EAORC BULLETIN 1,177 – 4 January 2026

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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 – assessment of a ~2-million-year-old hominin pelvis (DNH 43) from Drimolen

South African Journal of Science, 121(3/4), 17908 (2025).

ELLIE BERG et al – Further assessment of a ~2-million-year-old hominin pelvis (DNH 43) from Drimolen Main Quarry, South Africa

The palaeocave site of Drimolen Main Quarry (DMQ) in Gauteng Province, South Africa, has produced fossil hominin material dating to 2.04–1.95 Ma, including craniodental remains attributed to Paranthropus robustus and the earliest specimen of Homo erectus sensu lato along with numerous postcrania of uncertain taxonomic affiliation. Among this collection is a partial pelvis (DNH 43), which includes the sacrum and elements of the right os coxae. Although previously described as showing similarities to the pelvis of Australopithecus and Paranthropus, comparisons across the broader hominin fossil record have been limited and DNH 43 has never been analysed quantitatively. Here we present a partial digital reconstruction of DNH 43 and compare it to an expanded data set of fossil specimens to determine its closest morphological affinities. Overall, the quantitative analysis is congruent with qualitative results reflecting the primitive features of DNH 43, suggesting an Australopithecus/Paranthropus-like anatomy, including small absolute size, relatively small sacroiliac articulation, moderately wide tuberoacetabular sulcus, gracile acetabulosacral buttress, and obstetric dimensions that are relatively broad. A study of this rare articulated pelvis shows that the orientation of the sacrum (pelvic incidence) is similar to that of recent Homo sapiens. Although DNH 43 shares some specific metric similarities with specimens MH2 (Australopithecus sediba) and OH 28 (cf. Homo erectus), the taxonomic relevance is unclear given the poor understanding of Paranthropus and early Homo postcranial variation. Affiliation with Paranthropus robustus (which dominates the DMQ craniodental assemblage) cannot be ruled out, and we consider assignment to that taxon to be a reasonable provisional attribution.

https://www.academia.edu/144497885/Further_assessment_of_a_2_million_year_old_hominin_pelvis_DNH_43_from_Drimolen_Main_Quarry_South_Africa

ACADEMIA.EDU – Primate Phenotypes: a Multi-Institution Collection

Nature Scientific Data 11:1391 (2024).

SERGIO ALMÉCIJA et al – Primate Phenotypes: a Multi-Institution Collection of 3D Morphological Data Housed in MorphoSource

The field of phenomics is experiencing unprecedented advances thanks to the rapid growth of morphological quantification based on three-dimensional (3D) imaging, online data repositories, team-oriented collaborations, and open data-sharing policies. In line with these progressions, we present an extensive primate phenotypic dataset comprising >6,000 3D scans (media) representing skeletal morphologies of 386 individual specimens covering all hominoid genera (except humans) and other selected primates. The digitized specimens are housed in physical collections at the American Museum of Natural History, the National Museum of Natural History, the Royal Museum for Central Africa (Belgium), the Cleveland Museum of Natural History, and Stony Brook University. Our technical validation indicates that despite the diverse digitizing devices used to produce the scans, the final 3D models (meshes) can be safely combined to collect comparable morphometric data. The entire dataset (and detailed associated metadata) is freely available through MorphoSource. Hence, these data contribute to empowering the future of primate phenomics and providing a roadmap for future digitization and archiving of digital data from other collections.

https://www.academia.edu/144602161/Primate_Phenotypes_a_Multi_Institution_Collection_of_3D_Morphological_Data_Housed_in_MorphoSource

ACADEMIA.EDU – Tasmanian Aborigines and the origins of language

In J. Mulvaney & H. Tyndale-Biscoe (eds.), Rediscovering Recherche Bay. Academy of the Social Sciences in Australia, 69-85 (2007).

IAIN DAVIDSON – Tasmanian Aborigines and the origins of language

First contacts between Indigenous people and explorers or colonisers from lands across the sea were always extraordinary events. At Recherche Bay in 1793, there was considerable questioning of the nature of the people the French were encountering. By the French account, the Tasmanians, too, seemed curious about the nature of the visitors from the sea—which is hardly surprising if we consider the quite extraordinary nature of contact for the Tasmanians.

