EAORC BULLETIN 1,151 – 6 July 2025

CONTENTS

NOTICES

FORMATTED VERSION OF THIS BULLETIN

A pdf formatted version of this Bulletin is available for download at martinedwardes.me.uk/eaorc/eaorc_bulletins.htm.

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, and doesn't object to being called out on it.

ACADEMIA.EDU – Evolutionary origins of the human cultural mind

The Psychologist 364 25:5, 364-368 (2012).

THIBAUD GRUBER & KLAUS ZUBERBÜHLER – Evolutionary origins of the human cultural mind

Which components of our cognitive architecture are part of our primate heritage, and what is uniquely human? Comparative studies of non-human primates can provide insights into earlier stages of human evolution by revealing the ancestral states. We address one pillar of what it means to be human, the capacity for culture. Overall, there is good evidence – from both laboratory groups and more recent field studies – that primates possess the key ingredients for culture to various degrees. But can a chimpanzee disregard current cultural norms in order to find optimal solutions to a novel problem, or is this an ability that emerged more recently in human evolution?
https://www.academia.edu/4286941/Evolutionary_origins_of_the_human_cultural_mind

ACADEMIA.EDU – Neurological and behavioural perspectives on the Neandertal and modern mind

Journal of Anthropological Sciences 92, 285-289 (2014).

MARCO LANGBROEK – Ice age mentalists: debating neurological and behavioural perspectives on the Neandertal and modern mind

Reconstructions of the evolution of human cognition and the interaction between cognition and behaviour in extinct hominins suffer from two problems. One is the pervasive use of double standards when it comes to judging behavioural evidence from Homo sapiens and extinct hominins, notably Neandertals (Roebroeks & Corbey, 2001). The other one is the continued and pervasive use in palaeoanthropology of an outdated linear view of evolution for the evolution of cognition (Langbroek, 2012). Unlike in other domains of biology, the evolution of cognition is still universally approached by means of a scalar ladder model rather than a diverse branching tree. As a result, there is a strong focus on defining behaviours exclusive to Homo sapiens and arguing that the lack of these in extinct hominins points to an inferior cognition (Langbroek, 2012; Trinkaus et al., 2001). The existence and significance of well-developed uniquely derived modes of cognition and behaviour in

extinct hominins is seldom given a thought (Langbroek, 2001, 2012). When expressed in Homo sapiens, unique traits are always presented as evolutionary advantages over other hominins. Unique traits in extinct hominins in turn, if discussed at all, are usually quickly mitigated by turning them into evidence for 'deficiencies'. An example is the recent study by Pearce et al. (2013). Pearce et al. argue that superior Neandertal vision as implied by their large occipital lobes and large orbits was really a deficiency because it was achieved, they assume, at the expense of brain capacity for higher social cognitive functions. Pearce et al. tellingly never use the word 'superior' to describe Neandertal visual capacities: that word is exclusively used in connection to Homo sapiens in their study.
https://www.academia.edu/7260393/Ice_age_mentalists_debating_neurological_and_behavioural_perspectives_on_the_Neandertal_and_modern_mind

ACADEMIA.EDU – Bodily self-awareness and object perception

Theoria et Historia Scientiarum 7:1, 53-68 (2007)

SHAUN GALLAGHER – Bodily self-awareness and object perception

The term 'proprioception' has a wide range of meanings. Neuroscientists, for example, may treat somatic proprioception as an entirely sub-personal, nonconscious function. In this sense, it delivers information about body posture and limb position, generated in physiological (mechanical) proprioceptors located throughout the body (e.g., Sherrington, 1953; Foumeret and Jeannerod, 1998). In contrast, psychologists and philosophers sometimes treat somatic proprioception as a form of consciousness (e.g., O'Shaughnessy, 1995). One is said to be proprioceptively aware of one's own body, to consciously know where one's limbs are at any particular time as one moves through the world (e.g., Sheets-Johnstone, 1998). Thus proprioception can mean either nonconscious information or a form of conscious awareness. In this paper I maintain the distinction between proprioceptive information and proprioceptive awareness, respectively.
In this paper I would like to argue that proprioceptive awareness (including both somatic and ecological proprioception) is primarily a form of non-perceptual awareness. This might seem to be an obscure point, but it turns out to be philosophically significant in regard to what Shoemaker calls 'immunity to error through misidentification'. Although it is possible to make a mistake in identifying one's body via sense-perceptual modalities such as vision, some philosophers argue that one is immune to error through misidentification in regard to knowing one's own body by means of proprioception (Cassam, 1995; Evans, 1982). If proprioception were a form of perception then it would be possible for one to proprioceptively misidentify oneself in referring to one's body. In arguing that proprioception is not a form of perception I am defending the immunity principle in this regard.
https://www.academia.edu/130343701/Bodily_self_awareness_and_object_perception

NEWS

NATURE BRIEFING – A 40-year mission to speak dolphin

Marine biologist Denise Herzing first swam with wild dolphins in 1985. What was meant to be a six-week research trip turned into a forty-year long career devoted to studying how animals communicate, which she recounts in her book, Is Anyone Listening?. Herzing has earned the right to intuit and speculate about her speciality, writes marine biologist Laela Sayigh in her review, but the book lacks sufficient data and references, which leaves some of her statements unsubstantiated. "However, Herzing's passion for nature and animals makes for a positive overarching message," she writes.
https://www.nature.com/articles/d41586-025-02033-8

NATURE BRIEFING – Neanderthals boiled bones in 'fat factories'

Archaeologists have uncovered evidence that Neanderthals rendered fat from bones 125,000 years ago — 100,000 years earlier than oldest known fat rendering by modern humans. Thousands of bone fragments and other remains from Neumark-Nord in Germany suggest a large-scale operation in which animals were purposely transported to the area. "The social organization might be different, the technology might be different, but how you have to live in such a landscape to make your living and to survive and prosper is absolutely comparable to modern hunter-gatherers," says zooarchaeologist and study co-author Lutz Kindler.
https://www.nature.com/articles/d41586-025-02104-w

NATURE BRIEFING – AI knows what you'll do before you do

An artificial-intelligence system called Centaur can predict the decisions people will make in a wide variety of situations — often outperforming classical theories used in psychology to describe human choices. Trained on data from 160 psychology experiments in which 60,000 people made more than 10 million choices, the system can simulate human behaviour in tasks from problem-solving and gambling, and even those it hasn't been trained on. Using Centaur, "you can basically run experimental sessions in silico instead of running them on actual human participants", says cognitive scientist and study co-author Marcel Binz.
https://www.nature.com/articles/d41586-025-02095-8

NEWS FROM SCIENCE – Trump cuts subscriptions to Springer Nature journals

Other publishers appear unscathed in recent actions.
https://www.science.org/content/article/trump-cuts-subscriptions-springer-nature-journals

NEWS FROM SCIENCE – Stone Age farmers' households passed from mother to daughter

Moms and daughters were at the center of the family in ancient Çatalhöyük, ancient DNA and archaeological evidence suggest.
https://www.science.org/content/article/stone-age-farmers-households-passed-mother-daughter

