EAORC BULLETIN 1,101 – 21 July 2024

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.

EDITORIAL INTERJECTIONS

Comments in curly brackets are editorial interjections. The Editor reserves the right to be wrong.

ACADEMIA.EDU – Iconic origins of language?

Biology & Philosophy 39, 16 (2024).

CORIJN VAN MAZIJK – Iconic origins of language? An essay review of Steven Mithen's The Language Puzzle (2024)

This essay review explores Steven Mithen's interdisciplinary approach to the origins and evolution of language in The Language Puzzle (2024). It focuses mainly on what I call his iconic vocal origins hypothesis. Mithen challenges the prevalent gestural origins hypothesis, suggesting instead that early prehistoric languages were predominantly vocal and iconic, with conventionalization – as characteristic of symbol use – emerging later. The Language Puzzle draws on research from archaeology, philosophy, computer science, developmental psychology, and many other fields, thus assembling a wealth of insights from various disciplines. While intriguing, Mithen's suggestion that prehistoric languages may have relied on iconicity instead of conventionalization faces substantial problems, which are discussed in this review essay. In the final section, I also briefly review the important conclusion chapter of Mithen's book, which contains an imaginative outline of how language evolved from the last common ancestor up until modern H. sapiens. My criticisms of the iconic vocal origins hypothesis notwithstanding, The Language Puzzle is a valuable resource for anyone interested in language evolution, and once again showcases Mithen's wide-ranging expertise and masterful writing.

https://www.academia.edu/122101246/Iconic_origins_of_language_An_essay_review_of_Steven_Mithens_The_Language_Puzzle_2024_Biology_and_Philosophy

PREPRINTS – The Handaxe's Tale

JOHN SHEA – The Handaxe's Tale: A Carrying Revolution in Pleistocene Prehistory

A comparison of Pleistocene handaxes and other long core-tools (LCTs) with modern-day portable personal electronic devices supports the hypothesis that LCTs' sizes and shapes reflect design for ease of handcarrying. Occurrences of handaxes and other LCTs in the archaeological record after 1.6-1.8 Ma signal a novel strategy of habitual shaping stone tools for efficient transport, a strategy unique to the Genus Homo.

https://www.academia.edu/122078366/The_Handaxes_Tale_A_Carrying_Revolution_in_Pleistocene_Prehistory

NEWS

JOHN TEMPLETON FOUNDATION – Once Upon a Time…

Once upon a time, thousands of years ago, our distant ancestors organized sounds, symbols, and gestures to express ideas unrelated to necessities of the moment. It was the start of something big. Their use of "figurative language" decoded dreams and feelings. It allowed them to convey to others "an experience, a thought, a hope, or some other facet of the imagination," anthropologist Agustín Fuentes explains in his book The Creative Spark. "They were developing the capacity for a central facet of all human lives: the ability to tell stories."

https://www.templeton.org/news/once-upon-a-time

SCIENCEADVISER – Sex and gender influence the brain in different ways

Is there really such a thing as a "male" or "female" brain? In recent decades, neuroscientists have become increasingly interested in unraveling the relationship between sex and the brain, and how—or if—this relationship influences behavior. But many studies assume that any differences between men and women are the product of sex—overlooking the potentially significant influence of gender.

To untangle the effects of gender on the brain from those of sex, the authors of a new Science Advances study used machine learning to analyze functional brain imaging data from nearly 5000 children collected as part of the Adolescent Brain Cognitive Development (ABCD) Study—the largest long-term study of brain development and child health in the United States. They discovered that brain networks associated with sex—which tended to play a role in sensory processing and motor control—were distinct from networks associated with gender, which were more widely distributed throughout the brain and tended to be involved in cognitive abilities like attention, social cognition, and emotional processing.

The findings suggest that gender and sex play unique roles in neurobiology and should be considered separately in biomedical research. "I don't think anyone's looked at this question," says Lucina Uddin, who wasn't involved in the new work but serves as the justice, equity, diversity, and inclusion associate director for the ABCD. The discovery that sex and gender influence the brain in different ways, she adds, "could change the way we do science."

https://www.science.org/content/article/brain-imaging-study-children-shows-sex-and-gender-operate-different-networks-brain

SCIENCEADVISER – Where's my shrimp? Cuttlefish form false memories, too

Picture your favorite meal. You're probably recalling more than food—where you sat, who you were with. When we forge memories of experiences, our brains break them into pieces that are stored separately. Then, to remember the event, the brain reconstructs the experience. When that happens incorrectly, we can end up with a "false memory." Now, researchers have discovered such incorrect recollections aren't unique to bony animals.

Cuttlefish are the only invertebrates currently demonstrated to form episodic memories of events rather than semantic memories of individual facts and details. But it wasn't clear if, like us, those memories are collections of associated semantic memories, or if they're more film-like. To figure that out, researchers decided to try to trick cuttlefish into making false memories—which would only work if the animals also link separate memories to recreate experiences.