The very first humans who lived in Australia had to cross the sea to get there, just as the European invaders did. But about 10,000 years ago there was already substantial variation in body and behaviour on the one land mass, from the Melanesian agriculturalists of highland New Guinea, on one hand, to the Australian fishers, gatherers and hunters, on the other. These disparate peoples were destined to be isolated from each other a couple of thousand years later by the flooding of the Arafura Sea and Torres Strait by the rising sea level of the last great global warming. The isolation of Greater Australia from the islands of south-east Asia was great, but not complete: for we know that the dingo was introduced to Australia perhaps 4,000 years ago, and we also know that several Indonesian islands have Australian animals as part of their fauna which must have been introduced by people travelling back to the west. In Timor, cuscus bones have been found that may be as old as 9,000 years.

But Tasmania was even more extreme. he Tasmanians had never seen a European before 1642, and no inhabitant of Tasmania had seen anyone from outside the island since it had been cut of by rising seas 14,000 years before—at the end of

the last Ice Age. Indeed, we can go further and state that, unless knowledge was retained in the oral tradition over those 14,000 years, no Tasmanian could have known that land other than Tasmania, and people other than Tasmanians even existed. We can be reasonably sure, then, as we cannot for Australian or New Guinea first contacts that, apart from a brief encounter with Cook in 1777, the people described with such vividness by Labillardière had had no contact at all with people from any other society near or far.
https://www.academia.edu/218469/Tasmanian_Aborigines_and_the_origins_of_language

OTHER EAORC – 2025 and 2026 – Must try harder

Welcome to the new year, and I must first apologise to everyone who attempted to contact me last year: Life has been "interesting" in unexpectedly obtrusive ways. I'm working on a free-to-download coffee table book about last year's major issue, I'll let you know when it's done. I realise I have been a little lax on responding to emails of thanks, but I do appreciate all your good wishes and I promise to try harder this year.
Last year I also officially retired from supervising student projects, which means I am now fully dedicated to retirement. Fortunately I have my three hobbies sorted: the one carried over from work (writing a book based on the Routes to Language research model – http://martinedwardes.me.uk/eaorc/eaorc_languageroute_next1.html); the hobby long-promised for retirement (turning the garden into a garden); and the unexpected hobby (designing and giving away badges). Of course, there are the inevitable CYJs ("You're retired, can you just …"): giving lectures on linguistics at Newham u3a, and on LGBTQIA history at the Proudly Kings group; being interviewed by students and professionals for their LGBTQIA research projects; assisting people who are having problems with data searches or presentation; organising and running a walking tour of "LGBTQIA Stratford" for Newham Heritage; being Assistant Treasure to one of the real LGBTQIA Treasures (Philip, my life-partner). Attending picnics, parties, balls, photoshoots, marches, and other LGBTQIA events… oh, and occasionally remembering to breathe.
There is an end-of-year photo-newsletter available at http://martinedwardes.me.uk/other_newsletters.html if you are interested.

NEWS

NEWS FROM SCIENCE – Is 'open science' delivering benefits? Major study finds proof is sparse

It's hard to measure social and economic impacts of making papers and data free, researchers say.
https://www.science.org/content/article/open-science-delivering-benefits-major-study-finds-proof-sparse

SCIENCEADVISER – Paleolithic seafaring in East Asia

Kaifu, Y et al. Paleolithic seafaring in East Asia: An experimental test of the dugout canoe hypothesis. Science Advances 11 (2025). 10.1126/sciadv.adv5507

Chang, Y-LK et al. Traversing the Kuroshio: Paleolithic migration across one of the world's strongest ocean currents. Science Advances 11 (2025). 10.1126/sciadv.adv5508