NEWS FROM SCIENCE – Ancient wooden tools show human ancestors ate their veggies

Found in China, 300,000-year-old digging sticks reveal a lost technology.
https://www.science.org/content/article/ancient-wooden-tools-show-human-ancestors-ate-their-veggies

NEWS FROM SCIENCE – Genetic evidence that our brains make new neurons in adulthood

Cells from human brain tissue have genetic hallmarks of neural progenitors, AI-aided study finds.
https://www.science.org/content/article/genetic-evidence-our-brains-make-new-neurons-adulthood-may-close-century-old-debate

NEWS FROM SCIENCE – Researchers claim their AI model simulates the human mind. Others are skeptical

Cognitive scientists question new Centaur model's ability to predict human behavior.
https://www.science.org/content/article/researchers-claim-their-ai-model-simulates-human-mind-others-are-skeptical

SCIENCEADVISER – In Çatalhöyük, households passed from mother to daughter

When archaeologists in the 1950s uncovered "mother goddess" figurines at a site called Çatalhöyük in what is today central Turkey, some wondered whether people there worshipped female fertility deities, or if the ancient city had been ruled by women. Later, other experts called these claims overblown after additional analysis revealed the bone chemistry of skeletons buried there didn't show any differences in lifestyle, workload, or nutrition between men and women.

Now, ancient DNA from the site is resurrecting the idea that women played a central role in society at Çatalhöyük, one of the world's earliest large urban environments that came into existence some 9000 years ago near the dawn of agriculture.

After analyzing some 200 skeletons excavated from the site, scientists reported last week in a pair of Science papers that children buried together were often distantly related through their mothers, a practice known as matrilineality. At the same time, girls buried in the same house were more likely to be related to one another than to boys and men buried nearby. Among the adult burials, "the females seem to be associated with the house," says geneticist Mehmet Somel, who led the study.

The findings don't prove that women ruled the roost here, but they do suggest that society was to some degree organized along gender lines, and that women enjoyed a certain degree of autonomy and power. And in later layers, the scientists found that people buried within the same household weren't always blood relatives, hinting that perhaps fostering or adoption was widespread.
https://www.science.org/doi/10.1126/science.ady6939

PUBLICATIONS

Animal Behaviour

PAPERS

RANDALL S. WELLS & KATHERINE A. MCHUGH – Bottlenose dolphin community structure along Florida's Gulf coast

Long-term studies of bottlenose dolphins, Tursiops truncatus, in Sarasota Bay, Florida have documented a fluid society, built upon complex and dynamic fission–fusion interactions between individuals living in a year-round, multigenerational resident community displaying strong site fidelity to a shared geographical range. Sarasota Bay dolphins are bisexually philopatric, display repeated associations among individuals over decades and develop unique acoustic identity signals, all of which facilitate a high level of familiarity among community members. Although adult males form strong alliances and exhibit mate-guarding behaviour during the breeding season, there is no evidence for defence of physical space (territoriality). Instead, there is both reproductive exchange as well as some social and geographical connection with neighbouring communities along and across overlapping borders. While not universal for the species, variations on this basic societal structure have been documented for bottlenose dolphins in many parts of the world.
https://www.sciencedirect.com/science/article/pii/S0003347225001563

Behavioral and Brain Sciences

PAPERS

MANVIR SINGH – Subjective selection, super-attractors, and the origins of the cultural manifold

Human societies reliably develop complex cultural traditions with striking similarities. These "super-attractors" span the domains of magic and religion (e.g., shamanism, supernatural punishment beliefs), aesthetics (e.g., heroic tales, dance songs), and social institutions (e.g., justice, corporate groups), and collectively constitute what I call the "cultural manifold." The cultural manifold represents a set of equilibrium states of social and cultural evolution: hypothetically cultureless humans placed in a novel and empty habitat will eventually produce most or all of these complex traditions. Although the study of the super-attractors has been characterized by explanatory pluralism, particularly an emphasis on processes that favor individual- or group-level benefits, I here argue that their development is primarily underlain by a process I call "subjective selection," or the production and selective retention of variants that are evaluated as instrumentally useful for satisfying goals. Humans around the world are motivated towards similar ends, such as healing illness, explaining misfortune, calming infants, and inducing others to cooperate. As we shape, tweak, and preferentially adopt culture that appears most effective for achieving these ends, we drive the convergence of complex traditions worldwide. The predictable development of the cultural manifold reflects the capacity of humans to sculpt traditions that apparently provide them with what they want, attesting to the importance of subjective selection in shaping human culture.
https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/subjective-selection-superattractors-and-the-origins-of-the-cultural-manifold/2D71AA44CFDB34F171A3D2E2F4410173

Current Anthropology

PAPERS

GUSTAV PEEBLES – The Naysayers' Science? Epistemologies of Scarcity and Abundance across a Disciplinary Divide

In an effort to enhance interdisciplinary dialogue between anthropology and economics, this article (introducing the collection) probes the philosophical underpinnings of each discipline. In so doing, the article proposes that there exists an enduring epistemic divide that has stymied our conversation with economics and that this divide must first be named to be productively transcended. Although it is well known that economics is organized around an axiomatic belief in scarcity, it is here argued that anthropology has a similar grounding belief in abundance. These differences in axiomatic principles have deep consequences for our divergent methods, objects of study, and outreach. Having identified this epistemic divide, the article offers definitions for a specific set of terms that proved fruitful in building bridges across the scarcity-abundance chasm. Hopeful in its nature, the article believes that these sorts of appraisals and definitions can then allow anthropologists to contribute more robustly to crucial policy debates that have hitherto been dominated by economists.
https://www.journals.uchicago.edu/doi/full/10.1086/734216

Current Biology

PAPERS

PAOLO DOMENICI et al – Spatially coordinated predation with division of labor increases feeding success in killer whales

Group hunting is widespread among large vertebrates and is known to confer considerable advantages compared with foraging alone. Yet, the mechanisms underlying group hunting, including how social predators are organized during a hunt, are largely unknown for marine predators. Using drone videos, we tracked the predatory behavior of killer whales along the Norwegian coast to test the hypothesis that group hunting is organized in space, both in terms of individual roles and interactions with conspecifics. Taking advantage of shallow water hunts that reduced the interactions to a 2D horizontal plane, we reveal that whales using underwater tail slaps (i.e., "strikers") to stun herring are more likely to hunt near a neighbor (i.e., a "helper") rather than alone, and such "joint slaps" show higher feeding success (measured as feeding bout duration) than "alone slaps." At the onset of a joint slap, the position of the whales follows a specific geometrical pattern. Whales preferentially take roles as strikers or helpers, with division of labor determined by size: larger individuals predominantly act as strikers in line with their higher feeding success compared with smaller whales. Both striking and helping behaviors are more likely to be observed in males than in females. Individuals involved in joint slaps have preferred partners, with whom they share multi-decadal social bonds, likely allowing repeated opportunities to practice and learn to bestow enhanced geometric positioning and hunting success. These findings highlight the importance of social organization, long-term bonding, and developmental learning in the cooperative hunting of marine mammals.
https://www.cell.com/current-biology/fulltext/S0960-9822(25)00745-6

eLife

PAPERS

ERDEM PULCU & MICHAEL BROWNING – Humans adapt rationally to approximate estimates of uncertainty