First, they showed cuttlefish differently decorated tubes: one empty, one containing crab, and one containing shrimp—their favorite snack. Then, they offered just the ones containing shrimp and nothing, but this time, their contents were hidden. Lastly, keeping the contents secret, they let the cuttlefish choose between the empty tube and the crab tube. A choice of the empty tube over the crab would indicate that the animal thought the shrimp was inside it—a false memory made by mistakenly piecing together the information from the earlier choices.

Indeed, that's exactly what happened: Cuttlefish often chose the empty one, though the tendency varied between individuals. In future studies, the researchers want to understand why some were more susceptible to false memories than others—and whether this kind of gullibility changes "depending on its age, its level of attention to the task, or even its emotional state."

https://www.cell.com/iscience/fulltext/S2589-0042(24)01547-5

SCIENCE DAILY – Rewriting the history of contact between Neanderthals and other ancient humans

Using genomes from 2,000 living humans as well as three Neanderthals and one Denisovan, an international team mapped the gene flow between the hominin groups over the past quarter-million years.

https://www.sciencedaily.com/releases/2024/07/240711215541.htm

SCIENCE DAILY – Creativity starts in the cradle, new research shows

New research indicates that babies can begin grasping complex language and ideas.

https://www.sciencedaily.com/releases/2024/07/240710195507.htm

SCIENCE DAILY – Charting an equitable future for DNA and ancient DNA research in Africa

The American Journal of Human Genetics recently published a perspective piece on the need for an equitable and inclusive future for DNA and ancient DNA (aDNA) research in Africa. The paper highlights the fact that, while DNA from ancient and living African peoples is increasingly critical to the study of human evolution, African scientists remain starkly underrepresented in this field.

https://www.sciencedaily.com/releases/2024/07/240711215616.htm

SCIENCE DAILY – Introducing co-cultures: When co-habiting animal species share culture

Cooperative hunting, resource sharing, and using the same signals to communicate the same information -- these are all examples of cultural sharing that have been observed between distinct animal species. In a new article, researchers introduce the term 'co-culture' to describe cultural sharing between animal species. These relationships are mutual and go beyond one species watching and mimicking another species' behavior -- in co-cultures, both species influence each other in substantial ways.

https://www.sciencedaily.com/releases/2024/07/240711132154.htm

SCIENCE DAILY – Toddlers' brains show significant growth in cognitive skills by 16 months

Toddlers engage more regions of their brains around 16-months to help them develop important cognitive skills enabling them to follow simple instructions and control impulses. Findings from the study suggests 16 months is a critical period for brain development.

https://www.sciencedaily.com/releases/2024/07/240711111448.htm

SCIENCE DAILY – A new neural network makes decisions like a human would

Researchers are training neural networks to make decisions more like humans would. This science of human decision-making is only just being applied to machine learning, but developing a neural network even closer to the actual human brain may make it more reliable, according to the researchers.

https://www.sciencedaily.com/releases/2024/07/240715135808.htm

SCIENCE DAILY – New dating place first European hominids in the south of the Iberian Peninsula 1.3mya

One of the most important controversies about human evolution and expansion is when and by what route the first hominids arrived in Europe from the African continent. Now, geological dating techniques at the Orce sites (Baza basin, Granada, Spain) place the human remains found in this area as the oldest in Europe, at approximately 1.3 million years old. These results reinforce the hypothesis that humans arrived in Europe through the south of the Iberian Peninsula, through the Strait of Gibraltar, instead of returning to the Mediterranean via the Asian route.
https://www.sciencedaily.com/releases/2024/07/240715135719.htm

SCIENCE DAILY – Origins of creativity in the brain

New results could ultimately help lead to interventions that spark creative thought or aid people who have mental illnesses that disrupt these regions of the brain.
https://www.sciencedaily.com/releases/2024/07/240715103538.htm

SCIENCE DAILY – Cuttlefish can form false memories, too

During an event, details like what you saw, smelled, and felt aren't stored as a single memory. Rather, they are encoded and stored in your brain separately. To retrieve that memory, those pieces must get put back together. When that doesn't happen in the right way or details are distorted, it can lead to the creation of false memories. Now researchers have evidence that the common cuttlefish may create false memories, too.
https://www.sciencedaily.com/releases/2024/07/240717120956.htm

SCIENCE DAILY – Youth with conduct disorder show widespread differences in brain structure

The largest neuroimaging study of conduct disorder to date has revealed extensive changes in brain structure among young people with the disorder. The largest difference was a smaller area of the brain's outer layer, known as the cerebral cortex, which is critical for many aspects of behavior, cognition and emotion.
https://www.sciencedaily.com/releases/2024/07/240716202252.htm

SCIENCE.ORG NEWS – Brain imaging in children shows sex and gender operate in different networks

Experts say the study reinforces the need to consider sex and gender separately in biomedical research.
https://www.science.org/content/article/brain-imaging-study-children-shows-sex-and-gender-operate-different-networks-brain

SCIENCE.ORG NEWS – Mindfulness training may lead to altered states of consciousness