Ancient human migrations are relatively easy to trace on the terrestrial landscape despite the potentially destructive effects of glaciation, erosion, and other geological processes. Identifying routes across oceans is far more difficult since the only empirical evidence for crossing bodies of water can be found where watercraft may have been launched and where they may have made landfall. Around 35,000 years ago, Homo sapiens appeared in the Ryuku Islands of Japan, which are invisible from the Taiwanese coast. These islands can be seen from the highest points of eastern Taiwan, but once out on the open ocean, they would not be visible until seafarers were very close to them. A crossing would have required sophisticated seafaring skills, and suitable watercraft to navigate the powerful Kuroshio current.
To study this problem, two teams—one led by Yousuke Kaifu and the other by Yu-Lin Chang—joined forces. Kaifu's team had worked on this question before and found that sailing rafts made of either reed or bamboo could not make the crossing. This time they turned to another traditional Japanese craft—the dugout canoe. People during the Jōmon period developed this technology, and remains of canoes have been recovered by archaeologists. Using replicas of thin-bladed Early Upper Paleolithic stone axes, they cut down a Japanese cedar tree, and with fire and other stone tools, they shaped the trunk into a 7.5-meter dugout canoe—named Sugime (Japanese for cedar)—using the Jōmon remains as a guide. Offshore testing revealed it to be stable.
The Chang team focused their attention on modeling the behavior of the Kuroshio current to determine under what conditions a dugout canoe could make a crossing. Using a supercomputer, they ran numerical simulations of tides and changes in current flow and strength in modern as well as Late Paleolithic sea conditions and combined these data to identify optimal locations and times for where and when to launch.
On July 7, 2019, the Sugime with five experienced paddlers launched from the shores of Taiwan and made landfall in the Ryukus just over 45 hours later.
There are so many things to like about this project! For starters, it is interdisciplinary to its core—I mean, how many archaeologists get to use a supercomputer to solve an interesting archaeological problem that has many implications for understanding other seafaring migrations? This was combined with experiments using traditional technologies in both stone

and wood. It may not be the final word about the peopling of these islands, but the project speaks to the resilience and capacity of those Paleolithic voyagers and the challenges they overcame without the assistance of that supercomputer!
https://www.science.org/doi/10.1126/sciadv.adv5507
https://www.science.org/doi/10.1126/sciadv.adv5508

THE CONVERSATION – How Celtic languages spread across Britain and Ireland

The Celtic languages spoken today – namely Irish, Scottish Gaelic, Manx, Welsh, Cornish and Breton – all descend from Celtic languages once spoken across Britain and Ireland in antiquity. While the modern languages are well documented from the early middle ages onwards, what came before is far more mysterious.
https://theconversation.com/how-celtic-languages-spread-across-britain-and-ireland-why-we-need-to-reconsider-the-early-story-271338

PUBLICATIONS

American Journal of Biological Anthropology

PAPERS

NADINE G. STEER et al with TRACY L. KIVELL – Functional Morphology of the Scaphoid in Extant African Apes, Humans and Fossil Hominins

The morphology of the hominoid scaphoid has played a key role in functional and evolutionary hypotheses related to the emergence of hominin bipedalism and tool use. However, the scaphoid's complex morphology is challenging to comparatively analyze via traditional 2D linear measurements. This study quantifies scaphoid morphology utilizing 3D geometric morphometrics (3D GM) in African apes, humans and extinct hominins to provide a more holistic functional understanding of scaphoid morphology.
We use 3D GM, including anatomical and sliding semi-landmarks, to quantify scaphoid morphology in a comparative sample of African apes (Gorilla, Gorilla beringei, Pan paniscus and Pan troglodytes) (N = 54), extant and fossil Homo sapiens (N = 20) and nine fossil hominin scaphoids from Australopithecus sp., Australopithecus sediba, Homo naledi and Neandertals. Principal component analysis indicates that extant species can be distinguished by differences in scaphoid shape that are consistent with variation in hand use during locomotion and manipulation. The australopith scaphoids plot between the African ape and modern human distributions, whereas H. naledi falls between Gorilla and human distributions.
Results confirm previous studies describing differences between extant African apes and modern human scaphoids that were interpreted as advantageous for knuckle-walking and forceful manipulation, respectively. However, we highlight greater variation between Pan and Gorilla than previously recognized. The fossil hominin scaphoids present differing mosaics of joint orientation and shape, creating a distinct overall morphology in each hominin species. This may reflect differing functional pressures acting upon hominin wrists resulting from disparate combinations of locomotor and manipulative behaviors.
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.70157

ERICA PICCIRILLI et al with KATERINA HARVATI – The Human Remains From the MIS 6 Site of Grotta Del Poggio (Cilento, Southern Italy): A Taxonomic and Chronological Reassessment