Efficient learning requires estimation of, and adaptation to, different forms of uncertainty. If uncertainty is caused by randomness in outcomes (noise), observed events should have less influence on beliefs, whereas if uncertainty is caused by a

change in the process being estimated (volatility) the influence of events should increase. Previous work has demonstrated that humans respond appropriately to changes in volatility, but there is less evidence of a rational response to noise. Here, we test adaptation to variable levels of volatility and noise in human participants, using choice behaviour and pupillometry as a measure of the central arousal system. We find that participants adapt as expected to changes in volatility, but not to changes in noise. Using a Bayesian observer model, we demonstrate that participants are, in fact, adapting to estimated noise, but that their estimates are imprecise, leading them to misattribute it as volatility and thus to respond inappropriately.
https://elifesciences.org/reviewed-preprints/103734

HIROSHI HIGASHI – Individuality transfer: Predicting human decision-making across tasks
Predicting an individual's behaviour in one task based on their behaviour in a different task is a key challenge in modeling individual decision-making tendencies. We propose a novel framework that addresses this challenge by leveraging neural networks and introducing a concept we term the "individuality index." This index, extracted from behaviour in a "source" task via an encoder network, captures an individual's unique decision-making tendencies. A decoder network then utilizes this index to generate the weights of a task-specific neural network (a "task solver"), which predicts the individual's behaviour in a "target" task. We demonstrate the effectiveness of our approach in two distinct decision-making tasks: a value-guided task and a perceptual task. Our framework offers a robust and generalizable approach for parameterizing individuality, providing a promising pathway toward computational modeling at the individual level—that is, replicating individuals in silico.
https://elifesciences.org/reviewed-preprints/107163

NIKOLAOS SMIT & MARTHA M ROBBINS – Risk-taking incentives predict aggression heuristics in female gorillas
Competition is commonly reflected in aggressive interactions among groupmates, as individuals try to attain or maintain higher social ranks that can offer them better access to critical resources. In this study, we investigate the factors that can shift competitive incentives against higher- or lower-ranking groupmates. Using a 25-year long behavioural dataset on five wild groups of the two gorilla species, we show that most aggression is directed from higher- to lower-ranking adult females close in rank, highlighting rank-reinforcement incentives. However, females directed 42% of aggression to higher-ranking females than themselves. Lactating and pregnant females, especially those at the latest stage of pregnancy, targeted groupmates of higher rank than the groupmates that cycling females targeted, suggesting that energetic needs motivate females to risk confrontation with more powerful rivals. Females also targeted groupmates of higher rank with increasing number of males in the group, suggesting that males might buffer female-female aggression risk. Contrarily, they targeted females of lower rank with increasing number of females in the group, potentially because this is a low risk option that females prefer when they have access to a larger pool of competitors to choose from. Our study provides critical insights into the evolution of competitive behaviour, showing that aggression heuristics, the simple rules that animals use to guide their aggressive interactions, are not simply species-specific but also dependent on the conditions that individuals experience.
https://elifesciences.org/reviewed-preprints/107093

Frontiers in Environmental Archaeology

PAPERS

MILENA CARVALHO, JONATHAN A. HAWS & EMILY LENA JONES – Late Neanderthal subsistence and foraging mobility at Lapa do Picareiro: a zooarchaeological and taphonomic analysis of Level JJ
Recent revisions of Neanderthal behavioral models call into question the notion of inflexible subsistence strategies. Here, we present new zooarchaeological and taphonomic data from Level JJ at Lapa do Picareiro (Portuguese Estremadura), dating to ~51.5–42.5 ka cal BP, to evaluate Neanderthal prey selection, mobility, and adaptive responses to climatic fluctuations during MIS 3. Our zooarchaeological and taphonomic analysis of macro-mammalian faunal assemblages—divided into three stratigraphic subunits—reveals a consistent emphasis on red deer exploitation, supplemented by occasional hunting of ibex, chamois, aurochs, and horse. Despite paleoenvironmental disturbances associated with Heinrich Stadial (HS) 5, the stable abundance and processing of red deer indicate that these key resources remained reliable, supporting a localized foraging territory estimated at 225–400 km2. In contrast, the lithic record shows a shift in raw material procurement before and after the climatic event, suggesting adaptive technological responses. Overall, our findings imply that Neanderthals at Picareiro employed brief, intermittent site occupations while maintaining resilient, regionally adapted subsistence and mobility strategies in the face of environmental variability.
https://www.frontiersin.org/journals/environmental-archaeology/articles/10.3389/fearc.2025.1545249/full

Frontiers in Psychology

PAPERS

JUN-YI CHEN & TING-TING LIU – Intertwining social, affective, and digital dynamics: a masspersonal communication model to analyze home language maintenance
In multilingual families, sustaining home languages is increasingly challenged by digitalization and evolving communication patterns. This study proposes a new analytical model to analyze how home language development and maintenance are

shaped by three overlapping communication contexts: interpersonal, mass, and masspersonal communication. Grounded in the masspersonal communication model (MPCM) proposed by O'Sullivan and Carr, the model highlights how emotional attachment, interactive routines, and cognitive perceptions operate across these contexts. Interpersonal communication fosters intimacy and habitual language use; mass communication amplifies access to linguistic resources and influences parental ideologies through media exposure; and masspersonal communication, blending public and private dimensions, enables performative, collaborative, and feedback-driven practices that strengthen language identity and emotional ties. Practical recommendations for policy, education, and family language practices are outlined, emphasizing integrative approaches to leverage these intersecting forces. This study addresses a key theoretical gap by offering a model that captures how digitally mediated environments reshape language practices at home. Future research is encouraged to empirically validate the model and to trace affective and cognitive dynamics in home language socialization. By revealing the complex interplay between digital technologies, social interactions, and linguistic identities, this study advances conceptual understanding of home language maintenance in an interconnected, multilingual world.
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2025.1639079/full

Language and Cognition

PAPERS

PATRIZIA PAGGIO et al – Do hand gestures increase perceived prominence in naturally produced utterances?
This study investigates the effect of visually perceived gestures on the overall (multimodal) prominence of naturally occurring stimuli extracted from a multimodal corpus of Maltese conversations. Experiment participants were required to rate the prominence of target words in sentences presented to them as audiovisual and audio-only stimuli. In half of the stimuli, the target word was accompanied by a co-speech hand gesture. The results of the experiment show (i) that words produced with a co-speech gesture were rated as more prominent than words that were produced without one and (ii) that this was the case independently of whether raters could see those gestures (audiovisual condition) or not (audio-only condition). An acoustic analysis of the data shows that the presence of a co-occurring gesture has a significant effect on the pitch of the target vowel. The study suggests that gestures may provide the listener with an additional but not necessary cue to perceiving prominence.
https://www.cambridge.org/core/journals/language-and-cognition/article/do-hand-gestures-increase-perceived-prominence-in-naturally-produced-utterances/4F03337907CBDE6FA39310BAA7DA2288