Mindfulness training may lead participants to experience disembodiment and unity -- so-called altered states of consciousness -- according to a new study.
{Altered states of consciousness with only the self to be conscious of? Semi-lucid dream states?}
https://www.sciencedaily.com/releases/2024/07/240717162359.htm

THE CONVERSATION – Bigger animals don't always have the biggest brains relative to body size

Brains evolve with body size according to a simple rule. Exceptions to that rule include our own species with enormous brains.
https://theconversation.com/bigger-animals-dont-always-have-the-biggest-brains-relative-to-body-size-new-research-234730

THE CONVERSATION – Can collective experiences bring people closer together? Podcast

Pyschologist Garriy Shteynberg talks to The Conversation Weekly about his theory of the collective mind – and why you should think about it when watching the Olympics this summer.
https://theconversation.com/sharing-that-moment-can-collective-experiences-bring-people-closer-together-podcast-234937

PUBLICATIONS

Animal Behaviour

PAPERS

ANDREA L. PERMANA et al with CAREL P. VAN SCHAIK & CAROLINE SCHUPPLI – The ontogeny of nest-building behaviour in Sumatran orang-utans, Pongo abelii

Nest building is an important subsistence behaviour that young great apes must learn to become competent adults. Orang-utans show a remarkable degree of variability and selectivity for a broad range of features in their nest building. However, the details of when different aspects of nest-building skills emerge remain unclear. We used data on 27 immature Sumatran orang-utans and 20 mothers collected over a decade at Suaq Balimbing, Sumatra to investigate when immatures develop

their nest-building skills and examine when nest tree species preferences emerge. We found that young orang-utans showed interest in nest building from 6 months of age and begin to construct day nests at around 1 year of age, whereas night nests were not practised until close to the third year of life. Nest-building practice peaked around age 3–4 years and then steadily decreased as immatures approached the age of nutritional independence, around age 8 years. By then, immature orang-utans were competent nest-builders, but their nests differed from adult nests in several aspects, such as fewer multitree nests and additional comfort elements, which seemed to be mastered later in development. All age classes demonstrated stronger selectivity towards tree species used for night nests and immatures eventually had similar preferences to mothers. We conclude that the ontogeny of nest-building behaviour and the selection of nest tree species in Sumatran orang-utans is a multiyear learning process that requires intense practice.
https://www.sciencedirect.com/science/article/pii/S0003347224000708

Cell Reports

PAPERS

MARY H. PATTON et al – Synaptic plasticity in human thalamocortical assembloids

Synaptic plasticities, such as long-term potentiation (LTP) and depression (LTD), tune synaptic efficacy and are essential for learning and memory. Current studies of synaptic plasticity in humans are limited by a lack of adequate human models. Here, we modeled the thalamocortical system by fusing human induced pluripotent stem cell-derived thalamic and cortical organoids. Single-nucleus RNA sequencing revealed that >80% of cells in thalamic organoids were glutamatergic neurons. When fused to form thalamocortical assembloids, thalamic and cortical organoids formed reciprocal long-range axonal projections and reciprocal synapses detectable by light and electron microscopy, respectively. Using whole-cell patch-clamp electrophysiology and two-photon imaging, we characterized glutamatergic synaptic transmission. Thalamocortical and corticothalamic synapses displayed short-term plasticity analogous to that in animal models. LTP and LTD were reliably induced at both synapses; however, their mechanisms differed from those previously described in rodents. Thus, thalamocortical assembloids provide a model system for exploring synaptic plasticity in human circuits.
https://www.cell.com/cell-reports/fulltext/S2211-1247(24)00832-5

Evolutionary Anthropology

PAPERS

NATALIE G. MUELLER & JOHN C. WILLMAN – Domestication as the evolution of interspecies cooperative breeding

We propose that domestication is the result of interspecies cooperative breeding. Considering domestication as an outcome of cooperative breeding can explain how domestication occurs in both plants and animals, encompass cases of domestication that do not involve humans, and shed light on why humans are involved in so many domesticatory relationships. We review the cooperative breeding model of human evolution, which posits that care of human infants by alloparents enabled the evolution of costly human brains and long juvenile development, while selecting for tolerance of strangers. We then explore how human cooperation in the protection and provisioning of young plants and animals can explain the evolution of domestication traits such as changes in development; loss of aggressive, defensive, and bet-hedging aspects of the phenotype; and increased fertility. We argue that the importance of cooperative breeding to human societies has made humans especially likely to enter into interspecies cooperative breeding relationships.
https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.22042

Frontiers in Psychology

PAPERS

OLIVIA LÓPEZ MARTÍNEZ, ANTONIO JOSÉ LORCA GARRIDO & MARÍA ISABEL DE VICENTE-YAGÜE JARA – Indicators of verbal creative thinking: results of a Delphi panel