Grotta del Poggio is a key site for exploring the Middle Paleolithic in southern Italy, as it contains a pivotal anthropogenic deposit, mainly attributed to MIS 6, while in the Metal Ages, the cavity was used as a burial place. Excavations in the cave's deposit led to the discovery of a human molar and a human talus. A preliminary morphological evaluation of the talus concluded that it belonged to Homo sapiens. Conversely, the molar exhibited Neanderthal-like morphology. Here, we perform a taxonomic and chronological reassessment of these human remains.
The molar's crown and root morphology were examined and analyzed using linear measurements, 2D geometric morphometrics (GM) of the crown outline, and 3D GM of the enamel-dentin junction (EDJ) and cemento-enamel junction (CEJ). The talus was investigated through a 3D GM analysis of its whole shape. Both specimens were compared with Homo neanderthalensis and H. sapiens samples. Moreover, we performed radiocarbon dating on the talus to elucidate its absolute age.
The molar's non-metric traits, linear measurements, crown outline, EDJ, and CEJ confirmed its Neanderthal attribution, while the talus was attributed to recent H. sapiens. Radiocarbon dating ascribed the talus to the Middle Bronze age.
This study clarifies the taxonomic attribution of the two already known human remains from Grotta del Poggio, revising one of the oldest Neanderthal remains in Italy based on cutting-edge methodologies, and elucidating the reasons why a morphologically modern talus was recovered during the excavation of the Mousterian deposit.
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.70188

JESSE M. MARTIN et al – The StW 573 Little Foot Fossil Should Not Be Attributed to Australopithecus prometheus

We adopt the methods of classic morphology by comparing StW 573 to the type specimen of A. prometheus (MLD 1) and other consensus members of Australopithecus africanus. We utilize qualitative anatomical descriptions and comparisons, supplemented with the examination of selected relevant quantitative measurements.

We find that the morphology preserved by StW 573 does not support assigning that specimen to A. prometheus because it does not share a unique suite of primitive and derived traits in common with the A. prometheus type specimen, MLD 1. Specifically, StW 573 differs from MLD 1 in having a more pronounced external occipital protuberance, a sagittal crest at lambda, an asterionic notch, a long nuchal plane, and a smaller cranial capacity. Regarding these same areas of anatomy, MLD 1 more closely resembles Sts 5, and MLD 37/38, consensus members of A. africanus.
A. prometheus should remain a junior synonym for A. africanus based on the demonstrated morphological similarities between MLD 1 and the broader A. africanus sample. Conversely, while StW 573 cannot be attributed to A. prometheus, the results of this study indicate that it also differs in meaningful ways from specimens conventionally attributed to A. africanus.
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.70177

DAVID WEBB, LAURA ZACHARIAS & KAHLAN TRIPP – Human Trackway Parameters on Hard and Soft Substrates

To understand ancient hominins' locomotion, our best comparison is with modern humans, and it is easiest to study humans walking in a laboratory setting. However, trackways made on tile or concrete might not be representative of those made in softer substrates like dirt or sand, suggesting that some laboratory studies might not be applicable to ancient hominins. Therefore, a number of authors have considered different substrates in their experiments and sometimes have tried to match the substrates in the laboratory with those at various ancient sites. We expand on those efforts by evaluating some aspects of human trackways that might be expected to differ in different substrates.
A group of 20 subjects walked on hard, medium, and soft substrates, and three parameters were measured: foot angle, step length, and step width. Linear, mixed-effects regression was used to evaluate the effects of substrate on these parameters. Step width ($p = 0.74$) and step length ($p = 0.19$) were not significantly affected by substrate type. However, foot angle was ($p = 0.002$). Even so, the effect was very small and substrate accounted for only 1% of the variation in foot angle, whereas individual variation accounted for 50%. Also, the variance of all three measured parameters increased with softer substrates. This work on trails of footprints complements pre-existing research on individual prints on various substrates. Results here are encouraging for those interested in laboratory research to compare modern human trackways with those of ancient hominins. Even trackways produced on hard floors are similar to those made in softer, sandy substrates and may therefore be useful in understanding our ancient relatives' locomotion. However, because variation in parameters increases as the substrate becomes softer, some differences due to substrate may be obscured by large variances.
https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.70179

JANA MUSCHINSKI – Male-Male Greeting Behavior Observed in Chacma Baboons (Papio ursinus griseipes) in Gorongosa National Park, Mozambique