Nature

NEWS

Neanderthals boiled bones in 'fat factories' to enrich their lean diet
Germany digs reveal a large-scale operation 100,000 years earlier than oldest known fat rendering by modern humans.
https://www.nature.com/articles/d41586-025-02104-w

Nature Communications

ARTICLES

DAVID PITCHER – Neuropsychological evidence of a third visual pathway specialized for social perception
Recent evidence suggests the existence of a neural pathway specialized for social perception projecting between the well-established "what" and "where" pathways. A new study of neuropsychological patients demonstrates that this social pathway is causally essential for recognizing dynamic facial expressions.
https://www.nature.com/articles/s41467-025-61396-8

PAPERS

EMRE CAGLAYAN & GENEVIEVE KONOPKA – Decoding DNA sequence-driven evolution of the human brain epigenome at cellular resolution
DNA-based evolutionary comparisons of regulatory genomic elements enable insight into functional changes driven in cis, partially overcoming tissue inaccessibility. Here, we harnessed adult and fetal cortex single-cell ATAC-seq datasets to uncover DNA substitutions specific to the human and human-ancestral lineages within apes. We found that fetal microglia identity is evolutionarily divergent in all lineages, whereas other cell types are conserved. Using multiomic datasets, we further identified genes linked to multiple lineage-divergent gene regulatory elements and implicated biological pathways associated with these divergent features. We also uncovered patterns of transcription factor binding site evolution across lineages and identified expansion of bHLH-PAS transcription factor targets in human-hominin lineages, and MEF2 transcription factor targets in the ape lineage. Finally, conserved features were more enriched in brain disease variants, whereas there was no distinct enrichment of brain disease variants on the human lineage compared to its ancestral lineages. Our study identifies ancestral evolutionary patterns of the human brain epigenome at cellular resolution.
https://www.nature.com/articles/s41467-025-60665-w

Nature Communications Biology

PAPERS

YUANYUAN LI et al – Bidirectional information flow in cooperative learning reflects emergent leadership

Advances in social neuroscience have shown that one of the fundamental characteristics of cooperative learning is synchronization between learners' brains. However, the directionality of this synchronization, and the role of emergent leadership (i.e., a group leader emerges naturally), in cooperative learning remain unclear. Here, we investigated the directionality and dynamics of information flow by leveraging functional near-infrared spectroscopy (fNIRS) hyperscanning and Granger causality analysis (GCA). Through a 6 min dyadic cooperative learning task, we observed that dyads' utterance score increased over time and remained stable at the end of interaction, suggesting successful cooperative learning. At the neural level, we found a stronger leader-to-follower Granger causality in the left middle temporal gyrus, alongside a more pronounced follower-to-leader causality in the left sensorimotor cortex. Moreover, we found that information transfer in both directions increased and peaked around the first half of time into the task, followed by a decline. These temporally similar yet spatially dissociable patterns of directional information flow suggest a hierarchical organization of bidirectional communication during cooperative learning with emergent leadership.
https://www.nature.com/articles/s42003-025-08445-6

Nature Ecology & Evolution

ARTICLES

ADRIAN PALMER & IAN MATTHEWS – Palaeolithic people returned north earlier than expected

Climatic conditions from the northwestern European margins indicate that warmer summer conditions after the last cold glacial period existed there around 15,200 years ago. The presence of prey species in this landscape, combined with warmer summer conditions, presented an environment that supported the reoccupation of these northern marginal latitudes by Late Upper Palaeolithic humans.
https://www.nature.com/articles/s41559-025-02722-7

PAPERS

I. P. MATTHEWS et al – Summer warmth between 15,500 and 15,000 years ago enabled human repopulation of the northwest European margin

High-magnitude decadal to centennial-scale abrupt changes in climate had a transformative effect on many past human populations. However, our understanding of these human/climate relationships is limited because robust tests of these linkages require region-specific quantified palaeoclimatic data with sufficient chronological precision to permit comparisons to the archaeological record. Here we present new high-resolution palaeoclimatic data and combine these with radiocarbon inventories of archaeological and faunal material, to test the relationship between abrupt warming and the ability of humans to rapidly repopulate the northwest margins of Europe (>50° N and encompassing the area of Britain, Ireland, the surrounding islands and the North Sea basin) after regional abandonment during the Last Glacial Maximum. We address the timing of this process and the relevance of the abrupt climate changes recorded in the Greenland ice cores. We use the IntCal20 radiocarbon calibration curve to show that the earliest human repopulation in this region occurred up to 500 years before the climate of Greenland warmed. However, our analyses show that parts of the northwest European margin had already experienced substantial summer warming by this time, probably driven by changes of sea-ice area in the eastern North Atlantic. The associated warming influenced the distribution of key hunter-gatherer prey species such as reindeer, which were a key resource for humans. Accordingly, this study highlights asynchrony in seasonal warming across the North Atlantic region during the last deglaciation and shows that this asynchrony permitted human exploitation of northwest European margin paraglacial landscapes by ~15,200 years before the present.
https://www.nature.com/articles/s41559-025-02712-9

Nature Human Behaviour

PAPERS

FRIEDRICH M. GÖTZ et al – A unified framework integrating psychology and geography

We do not live in a vacuum. Everything humans do, think and feel is embedded within geography, which itself is interpreted, understood and modified by humans. Although it is thus conceptually obvious that psychology and geography need one another to fulfil their mandates, integrating them has been empirically challenging. To remedy this, we propose the unifying Geographical–Psychological Interactionist Framework. This framework features three axes (that is, geography, psychology, and geography–psychology interactions). Each axis hosts overarching classes (for example, human, physical and spatial geographical variables) and specific instances thereof (for example, climate and distance). As such, our framework provides: (1) a systematic taxonomy of the general interplay between geography and psychology; (2) a precise vocabulary with which to categorize specific interactions; and (3) a straightforward tool to inspire concrete and testable hypotheses. We conclude by positioning our conceptual framework in relation to existing theories and discuss next steps towards an interdisciplinary future at the nexus of psychology and geography.
https://www.nature.com/articles/s41562-025-02237-y

Nature Scientific Reports

PAPERS

JINRUI TIAN & RONGHUA ZHANG – Moral judgments influence emotional responses and comment lengths through the moderating role of linguistic style matching