Creativity is a fundamental competence that manifests itself in various domains of knowledge, including verbal creativity. The main aim of this study was to identify indicators of verbal creativity for the assessment of three writing tasks.
Sixteen multidisciplinary and international creativity experts participated in a two-stage Delphi panel. The administered questionnaire asked about the measurement or non-measurement of eight indicators of verbal creative thinking in three tasks: problem posing, creative idea generation, and idea improvement. Originality is the most important indicator of creativity. The indicators identified in the first task were fluency, flexibility, originality, elaboration, and sensitivity to problems. The second task measures flexibility, originality, elaboration, opacity, and dynamic integration. In the third task, fluency, flexibility, originality, elaboration, dynamic integration, and refinement of ideas are considered.
The results of this study are key to progress in the field of measuring verbal creative thinking.
The identification of indicators of the construct called verbal creativity allows the determination of its components in order to be able to estimate the creative potential in this specific domain.
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2024.1397861/full

Heliyon

PAPERS

BISRAT TEKLESILASSIE YAZEW – Women's contributions versus Men's patriarchal status among Afar pastoralists in the Lower Awash Valley

This study examined women's unrecognized roles in facilitating socio-economic interactions and clan networks in a patriarchal society. A qualitative research methodology was chosen. Situational observations, key interviews, and group discussions were applied as data-gathering tools. A thematic descriptive analysis method was used to examine the data that had been gathered. Accordingly, the study found that women are not participating in leading customary institutions and publicly due to the traditional patriarchal domination. However, the customary law shields women from various presumptions. It has been noted women's participation in maintaining social order, economic reciprocity, and resource sharing. Most importantly, women's continual control of household responsibilities and income-generating activities is essential to Afar society's survival. The study recommends that multifaceted interventions should be made to maintain women's role in supporting their traditional methods of engaging in maintaining clan networks. An intervention should mostly be better focused on women's activities as it will help to explore additional mechanisms that uplift either women by themselves or by the initial intervention system. Therefore, the study recommends incorporating pastoral women's roles into more extensive women's enclave empowerment policies and removing the existing sociocultural limitations to allow them to contribute more to pastoral livelihoods.
https://www.cell.com/heliyon/fulltext/S2405-8440(24)10500-2

Mind & Language

PAPERS

ALEXANDRE DUVAL – In defense of language-independent flexibility, or: What rodents and humans can do without language

There are two main approaches within classical cognitive science to explaining how humans can entertain mental states that integrate contents across domains. The language-based framework states that this ability arises from higher cognitive domain-specific systems that combine their outputs through the language faculty, whereas the language-independent framework holds that it comes from non-language-involving connections between such systems. This article turns on its head the most influential empirical argument for the language-based framework, an argument that originates from research on spatial reorientation. I make the case that neuroscientific findings about spatial reorientation in rodents and humans bolster the language-independent framework instead.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12522

Nature Communications

PAPERS

NICOLE EICHERT et al – Hippocampal connectivity patterns echo macroscale cortical evolution in the primate brain

While the hippocampus is key for human cognitive abilities, it is also a phylogenetically old cortex and paradoxically considered evolutionarily preserved. Here, we introduce a comparative framework to quantify preservation and reconfiguration of hippocampal organisation in primate evolution, by analysing the hippocampus as an unfolded cortical surface that is geometrically matched across species. Our findings revealed an overall conservation of hippocampal macro- and micro-structure, which shows anterior-posterior and, perpendicularly, subfield-related organisational axes in both humans and macaques. However, while functional organisation in both species followed an anterior-posterior axis, we observed a marked reconfiguration in the latter across species, which mirrors a rudimentary integration of the default-mode-network in non-human primates. Here we show that microstructurally preserved regions like the hippocampus may still undergo functional reconfiguration in primate evolution, due to their embedding within heteromodal association networks.
https://www.nature.com/articles/s41467-024-49823-8

Nature Communications Psychology

PAPERS

KATARZYNA PISANSKI, DAVID REBY & ANNA OLESZKIEWICZ – Humans need auditory experience to produce typical volitional nonverbal vocalizations

Human nonverbal vocalizations such as screams and cries often reflect their evolved functions. Although the universality of these putatively primordial vocal signals and their phylogenetic roots in animal calls suggest a strong reflexive foundation, many of the emotional vocalizations that we humans produce are under our voluntary control. This suggests that, like speech, volitional vocalizations may require auditory input to develop typically. Here, we acoustically analyzed hundreds of volitional vocalizations produced by profoundly deaf adults and typically-hearing controls. We show that deaf adults produce unconventional and homogenous vocalizations of aggression and pain that are unusually high-pitched, unarticulated, and with extremely few harsh-sounding nonlinear phenomena compared to controls. In contrast, fear vocalizations of deaf adults are relatively acoustically typical. In four lab experiments involving a range of perception tasks with 444 participants, listeners were less accurate in identifying the intended emotions of vocalizations produced by deaf vocalizers than by controls,

perceived their vocalizations as less authentic, and reliably detected deafness. Vocalizations of congenitally deaf adults with zero auditory experience were most atypical, suggesting additive effects of auditory deprivation. Vocal learning in humans may thus be required not only for speech, but also to acquire the full repertoire of volitional non-linguistic vocalizations.
https://www.nature.com/articles/s44271-024-00104-6