Male–male greetings have been described across many primate species, with varying forms and functions. Within Papio, their study has been of particular interest as baboons show variation in greeting, male–male cooperation, philopatry, and social systems. The function of greetings in Papio may differ by species, including facilitating cooperative behavior, negotiating rank, and maintaining social relationships. Chacma baboons, a species that generally exhibits limited to no coalition formation and low male–male tolerance, remain understudied regarding their male–male greeting behavior.
Here I present descriptions of male–male greeting behavior of chacma baboons (Papio ursinus griseipes) recorded in Gorongosa National Park, Mozambique in 2018 and 2019. Behavioral data was collected from video footage and categorized using established definitions from the published literature (e.g., presence and intensity of physical contact, reciprocity, and completeness).
Strong similarities in signal use between the sample of chacma baboon greetings and published accounts of olive, hamadryas, and yellow baboon greetings were identified. Specifically, rates of physical contact, intense physical contact, and reciprocal use of facial expressions were similar to those of the other Papio species, excluding the Guinea baboon which exhibits more stereotyped and highly physical greetings. The proportion of observed chacma baboon greetings which were considered "incomplete" (i.e., exhibiting only facial signals, with no presenting or contact) however, was greater than in the other baboon species, highlighting a key difference that may reflect the lower level of male tolerance and weaker male relationships in chacma baboons compared to other baboon species.
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.70169

BRITTANY N. FLORKIEWICZ, ELLIOT KEMP & MATTHEW W. CAMPBELL – Gibbon Gestures: Hylobatid Facial Signals and Insights into Language Evolution

The evolution of human language is a subject of ongoing debate. Some researchers suggest that language developed gradually from earlier forms of communication, akin to the manual gestures of great apes. Great ape manual gestures are produced intentionally and flexibly to achieve specific goals. Recent research on chimpanzees has demonstrated that they also use facial signals as gestures, raising the possibility that such facial gesturing may be present in other species. In our present study, we examined whether hylobatid facial signals also qualify as gestures.
We studied the facial signaling behavior of 20 captive hylobatids. We observed 484 facial signals spanning six types. We assessed all coded facial signals based on four key gesture properties: communicative, intentional, flexible, and goal-associated, along with their 12 related variables identified in prior research.

Our findings suggest that hylobatid facial signals may be used in a communicative and flexible manner. However, hylobatid facial signals do not meet the essential criteria for intentionality or goal association. We found statistically significant differences were observed in intentional and goal-oriented facial signaling among genera of hylobatids, with members of Hylobates being significantly more likely to exhibit variables associated with these two traits compared to Hoolock.
Our study suggests that some properties of great ape manual gesturing (and language) are present in hylobatid facial signals. However, there are numerous interpretations of our results. We therefore suggest directions for future research on the facial gesturing capabilities of hylobatids and monkeys to clarify the ambiguities our data have raised.
https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.70185

Animal Behaviour

PAPERS

NATALIE T. TEGTMAN, ANDREW N. RADFORD & ROBERT D. MAGRATH – A heads-up on danger: a novel avian vigilance call changes subsequent responses to alarm calls

Gaining information about predators is critical when determining an appropriate antipredator response. Many species obtain social information from alarm calls, prompting fleeing or mobbing, but personal vigilance also provides detailed information about the current threat level. The two sources of information on danger may interact in complex ways, but this has rarely been examined. Using a series of field experiments, we first tested the function of an undescribed 'seet' vocalization given by superb fairy-wrens, Malurus cyaneus, in response to predators and found that it prompted vigilance in conspecific receivers. We then examined whether hearing these calls changed the threshold for response to subsequent aerial alarm calls (warning of airborne predators), either by reducing responsiveness, because individuals had more personal information, or priming individuals to respond more strongly to alarm calls. Fairy-wrens reduced their response to more urgent aerial alarm calls that followed seet calls. There was no difference in immediate response to less urgent aerial alarm calls, but individuals who did not flee were more vigilant if the alarm call followed a seet call. Our work demonstrates contextual variation in response to alarm calls, providing rare evidence that responses to these warning signals can differ based on prior calls from conspecifics, which provides an example of birds integrating social and personal information in an antipredator context.
https://www.sciencedirect.com/science/article/pii/S0003347225003306

VEDRANA ŠLIPOGOR et al – With or without you: common marmoset, Callithrix jacchus, personality expression is mediated by social setting