The study aims to explore how moral judgment influences negative emotional responses and comment length in reactions to "New Yellow Journalism" on Weibo, as well as how Linguistic Style Matching (LSM) moderates these relationships. The study extracted over 8,000 comments from a recent incident involving fabricated viral news and conducted analytical methods to test our hypotheses. The results demonstrate that negative emotional responses mediate the relationship between moral judgment and comment length. Additionally, LSM moderates both the direct effect of moral judgment on comment length and the indirect effect through negative emotional responses. These findings highlight the psychological mechanisms underlying online public opinion dynamics and offer insights for managing online interactions in the digital media era.
https://www.nature.com/articles/s41598-025-07079-2

SHUN LIU, WENPENG HU & XIQIN LIU – Different effects of verbal and visual working memory loads on Language prediction

Mounting studies suggest that working memory (WM) plays a crucial role in language prediction, but how varying types of WM loads influence language prediction remains unclear. This study investigated whether verbal and visual WM loads differentially impact language predictions during speech comprehension. Using a dual-task paradigm combined with eye-tracking in a visual world setting, we asked 48 participants to complete a sentence comprehension task under concurrent WM load conditions. Participants were divided into two groups, one of which performed a visual dots memory task and the other completed a visual words memory task, with memory load being applied in half of the trials. Results revealed anticipatory gaze towards target objects, suggesting the prediction of upcoming linguistic information. Notably, early fixations during the tonal cue window indicated tonal prediction in spoken sentence processing. Furthermore, WM load significantly disrupted participants' language prediction effects, highlighting the involvement of working memory resources in this process. Importantly, the verbal memory task imposed a more severe disruption to language prediction than the visual memory task, suggesting differential roles of WM subtypes in linguistic prediction. This offers novel insights into how verbal WM and visual-spatial WM differentially influence predictive language processing.
https://www.nature.com/articles/s41598-025-03556-w

ELIZABETH PHILLIPS & STEVEN BROWN – Music is scaled, while speech is not: A cross-cultural analysis

Music is well-known to be based on sets of discrete pitches that are combined to form musical melodies. In contrast, there is no evidence that speech is organized into stable tonal structures analogous to musical scales. In the current study, we developed a new computational method for measuring what we call the "scaledness" of an acoustic sample and applied it to three cross-cultural ethnographic corpora of speech, song, and/or instrumental music (n = 1696 samples). The results confirmed the established notion that music is significantly more scaled than speech, but they also revealed some novel findings. First, highly prosodic speech—such as a mother talking to a baby—was no more scaled than regular speech, which contradicts intuitive notions that prosodic speech is more "tonal" than regular speech. Second, instrumental music was far more scaled than vocal music, in keeping with the observation that the voice is highly imprecise at pitch production. Finally, singing style had a significant impact on the scaledness of song, creating a spectrum from chanted styles to more melodious styles. Overall, the results reveal that speech shows minimal scaledness no matter how it is uttered, and that music's scaledness varies widely depending on its manner of production.
https://www.nature.com/articles/s41598-025-03049-w

ANNA CHRABASZCZ et al – Contributions of the multiple demand network to emergent and skilled reading

Reading is an acquired skill that must engage brain networks initially evolved for other functions, integrating visual, language, and executive systems. However, it is still unclear how evolutionary-defined brain networks are leveraged to scaffold reading skills. Here, we focus on emergent reading in an artificial alphabetic writing system — a process that is heavily based on phonological decoding. We examine whether such emergent reading co-opts portions of the language and multiple demand (MD) networks, and whether it activates constituents of a network associated with skilled reading. Adult participants (n = 32) completed training in the artificial alphabet and ten reading sessions over the course of several weeks. After that, participants' brain activity was recorded with the fMRI as they read words in the new alphabet. We found substantial overlap between regions activated during emergent reading and the MD network, but only minor overlap with the language network. Identified regions also overlapped with the skilled reading network, albeit showing sites of divergence. Furthermore, we observed differences in the relative engagement of the MD and language networks during emergent vs. skilled reading, suggesting that configurations of neural systems change with reading experience, with greater contributions from the language network to more skilled reading processes.
https://www.nature.com/articles/s41598-025-05756-w

DÉSIRÉE BRUCKS et al – Exploring the drivers of inter- and intraspecific differences in prosociality in four parrot species
Prosocial behaviours - behaviours that benefit others at low or no cost to the actor - have been associated with cooperative breeding, nesting ecology, and overall levels of dependency and social tolerance. To confirm whether these factors drive the evolution of prosociality, we need to generate more robust data using a comparative approach with a standardised procedure. Parrots present a compelling model group to test this further due to their large brains, and advanced cognitive abilities. Using the group service paradigm, in which individuals can provide food to group memebers, we tested four distantly related parrot species with different socio-ecological backgrounds. All species provided food to group members at moderate to high levels and some individuals of all species were able to discriminate between situations in which food could be provided to others or not. All parrots demonstrated dyadic preferences by providing more food to both affiliated and non-related partners, with sex-specific effects varying between species. Furthermore, males from species that engage in cooperative breeding and territorial nesting provided the most food to members of their group. This implies that cooperative breeding and a reliance on other group members may be driving factors in the evolution of prosocial behaviour in parrots.
https://www.nature.com/articles/s41598-025-04115-z

CARLOS NETO DE CARVALHO et al with CLIVE FINLAYSON – Neanderthal coasteering and the first Portuguese hominin tracksites
Multiple sources of evidence for the systematic use of coastal ecosystems and resources by Neanderthals are known. Fossil hominin footprints offer direct portraits of individual or social group presence and locomotor behavior, and interspecific interactions, in the coastal ecospace. Here we describe the first two hominin tracksites found in the southwestern most region of Europe. At Monte Clérigo, dated to 78 ± 5 ka, trackways of three individuals demonstrate how Neanderthals navigated dune landscapes. These behaviors suggest route planning, with dune systems serving as advantageous settings for ambush hunting or stalking prey. A single footprint at Praia do Telheiro site, dated to 82 ± 5 ka, sustains the presence of Neanderthals in the dune ecosystem during Marine Isotope Stage (MIS) 5a. Network analysis provided dietary preferences and ecological interactions of Neanderthals in coastal areas. A review of the Neanderthal coastal sites associated with faunal evidence shows that their diet was primarily centered on cervids, horses and hares. The consistent presence of these mammal taxa highlights their role as reliable food sources, irrespective of the varying environments inhabited by Neanderthals. In addition, the Neanderthal diet also incorporated animals from neighboring littoral habitats, indicating a broad foraging strategy that capitalized on local biodiversity.
https://www.nature.com/articles/s41598-025-06089-4