Nature Ecology & Evolution

PAPERS

JOHN ROWAN et al – Long-term biotic homogenization in the East African Rift System over the last 6 million years of hominin evolution

Eastern Africa preserves the most complete record of human evolution anywhere in the world but we have little knowledge of how long-term biogeographic dynamics in the region influenced hominin diversity and distributions. Here, we use spatial beta diversity analyses of mammal fossil records from the East African Rift System to reveal long-term biotic homogenization (increasing compositional similarity of faunas) over the last 6 Myr. Late Miocene and Pliocene faunas (~6–3 million years ago (Ma)) were largely composed of endemic species, with the shift towards biotic homogenization after ~3 Ma being driven by the loss of endemic species across functional groups and a growing number of shared grazing species. This major biogeographic transition closely tracks the regional expansion of grass-dominated ecosystems. Although grazers exhibit low beta diversity in open environments of the Early Pleistocene, the high beta diversity of Mio-Pliocene browsers and frugivores occurred in the context of extensive woody vegetation. We identify other key aspects of the Late Cenozoic biogeographic development of eastern Africa, their likely drivers and place the hominin fossil record in this context. Because hominins were undoubtedly influenced by many of the same factors as other eastern African mammals, this provides a new perspective on the links between environmental and human evolutionary histories.
https://www.nature.com/articles/s41559-024-02462-0

Nature Scientific Reports

PAPERS

RISAKO SHIRAI & KATSUMI WATANABE – Different judgment frameworks for moral compliance and moral violation

In recent decades, the field of moral psychology has focused on moral judgments based on some moral foundations/categories (e.g., harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity). When discussing the moral categories, however, whether a person judges moral compliance or moral violation has been rarely considered. We examined the extent to which moral judgments are influenced by each other across moral categories and explored whether the framework of judgments for moral violation and compliance would be different. For this purpose, we developed the episodes set for moral and affective behaviors. For each episode, participants evaluated valence, arousal, morality, and the degree of relevance to each of the Haidt's 5 moral foundations. The cluster analysis showed that the moral compliance episodes were divided into three clusters, whereas the moral violation episodes were divided into two clusters. Also, the additional experiment indicated that the clusters might not be stable in time. These findings suggest that people have different framework of judgments for moral compliance and moral violation.
https://www.nature.com/articles/s41598-024-66862-9

ANA PHILIPPSEN et al – Time pressure and deliberation affect moral punishment

The deliberate-morality account implies that moral punishment should be decreased with time pressure and increased with deliberation while the intuitive-morality account predicts the opposite. In three experiments, moral punishment was examined in a simultaneous one-shot Prisoner's Dilemma game with a costly punishment option. The players cooperated or defected and then decided whether or not to punish their partners. In Experiment 1, the punishment decisions were made without or with time pressure. In Experiment 2, the punishment decisions were immediate or delayed by pauses in which participants deliberated their decisions. In Experiment 3, participants were asked to deliberate self-interest or fairness before deciding whether to punish their partners. Different types of punishment were distinguished using the cooperation-and-punishment model. In Experiment 1, time pressure decreased moral punishment. In Experiment 2, deliberation increased moral punishment. So far, the evidence supports the deliberate-morality account. Experiment 3 demonstrates that the effect of deliberation depends on what is deliberated. When participants deliberated self-interest rather than fairness, moral punishment was decreased. The results suggest that unguided deliberation increases moral punishment, but the effects of deliberation are modulated by the type of deliberation that takes place. These results strengthen a process-based account of punishment which offers a more nuanced understanding of the context-specific effect of deliberation on moral punishment than the deliberate-morality account.
https://www.nature.com/articles/s41598-024-67268-3

LYDIA V. LUNCZ et al – Tool skill impacts the archaeological evidence across technological primates

The archaeological record offers insights into our evolutionary past by revealing ancient behaviour through stone and fossil remains. Percussive foraging is suggested to be particularly relevant for the emergence of tool-use in our lineage, yet early hominin percussive behaviours remain largely understudied compared to flaked technology. Stone tool-use of extant

primates allows the simultaneous investigation of their artefacts and the associated behaviours. This is important for understanding the development of tool surface modification, and crucial for interpreting damage patterns in the archaeological record. Here, we compare the behaviour and the resulting material record across stone tool-using primates. We investigate the relationship of nut-cracking technique and stone tool modification across chimpanzees, capuchins, and long-tailed macaques by conducting standardized field experiments with comparable raw materials. We show that different techniques likely emerged in response to diverse nut hardness, leading to variation in foraging success across species. Our experiments further demonstrate a correlation between techniques and the intensity of visible percussive damage on the tools. Tools used with more precision and efficiency as demonstrated by macaques, show fewer use wear traces. This suggests that some percussive techniques may be less readily identified in the archaeological record.
https://www.nature.com/articles/s41598-024-67048-z