Animal personality has been studied in many solitary and socially living taxa, but the effect of conspecifics on the individuals' personality expression remains largely unknown. Studies assessing the personality of the same animals in individual and social settings are also lacking. Common marmosets are callitrichid primates that spend their lives in family groups, yet they also face problems on their own (e.g. during foraging). Marmosets show consistent interindividual behavioural differences; however, whether and how their personality profiles are affected by conspecifics remains unknown. In this study, we aimed to answer this question by replicating a personality test battery previously done in an individual setting. A total of 25 captive subjects were tested across five experimental set-ups in two sessions in a social setting, assessing their general activity, reactions to a novel object, food and predator model, and their foraging under risk. Most of the behavioural variables showed temporal and contextual consistency. The resulting personality structure was similar to the previously obtained captive and wild personality structures. When examining the personality structure containing the same behavioural variables across settings, two principal components emerged. Although individual scores of 'Avoidance/Shyness' were consistent across solitary and social settings, 'Stress/Activity' scores were considerably modified by the presence of group members: more stressed/active individuals in the individual setting became less stressed/active when tested with conspecifics, and vice versa. The personality traits were further linked with subjects' age and group membership. These findings indicate that some personality traits may be more plastic than others and that the social environment can be an important modifier of individual behaviour. Furthermore, our findings promote the implementation of social setting in test designs for animal behaviour and cognition as an equally rigorous yet, in some cases, ecologically more relevant empirical choice.
https://www.sciencedirect.com/science/article/pii/S0003347225002945

E. MORTESSAGNE et al – Effects of negative stimuli on object permanence performance in baboons, Papio anubis, according to task complexity

Object permanence is a fundamental aspect of spatial cognition, referring to the ability to understand that objects continue to exist even when out of sight. This cognitive skill, essential for object tracking in daily activities, provides a relevant ecological framework for exploring how emotional states can affect cognitive performances across species with varying evolutionary histories. The transposition task, a common method for assessing object permanence, evaluates individuals' ability to track the movement of an object hidden under a container. While the complex relationship between emotion and cognition is extensively studied in a diversity of taxa, little is known about how emotion influences performance in object permanence tasks in primates. In this study, we investigated the effect of emotional distractors on the performance of four adult and captive olive baboons, Papio anubis, during a modified transposition task. The task involved a choice between two cups, one containing a food reward and the other containing either nothing (control condition), an identification medal (neutral condition) or plastic snakes/spiders (negative condition). Task difficulty was manipulated through five cups'

displacement patterns. We compared the success rates (i.e. tracking and pointing toward the cup containing the reward) across those three conditions. Our results suggest that the presence of a negative distractor influenced baboon performance in various ways, depending on the difficulty of the task. This research underscores that factors such as task difficulty are essential in interpreting how emotion interacts with cognitive performance, and that the lack of consideration of such factors may, in part, explain conflicting results across experimental studies.
https://www.sciencedirect.com/science/article/pii/S0003347225003549

JACOB C. DUNN et al with W. TECUMSEH FITCH – Honestly exaggerated: howler monkey roars are reliable signals of body size and behaviourally relevant to listeners

Acoustic signals are key components of animal social behaviour, potentially conveying fitness-relevant information about signallers. Howler monkeys produce extremely loud, low-frequency roars, which exaggerate the acoustic impression of body size relative to other species. However, whether howler monkey roars contain reliable information about body size within species, and whether conspecific listeners use this information and adjust their responses accordingly, remain unclear. In this study, whether the roars of black-and-gold howler monkeys, Alouatta caraya, serve as honest signals of body size was first examined by analysing the relationship between formant spacing and body mass in 11 adult males. The results revealed a strong negative correlation: larger males produced roars with lower formant spacing. Subsequently, the behavioural relevance of the variation in formant spacing was tested using playback experiments. These were conducted with 23 conspecific listeners, simulating the roars of unknown males with small, average and large body sizes. Listeners showed significantly different responses to calls of different body sizes. When presented with calls simulating larger males, they were more likely to approach and spent longer orientated towards the playback speaker. The effect of simulated body size on the likelihood of listeners vocalizing in response was not significant, although males spent more time vocalizing in response to playbacks than females. These findings indicate that formant spacing in howler monkey roars serves as an honest indicator of body size and plays a critical role in mediating social interactions. Our study highlights the adaptive importance of acoustic cues to body size, which can provide receivers with accurate information that can be used to assess rivals or choose mates.
https://www.sciencedirect.com/science/article/pii/S0003347225003513