GRÉGORY ABRAMS et al – Earliest evidence of Neanderthal multifunctional bone tool production from cave lion (Panthera spelaea) remains
Throughout history, humans have had a complex relationship with lions, both reverencing and fearing them. Interactions between Neanderthals and cave lions (Panthera spelaea) remain poorly documented due to the scarcity of direct evidence. This study examines the selective use of cave lion bones by Neanderthals to determine whether this behaviour was driven by practical, functional, or symbolic factors, through a detailed zooarchaeological analysis. Previous studies highlighted Neanderthals' skinning and butchering of cave lions, yet new discoveries at Scladina Cave (Belgium) offer deeper insights into this relationship. Dated to the end of the Saalian, the faunal assemblage provides the earliest evidence of bone tools crafted from cave lion remains. A tibia was deliberately processed into multifunctional tools, initially serving as an intermediate tool before being repurposed as retouchers. Proteomic analysis applied on the remains, confirmed the specific identification. These findings reveal that Neanderthals not only competed with but actively utilized cave lions for practical purposes, indicating complex ecological and behavioral interactions. Relationships between pre-humans and large predators, rooted in the Middle Pleistocene, suggest a strategic exploitation of carnivore remains. However, opportunistic procurement cannot be entirely ruled out as a potential factor influencing animal choice in tool production. The intentional transformation of lion bones into functional tools highlights Neanderthals' cognitive skills, adaptability, and capacity for resource utilization beyond their immediate survival needs.
https://www.nature.com/articles/s41598-025-08588-w

GUILLERMO RODRÍGUEZ-GÓMEZ et al with JOSÉ MARÍA BERMÚDEZ DE CASTRO & EUDALD CARBONELL – Ecologically sustainable human exploitation of the Gran Dolina TD10.2 bison (Sierra de Atapuerca, Spain)
There is evidence that communal hunting of bison was a practice that occurred from the Middle Pleistocene to historic times and was also observed among Indigenous Americans. Within the subsistence strategies of Pleistocene humans, communal hunting was part of their range of behaviors. The level TD10.2-BB of the Gran Dolina in the Sierra de Atapuerca preserves a fossil record of this practice, with remains of at least 60 bison of different age classes. This study aims to evaluate the hypothesis that human exploitation of these bison was sustainable. To this end, we analyzed the mortality pattern of bison from TD10.2-BB through dental remains using ternary diagrams and life tables. We also used allometric equations to estimate the mean body mass of the bison population and the potential energy yield they could have provided. Our results suggest a catastrophic mortality profile for the TD10.2-BB bison, with individuals of all age classes and no selective bias toward specific age classes. The life table derived from this profile suggests a growing bison population, indicating that human exploitation could have been sustained without causing a population collapse. Furthermore, our results suggest that

bison would provide meat and energy resources to support large groups of humans for several days. While the high protein content of bison carcasses may have limited their full utilization, the availability of other resources in the ecosystem likely facilitated the optimal use of bison.
https://www.nature.com/articles/s41598-025-01928-w

SETHU KARTHIKEYAN, TOE AUNG & MARYANNE L. FISHER – Ethics trumps resources in women's and men's evaluations of potential mates and competitors

Just as kindness is prioritized in mate selection, warmth and fairness are often favored in cooperative social interactions, sometimes over competence and wealth, suggesting that these traits may influence social status. We conducted three studies to examine how heterosexual men (N = 193) and women (N = 178) from the U.S. evaluate men's faces for mating- and status-relevant traits, both alone and in combination with vignettes describing their economic resources and ethical reputation. The vignettes presented all men as generally smart, nurturant, and healthy, but pitted economic resources against ethical reputation surrounding care and fairness. Study 1, pitting men's ethics against their resources, found that an ethical reputation enhanced ratings of long-term mating attractiveness, prestige, intelligence, and kindness, but short-term mating attractiveness and physical dominance ratings were unaffected. Study 2, pitting men's parent's ethics against parental resources, yielded results consistent with Study 1. Study 3, pitting men's ethical history related to their adolescence with their current resources, found similar results to studies 1 and 2 with one key difference: women lowered prestige ratings for men with an unethical past, and men lowered physical dominance ratings for these men. The discussion reassesses notions of status and resources, exploring their relative significance in mating evaluations.
https://www.nature.com/articles/s41598-025-06611-8

YUTA KIDO & MASANORI TAKEZAWA – Empirical evidence for the spread of Cooperation through copying successful groups

Large-scale cooperation among unrelated humans remains an evolutionary puzzle. Cultural group selection theory suggests that strong intergroup selection drives the evolution of cooperation, given substantial behavioral variation between groups. This study investigated payoff-biased imitation of successful out-groups as an intergroup selection process, specifically as an alternative to warfare-based mechanisms. We thus conducted two experiments manipulating exposure to cooperative out-group information in public goods games, demonstrating that cooperative behavior can indeed transmit across group boundaries, thereby influencing decision-making processes. However, this effect gradually diminished within groups, and transmitted cooperation was not likely to spread. Additionally, we performed a cross-cultural survey examining relationships between press freedom, which is a proxy for accessibility to out-group information, and different types of prosociality. The results revealed contrasting relationships, particularly in democratic countries: higher press freedom positively predicted impersonal prosociality (e.g., generalized trust) while negatively predicting personal prosociality (e.g., trust in family). These findings suggest that cultural processes such as payoff-biased imitation can facilitate the spread of cooperation beyond group boundaries, serving as a potential channel for intergroup selection. Finally, we discuss the implications for cultural group selection theory and additional mechanisms' potential role in sustaining within-group cooperation.
https://www.nature.com/articles/s41598-025-07863-0

PABLO MARCOS-PRIETO – Dopaminergic and serotonergic genetic variants predict actions and expectations of cooperation and punishment

Genetic variants in dopaminergic and serotonergic pathways have been linked to individual differences in social behavior. In this study, we investigated the relationship between eight allelic variants within these pathways and both behavior and beliefs in 99 participants playing an online Public Goods Game (PGG) with and without punishment. Our results show that individuals with the 5-HTTLPR L/L genotype contributed less and had lower expectations of others' contributions in the absence of punishment; the 5-HTR1B-rs13212041 T/T genotype was associated with lower expectations of antisocial and spiteful punishment; the COMT-rs4680 A/A (Met/Met) genotype was linked to lower expectations of contributions in the presence of punishment. These findings suggest that specific alleles modulate both cooperative behavior and social expectations, suggesting a genetic contribution to individual variability in responses to social dilemmas.
https://www.nature.com/articles/s41598-025-03772-4

New Scientist

NEWS

Generation Alpha's coded language makes online bullying hard to detect

Adults and AI models fail to recognise messages with harmful intent expressed with Gen Alpha slang or memes, raising concerns about youngsters' online safety.
https://www.newscientist.com/article/2485808-generation-alphas-coded-language-makes-online-bullying-hard-to-detect/

Ancient mammoth-tusk boomerang is twice as old as we thought

A boomerang discovered in a Polish cave was originally dated as 18,000 years old, but it may have been contaminated by preservation materials. A new estimate suggests the mammoth-ivory artefact is 40,000 years old.

https://www.newscientist.com/article/2485925-ancient-mammoth-tusk-boomerang-is-twice-as-old-as-we-thought/

Orcas scrub each other clean with bits of kelp
Drone footage has captured killer whales breaking off stalks of kelp and rubbing the pieces on other orcas, a rare case of tool use in marine animals.
https://www.newscientist.com/article/2485501-orcas-scrub-each-other-clean-with-bits-of-kelp/