MATTEO CAVALIERE et al – Cooperation and social organization depend on weighing private and public reputations
To avoid exploitation by defectors, people can use past experiences with others when deciding to cooperate or not ('private information'). Alternatively, people can derive others' reputation from 'public' information provided by individuals within the social network. However, public information may be aligned or misaligned with one's own private experiences and different individuals, such as 'friends' and 'enemies', may have different opinions about the reputation of others. Using evolutionary agent-based simulations, we examine how cooperation and social organization is shaped when agents (1) prioritize private or public information about others' reputation, and (2) integrate others' opinions using a friend-focused or a friend-and-enemy focused heuristic (relying on reputation information from only friends or also enemies, respectively). When agents prioritize public information and rely on friend-and-enemy heuristics, we observe polarization cycles marked by high cooperation, invasion by defectors, and subsequent population fragmentation. Prioritizing private information diminishes polarization and defector invasions, but also results in limited cooperation. Only when using friend-focused heuristics and following past experiences or the recommendation of friends create prosperous and stable populations based on cooperation. These results show how combining one's own experiences and the opinions of friends can lead to stable and large-scale cooperation and highlight the important role of following the advice of friends in the evolution of group cooperation.
https://www.nature.com/articles/s41598-024-67080-z

MARIA LOJOWSKA, FEDERICA LUCCHI & MANON MULCKHUYSE – Threat-induced prosocial behavior: enhanced exogenous attention to protect others from harm
As social animals, humans tend to voluntarily engage in pro-social behavior to prevent harm to others. However, to what extent prosocial behavior can be reflected at the level of less voluntary cognitive processes remains unclear. Here, we examined how threat to others modulates exogenous attention. Fifty-four participants performed an exogenous spatial cueing task where the participant's performance determined whether electric shocks would be delivered either to themselves or to their anonymous co-participant. Threat of shock to the co-participant elicited orienting and reorienting responses that were faster than in the safe condition and did not differ from performance when participants avoided shocks to themselves. This attentional improvement was not due to speed-accuracy trade off and was associated with arousal, i.e., increased pupil dilation in both threat conditions. Together, these findings suggest that pro-social behavior triggers automatic attentional processes which may be relevant for providing immediate help without relying on reflexive processes.
https://www.nature.com/articles/s41598-024-66787-3

New Scientist

NEWS

Denisovan DNA may help modern humans adapt to different environments
Highland and lowland populations in Papua New Guinea have different gene variants derived from Denisovan archaic humans, indicating possible adaptations for lower oxygen levels and higher malaria risk.
https://www.newscientist.com/article/2438941-denisovan-dna-may-help-modern-humans-adapt-to-different-environments/

The plague may have wiped out most northern Europeans 5000 years ago
DNA evidence from tombs in Sweden and Denmark suggests major plague outbreaks were responsible for the Neolithic decline in northern Europe.
https://www.newscientist.com/article/2439016-the-plague-may-have-wiped-out-most-northern-europeans-5000-years-ago/

One Earth

PAPERS

GODA PERLAVICIUTE – Citizen assemblies should involve citizens as experts on their own values
Citizen assemblies (CAs) could enrich policymaking by unveiling public values and preferences for climate polices. Yet, the current paradigm guiding CAs is rationalistic and primarily fact orientated. This might underexploit the potential of CAs to bring a unique contribution to climate policymaking. I propose a paradigm shift that creates explicit room for citizens' values

in CAs. Using concrete examples, I illustrate how every step of CAs could be transformed to elicit citizens' values: from citizen selection, to setting the remit, facilitating the discussion, and shaping and institutionalizing policy recommendations.
{Does this author understand the difference between things that are true to the individual because they believe them to be true, things that are true to the group because the group agrees they are true, and things that are true because there is no convincing counter-evidence that they are untrue? Let us call this third group of truths, actualities. If what is currently guiding CAs is "rationalistic and primarily fact orientated", I don't see any role for "unique contributions". Anyone who has observed a town hall meeting in the mid-West of the USA will have seen the astonishing amount of actuality-denial at work; yet, as with all actualities, the path of climate change remains stubbornly unresponsive to the "unique contributions" of pseudoscience and religion.}
https://www.cell.com/one-earth/fulltext/S2590-3322(24)00318-X#%20

Philosophical Transactions of the Royal Society B

PAPERS

ANTONIO DAMASIO & HANNA DAMASIO – Sensing, feeling and consciousness
Living organisms achieve homeostasis by using distinct mechanisms tailored to their physiological complexity. Unicellular organisms as well as plants, which are devoid of nervous systems, rely on covert sensing/detecting and equally covert responding mechanisms. Organisms with nervous systems rely on overt consciousness which is based on homeostatic feelings and the experiences and consequent subjectivity they generate.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2023.0243