Ancient people took wallabies to Indonesian islands in canoes
Humans established a wild population of brown forest wallabies in the Raja Ampat Islands thousands of years ago for their meat and fur in one of the earliest known species translocations.
https://www.newscientist.com/article/2485490-ancient-people-took-wallabies-to-indonesian-islands-in-canoes/

ARTICLES

MICHAEL MARSHALL – The remarkable tale of how humans nearly didn't conquer the world
Over tens of thousands of years, waves of Homo sapiens set out across Europe and Asia, only for their societies and cultures to mysteriously vanish. At last, ancient DNA is revealing why.
https://www.newscientist.com/article/2484740-the-remarkable-tale-of-how-humans-nearly-didnt-conquer-the-world/

Physics of Life Reviews

COMMENTARIES

JEAN DAUNIZEAU – The brain that wouldn't know itself: Comment on 'The paradox of the self-studying brain' by Simone Battaglia, Philippe Servajean and Karl J. Friston
https://www.sciencedirect.com/science/article/abs/pii/S1571064525000995

Original Paper: SIMONE BATTAGLIA, PHILIPPE SERVAJEAN & KARL J. FRISTON – The Paradox of the Self-Studying Brain ***{See EAORC Bulletin 1,126.}***
https://www.sciencedirect.com/science/article/pii/S1571064524001787

PLoS Biology

PAPERS

ISABEL RAPOSO et al – Human attention-guided visual perception is governed by rhythmic oscillations and aperiodic timescales
Attention samples visual space sequentially to enhance behaviorally relevant sensory representations. While traditionally conceptualized as a static continuous spotlight, contemporary models of attention highlight its discrete nature. But which neural mechanisms govern the temporally precise allocation of attention? Periodic brain activity as exemplified by neuronal oscillations as well as aperiodic temporal structure in the form of intrinsic neural timescales have been proposed to orchestrate the attentional sampling process in space and time. However, both mechanisms have been largely studied in isolation. To date, it remains unclear whether periodic and aperiodic temporal structure reflect distinct neural mechanisms. Here, we combined computational simulations with a multimodal approach encompassing five experiments, and three different variants of classic spatial attention paradigms, to differentiate aperiodic from oscillatory-based sampling. Converging evidence across behavior as well as scalp and intracranial electroencephalography (EEG) revealed that periodic and aperiodic temporal regularities can theoretically and experimentally be distinguished. Our results extend the rhythmic sampling framework of attention by demonstrating that aperiodic neural timescales predict behavior in a spatially-, context-, and demand-dependent manner. Aperiodic timescales increased from sensory to association cortex, decreased during sensory processing or action execution, and were prolonged with increasing behavioral demands. These results reveal that multiple, concurrent temporal regularities govern attentional sampling.
https://journals.plos.org/plosbiology/article

PLoS One

PAPERS

SPENCER CAPLAN – Word learning as category formation
A fundamental question in word learning is how, given only evidence about what objects a word has previously referred to, children are able to generalize to the correct class. How does a learner end up knowing that "poodle" only picks out a specific subset of dogs rather than the broader class and vice versa? Numerous phenomena have been identified in guiding learner behavior such as the "suspicious coincidence effect" (SCE)—that an increase in the sample size of training objects facilitates more narrow (subordinate) word meanings. While SCE seems to support a class of models based in statistical inference, such rational behavior is, in fact, consistent with a range of algorithmic processes. Notably, the broadness of semantic generalizations is further affected by the temporal manner in which objects are presented—either simultaneously or sequentially. First, I evaluate the experimental evidence on the factors influencing generalization in word learning. A

reanalysis of existing data demonstrates that both the number of training objects and their presentation-timing independently affect learning. This independent effect has been obscured by prior literature's focus on possible interactions between the two. Second, I present a computational model for learning that accounts for both sets of phenomena in a unified way. The Naïve Generalization Model (NGM) offers an explanation of word learning phenomena grounded in category formation. Under the NGM, learning is local and incremental, without the need to perform a global optimization over pre-specified hypotheses. This computational model is tested against human behavior on seven different experimental conditions for word learning, varying over presentation-timing, number, and hierarchical relation between training items. Looking both at qualitative parameter-independent behavior and quantitative parameter-tuned output, these results support the NGM and suggest that rational learning behavior may arise from local, mechanistic processes rather than global statistical inference.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0327615

VERA TRETYAKOVA et al – Newly acquired word-action associations trigger auditory cortex activation during movement preparation: Implications for Hebbian plasticity in action word learning

Action word learning is believed to rely on mechanisms of Hebbian learning. However, this biological mechanism requires activation of the neural assemblies representing a word form and a corresponding movement to repeatedly overlap in time. In reality, though, these associated events could be separated by seconds. In the current MEG study, we examined trial-and-error learning of associations between novel auditory pseudowords and movements of specific body parts. We aimed to explore how the brain bridges the temporal gap between the transient activity evoked by auditory input and the preparatory motor activation before the corresponding movement. To address this, we compared learning-induced changes in neuromagnetic responses locked to the onset of the stimulus and to the onset of the movement. As learning progressed, both types of neural responses showed sustained enhancement during the delay period between the auditory pseudoword and the required movement. Cortical sources of this learning-induced increase were localized bilaterally in the lateral and medial temporal cortices. Notably, the learning effect was significantly stronger when measured time-locked to the movement onset, rather than to the pseudoword onset. This suggests that once pseudoword-movement associations were reliably acquired, extensive regions of the auditory cortex were reactivated in synchrony with the preparation for the upcoming movement. Such reactivation likely served to bring together in time the representations of the correct action and the preceding auditory cue. This temporal alignment could enable Hebbian learning, leading to long-lasting synaptic changes in temporally correlated neural assemblies.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0325977

DALILA DE CARO et al with KATERINA HARVATI – Small flakes for sharp needs: Technological behaviour in the Lower Palaeolithic site of Marathousa 1, Greece

Marathousa 1 (~430 ka BP), located in the Megalopolis Basin, Greece, represents the earliest documented butchery site in the Southern Balkans, providing clear evidence of a direct association between artefacts and remains of Palaeoloxodon antiquus. The lithic assemblage features a distinctive small tools industry, primarily produced from local radiolarite, comprising both simple flakes and retouched tools. Through technological analysis, raw material characterisation, experimental knapping, and statistical analyses, this study explores how Middle Pleistocene hominins organised their technological behaviour as reflected in the lithic assemblage, and how these behaviours were shaped by the resource-rich setting of the Megalopolis Basin, characterised by abundant raw materials, water sources, and faunal availability. Results demonstrate the interplay between freehand and bipolar knapping, reflecting a flexible technological strategy to exploit the available radiolarite. Freehand percussion was mainly used in flake production, while the bipolar technique facilitated initial core reduction and late-stage exhaustion. The consistent microlithisation at the site is also evident in the exploitation of other locally available raw materials, such as limestone, flint, and quartz, supporting previous studies demonstrating small flakes' effectiveness in diverse tasks. Technological patterns at Marathousa 1 broadly correspond to those observed at other Middle Pleistocene small tool sites; however, its distinctive intersection of raw material availability, technological choices and functional demands provides new insights into regional patterns of lithic variability across Eurasia during this period.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0324958

LINDSAY M. NOVAK & LINDA J. SKITKA – Understanding the functional basis of moral conviction: Is moral conviction related to personal and social identity expression?