DAPHNE MAURER & CHARLES MAURER – The origins and development of aesthetics
All people (and some other animals) have aesthetic responses to sensory stimulation, responses of emotional pleasure or displeasure. These emotions vary from one person and culture to another, yet they share a common mechanism. To survive, an adaptive animal (as opposed to a tropic animal) needs to become comfortable with normality and to have slight abnormalities draw attention to themselves. Walking through a jungle you need to notice a tiger from a single stripe: if you must wait to see the whole animal, you are unlikely to survive. In Homo sapiens, the brain's adaptive neurochemistry does this naturally, partly because the brain's neuronal networks are structured to react efficiently to fractal structures, structures that shape much of nature. In addition, previous associations may turn a slight variation from normal into feelings of either pleasure or danger. The details of these responses—what is normal and what variations feel like—will depend upon an individual's experience, but the mechanism is the same, no matter whether a person is tasting a wine, seeing a face or landscape, or hearing a song.
https://royalsocietypublishing.org/doi/abs/10.1098/rstb.2023.0246

PLoS One

PAPERS

JAMES CLARK et al with CERI SHIPTON & ROBERT ANDREW FOLEY – When is a handaxe a planned-axe? exploring morphological variability in the Acheulean
The handaxe is an iconic stone tool form used to define and symbolise both the Acheulean and the wider Palaeolithic. There has long been debate around the extent of its morphological variability between sites, and the role that extrinsic factors (especially raw material, blank type, and the extent of resharpening) have played in driving this variability, but there has been a lack of high-resolution examinations of these factors in the same study. In this paper, we present a 2D geometric morphometric analysis of 1097 handaxes from across Africa, the Levant, and western Europe to examine the patterning of this variability and what it can tell us about hominin behaviour. We replicate the findings of previous studies, that handaxe shape varies significantly between sites and entire continental regions, but we find no evidence for raw material, blank type, or resharpening in determining this pattern. What we do find, however, is that markers of reduction trajectory vary substantially between sites, suggesting that handaxes were deployed differently according to hominin need at a given site. We argue this is reflective of a continuum of reduction strategies, from those focused on the maintenance of a sharp cutting edge (i.e. direct use in cutting activities), to those focused on maintaining tip shapes, and perhaps a corresponding production of flakes. Implications for hominin behavioural flexibility are discussed.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0307081

MARIANO DEL PAPA et al – Anthropic cut marks in extinct megafauna bones from the Pampean region (Argentina) at the last glacial maximum
The initial peopling of South America is a topic of intense archaeological debate. Among the most contentious issues remain the nature of the human-megafauna interaction and the possible role of humans, along with climatic change, in the extinction of several megamammal genera at the end of the Pleistocene. In this study, we present the analysis of fossil remains with cutmarks belonging to a specimen of Neosclerocalyptus (Xenarthra, Glyptodontidae), found on the banks of the Reconquista River, northeast of the Pampean region (Argentina), whose AMS 14C dating corresponds to the Last Glacial Maximum (21,090–20,811 cal YBP). Paleoenvironmental reconstructions, stratigraphic descriptions, absolute chronological

dating of bone materials, and deposits suggest a relatively rapid burial event of the bone assemblage in a semi-dry climate during a wet season. Quantitative and qualitative analyses of the cut marks, reconstruction of butchering sequences, and assessments of the possible agents involved in the observed bone surface modifications indicate anthropic activities. Our results provide new elements for discussing the earliest peopling of southern South America and specifically for the interaction between humans and local megafauna in the Pampean region during the Last Glacial Maximum.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0304956

JESSICA BATES et al – Spatial organisation within the earliest evidence of post-built structures in Britain
This paper explores tool-using activities undertaken in and around the earliest known evidence of post-built structures in Britain. Microwear results associated with at least three structures identified at the Early Mesolithic site of Star Carr, North Yorkshire, are examined as a means of identifying activity zones associated with the diverse stone tools used to process a variety of materials (e.g. wood, bone, antler, plant, hide, meat, fish). With 341 lithic artefacts analysed, this research represents the first microwear study focused on the post-built structures at Star Carr. A combination of spatial and microwear data has provided different scales of interpretation: from individual tool use to patterns of activity across the three structures. Different types of tool use observed have aided interpretations of possible activity areas where objects were produced and materials were processed. Zones of activity within one of the structures suggest that the working of some materials was more spatially restricted than others; even where there are high densities of flint deposition, spatial patterns in tool-using activity were observed. From this, it is interpreted that social norms and behaviours influenced the spatial organisation of different spaces. Our results demonstrate the importance of combining microwear analysis with GIS to explore function and variability in the use of Mesolithic structures—providing new insights into their role as social spaces.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0306908

PRISCA JÖST – Neighborly social pressure and collective action: Evidence from a field experiment in Tunisia
Research on political participation almost unanimously assumes that social pressure by neighbors induces collective behavior. Yet most experimental studies focus on individually based forms of political and civic behavior, such as voting and recycling, in Western industrialized societies. The paper tests the effect of neighborly social pressure on collective action in Tunisia. In a field experiment, I manipulate whether neighbors or community outsiders invite citizens to contribute to a public good (i.e., trash collection). I run the experiment in three neighborhoods of varying socioeconomic composition in Tunis (n = 1199). I do not find evidence to suggest that neighborly social pressure encourages participation in neighborhood cleanups, with low participation rates both for the neighbor and outsider contact conditions. While the effect of social pressure does not significantly vary across communities, overall participation rates do. Residents of the poor neighborhood are most likely to respond in a socially desirable way when asked about their intentions but least likely to participate. The paper also discusses some limitations of the study and outlines avenues for future research.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0304269

Proceedings of the Royal Society B

PAPERS

J. WHITEHOUSE et al – Facial expressivity in dominant macaques is linked to group cohesion
Social living affords primates (including humans) many benefits. Communication has been proposed to be the key mechanism used to bond social connections, which could explain why primates have evolved such expressive faces. We assessed whether the facial expressivity of the dominant male (quantified from the coding of anatomically based facial movement) was related to social network properties (based on social proximity and grooming) in nine groups of captive rhesus macaques (Macaca mulatta) housed in uniform physical and social environments. More facially expressive dominant male macaques were more socially connected and had more cohesive social groups. These findings show that inter-individual differences in facial expressivity are related to differential social outcomes at both an individual and group level. More expressive individuals occupy more beneficial social positions, which could help explain the selection for complex facial communication in primates.
https://royalsocietypublishing.org/doi/10.1098/rspb.2024.0984

HILLARY LENFESTY et al with ROBERT BOYD – Third-party arbitration and forgiving strategies increase cooperation when perception errors are common
Humans cooperate in groups in which mutual monitoring is common, and this provides the possibility of third-party arbitration. Third-party arbitration stabilizes reciprocity in at least two ways: first, when it is accurate, it reduces the frequency of misunderstandings resulting from perception errors, and second, even when it is inaccurate, it provides a public signal that allows pairs to align their expectations about how to behave after errors occur. Here, we describe experiments that test for these two effects. We find that in an iterated, sequential Prisoner's Dilemma game with errors, players with the highest average payoffs are those who make use of third-party arbitration and who also employ forgiving strategies. The combination of these two behaviours reduces the detrimental effects of errors on reciprocity, resulting in more cooperation.
https://royalsocietypublishing.org/doi/10.1098/rspb.2024.0861

Science

NEWS

The most ancient human genome yet has been sequenced—and it's a Denisovan's

200,000-year-old DNA from Siberian cave shows our elusive, extinct cousins mated repeatedly with Neanderthals.
https://www.science.org/content/article/most-ancient-human-genome-yet-has-been-sequenced-and-it-s-denisovan

Science Advances

PAPERS

SIMON CULLEN & DANIEL OPPENHEIMER – Choosing to learn: The importance of student autonomy in higher education

Despite strong evidence that autonomy enhances motivation and achievement, few interventions for promoting student autonomy in higher education have been developed and empirically tested. Here, we demonstrate how two autonomy-supportive policies effectively increase classroom attendance and subject mastery. First, in a randomized controlled field study, we explored the effect of allowing students to choose whether to make their attendance mandatory (i.e., a component of their course grades). We found that nearly all students used the opportunity as a pre-commitment device and were subsequently more likely to attend class than were students whose attendance had been mandated. Second, in a multi-year cohort study, we explored the effect of allowing students to opt out of a challenging, high-effort assessment stream, finding that students given greater autonomy invested more effort into their assignments and attained greater proficiency with the material. We discuss other opportunities for applying choice architecture to improve learning, motivation, and well-being in higher education.
https://www.science.org/doi/10.1126/sciadv.ado6759

Trends in Cognitive Sciences

PAPERS

NAZBANOU NOZARI & RANDI C. MARTIN – Is working memory domain-general or domain-specific?

Given the fundamental role of working memory (WM) in all domains of cognition, a central question has been whether WM is domain-general. However, the term 'domain-general' has been used in different, and sometimes misleading, ways. By reviewing recent evidence and biologically plausible models of WM, we show that the level of domain-generality varies substantially between three facets of WM: in terms of computations, WM is largely domain-general. In terms of neural correlates, it contains both domain-general and domain-specific elements. Finally, in terms of application, it is mostly domain-specific. This variance encourages a shift of focus towards uncovering domain-general computational principles and away from domain-general approaches to the analysis of individual differences and WM training, favoring newer perspectives, such as training-as-skill-learning.
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(24)00164-5

STEPHEN M. FLEMING & NICHOLAS SHEA – Quality space computations for consciousness

The quality space hypothesis about conscious experience proposes that conscious sensory states are experienced in relation to other possible sensory states. For instance, the colour red is experienced as being more like orange, and less like green or blue. Recent empirical findings suggest that subjective similarity space can be explained in terms of similarities in neural activation patterns. Here, we consider how localist, workspace, and higher-order theories of consciousness can accommodate claims about the qualitative character of experience and functionally support a quality space. We review existing empirical evidence for each of these positions, and highlight novel experimental tools, such as altering local activation spaces via brain stimulation or behavioural training, that can distinguish these accounts.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(24)00165-7

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