The degree to which one experiences an attitude as a moral conviction is associated with a host of consequences, such as charitable giving, volunteerism, political engagement, resistance to compromise, intolerance of dissenting viewpoints, and acceptance of any means, including violence, to achieve morally preferred ends. Despite these profound ramifications, our understanding of the psychological functions of moral conviction remains limited. In three studies, we tested competing hypotheses about two possible functions of moral conviction: personal identity and social identity expression. Study 1 developed and validated personal and social identity function measures in a U.S. sample and provided an initial test of hypotheses (N = 320). Study 2 further validated these measures and tested whether cultural mindset moderated the relationship between identity functions and moral conviction in a U.S. sample (N = 364). Study 3 tested hypotheses cross-culturally (i.e., using U.S. and Indian samples, N = 300). The personal identity function uniquely predicted moral conviction in

all three studies and across six issue domains, whereas the social identity function did not (Studies 1–3). Surprisingly, neither cultural mindset (i.e., an independent and interdependent self-construal or endorsement of the individualizing or binding moral foundations) nor culture moderated these results.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0327438

Proceedings of the Royal Society A

PAPERS

SAPTARSHI PAL, MAYEUL LAMBERT & MARTIN A. NOWAK – Stabilizing unconditional cooperation
The ultimate goal of research on the evolution of cooperation could be conceived as finding a method for stabilizing strategies that always cooperate, that never deviate from cooperation, that never exploit, and never retaliate, because all such activities are inherently problematic. The hope of achieving this cooperative utopia seems unjustified, especially in the context of direct reciprocity, which relies on the principle that cooperative partner strategies succeed in defending themselves by using moderate retaliation. Here, we propose a dynamic that goes a certain way towards achieving the desirable goal. In the ground state, the population consists of individuals that use always-cooperate (ALLC). Occasionally defectors, in the form of always-defect (ALLD), invade the population. Their presence triggers a mutation from ALLC to another strategy, X, with the aim to avert the take-over of defectors. In the absence of X, ALLD dominates ALLC, but in the presence of X, the invasion attempt might fail and subsequently the ALLC ground state can be restored. We study this mutation-selection process in finite and infinite populations. We identify the properties of the ideal rescue strategy. We derive an optimum mutation rate that maximally stabilizes ALLC.
https://royalsocietypublishing.org/doi/10.1098/rspa.2024.0945

Proceedings of the Royal Society B

PAPERS

STACY ROSENBAUM et al – Testing early life effects frameworks: developmental constraints and adaptive response hypotheses do not explain fertility outcomes in wild female baboons
In evolutionary ecology, two classes of explanations are frequently invoked to explain early life effects on adult outcomes. Developmental constraints (DC) explanations contend that the costs of early adversity arise from limitations adversity places on optimal development. Adaptive response (AR) hypotheses propose that later life outcomes will be worse when early and adult environments are poorly 'matched'. Here, we use recently proposed mathematical definitions for these hypotheses and a quadratic-regression based approach to test the long-term consequences of variation in developmental environments on fertility in wild baboons. We evaluate whether low rainfall and/or dominance rank during development predict three female fertility measures in adulthood, and whether any observed relationships are consistent with DC and/or AR. Neither rainfall during development nor the difference between rainfall in development and adulthood predicted any fertility measures. Females who were low-ranking during development had an elevated risk of losing infants later in life, and greater change in rank between development and adulthood predicted greater risk of infant loss. However, both effects were statistically marginal and consistent with alternative explanations, including adult environmental quality effects. Consequently, our data do not provide compelling support for either of these common explanations for the evolution of early life effects.
https://royalsocietypublishing.org/doi/full/10.1098/rspb.2024.2485

Science

NEWS

Ancient wooden tools show human ancestors ate their veggies
Found in China, 300,000-year-old digging sticks reveal a lost technology.
https://www.science.org/content/article/ancient-wooden-tools-show-human-ancestors-ate-their-veggies

PAPERS

JIAN-HUI LIU et al – 300,000-year-old wooden tools from Gantangqing, southwest China
Evidence of Early and Middle Pleistocene wooden implements is exceptionally rare, and existing evidence has been found only in Africa and western Eurasia. We report an assemblage of 35 wooden implements from the site of Gantangqing in southwestern China, which was found associated with stone tools, antler billets (soft hammers), and cut-marked bones and is dated from ~361,000 to ~250,000 years at a 95% confidence interval. The wooden implements include digging sticks and small, complete, hand-held pointed tools. The sophistication of many of these tools offsets the seemingly "primitive" aspects of stone tool assemblages in the East Asian Early Paleolithic. This discovery suggests that wooden implements might have played an important role in hominin survival and adaptation in Middle Pleistocene East Asia.
https://www.science.org/doi/10.1126/science.adr8540

Science Advances

PAPERS

LUTZ KINDLER et al with WIL ROEBROEKS – Large-scale processing of within-bone nutrients by Neanderthals, 125,000 years ago

Diet played a key role in human evolution, making the study of past diet and subsistence strategies a crucial research topic within paleoanthropology. Lipids are a crucial resource for hunter-gatherers, especially for foragers whose diet is based heavily on animal foods. Recent foragers have expended substantial amounts of energy to obtain this resource, including time-consuming production of bone grease, a resource intensification practice thus far only documented for Upper Paleolithic populations. We present archaeological data from the lake landscape of Neumark-Nord (Germany), where Last Interglacial Neanderthals processed at least 172 large mammals at a water's edge site. Their (partial) carcasses were transported to this location for the extraction of within-bone nutrients, particularly bone grease. This "fat factory" constitutes a well-documented case of grease rendering predating the Upper Paleolithic, with the special task location devoted to extraction of nutritionally important lipids forming an important addition to our knowledge of Neanderthal adaptations.
https://www.science.org/doi/10.1126/sciadv.adv1257

Trends in Cognitive Sciences

PAPERS

IONATAN KUPERWAJS et al – Looking deeper into the algorithms underlying human planning

Humans possess a remarkable ability to form sophisticated multi-step plans even in complex environments. In this review article, we consider efforts that attempt to characterize the mechanisms underlying human planning using a computational framework, primarily focusing on methods that search a tree of possible solutions. These studies range from experimental probes for heuristics that people employ while thinking ahead to normative models for reducing the computational costs of planning. Additionally, we examine the recent successes of artificial intelligence in the domain of planning and how these innovations can be applied to better understand human sequential decision-making. As examples, we highlight this approach in two tasks that require planning many steps into the future, namely 4-in-a-row and chess.
https://www.cell.com/trends/cognitive-sciences/abstract/S1364-6613(25)00152-4

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