DANIEL W. HART, PAUL J. JACOBS & NIGEL C. BENNETT – Subterranean mammalian societies: identity and social architecture in eusocial mole-rats

Societies are more than groups of animals coexisting; they are structured, enduring communities defined by stable membership, shared identity and relationships that persist across generations. Among mammals, such societies are uncommon but reach their most extreme form in the eusocial African mole-rats, namely the naked mole-rat, Heterocephalus glaber, and the Damaraland mole-rat, Fukomys damarensis. Eusociality, well known from ants, bees and termites, is a social system loosely comparable to a monarchy, in which a single breeding queen and one or a few males monopolize the colony's reproduction, while other group members suppress their own reproductive potential to serve the needs of the colony. These mole-rats are among the only mammals to fully embody this system, forming long-lived, cooperative colonies with strict boundaries between colony members and outsiders. Yet their strategies for social cohesion diverge. Fukomys damarensis depends primarily on individual familiarity to maintain group identity, thereby limiting colony size. In contrast, H. glaber uses a shared colony scent and distinct colony-specific vocal dialect to support larger, scalable societies. By comparing these societal extremes, this review explores what makes societies stable, exclusive and resilient, while highlighting the gaps in our current knowledge.
https://www.sciencedirect.com/science/article/pii/S0003347225003367

Current Anthropology

PAPERS

CLIFF GODDARD & ANNA WIERZBICKA – Anchoring Anthropological Categories in Simple, Translatable Words: The Case of "Art" and "Religion"

"Art" and "religion" are classic categories of anthropological discourse. Both words can be seen as designating distinctive and profound categories of human action and experience and hold special significance not only for anthropology but also for sociology, history, archeology, and adjacent disciplines. Problematically, however, both words are untranslatable into many languages, and even within European languages, they have been subject to endless definitional debates. Many scholars have given up on definitions altogether. Swimming against the tide, we demonstrate that clear, coherent, and translatable definitions can be achieved using a defining methodology based on simple, cross-translatable words and show that this methodology allows us to shed light on the history and present-day polysemy of both concepts. Of course, for anthropological purposes, "art" and "religion" need to be given stipulative definitions to distance them from their everyday English senses. We further demonstrate, however, that anthropological definitions can also be cast in simple, translatable words and that there are multiple benefits from doing so. In wider perspective, we contend that if anthropologists are to use broad but abstract terms like "art" and "religion" (or "emotion," "power," "economics") on a comparative scale, they need better semantic tools to define these as analytic concepts.

{my big stakeword is "self" – but I don't think I could assay a simple, unified meaning for it, and I'm not sure what the value of such an attempt would be. Another big stakeword is "consciousness", but I'm somewhat of the opinion that this word is best banned; there have been numerous attempts to fix its meaning, but it keeps sliding out of the straitjackets.}
https://www.journals.uchicago.edu/doi/abs/10.1086/739001

CONSTANTINE V. NAKASSIS – Voicing, Looking, Perspective
What, semiotically speaking, is a perspective? Synthesizing the notions of voicing in linguistic anthropology and looking in film and visual studies with Fanon's phenomenology of racialized perception, this article situates perspective as a constitutive feature of semiosis and, vice versa, sign activity as constitutive of how perspectives evenementially and historically emerge in and circulate across events. To exemplify this process, I analyze select aspects of the 2018 trial of Chicago police officer Jason Van Dyke for the murder of a Black teenager, Laquan McDonald. I focus in particular on the contextualized courtroom use of a forensic digital animation created by the defense to provide the perspective of Van Dyke in the event of his murder of McDonald.
https://www.journals.uchicago.edu/doi/abs/10.1086/738977

eLife

PAPERS

XIAOYAN WU et al – The Self-Interest of Adolescents Overrules Cooperation in Social Dilemmas
Reviewed Preprint
Cooperation is essential for success in society. Research consistently showed that adolescents are less cooperative than adults, which is often attributed to underdeveloped mentalizing that limits their expectations of others. However, the internal computations underlying this reduced cooperation remain largely unexplored. This study compared cooperation between adolescents and adults using a repeated Prisoner's Dilemma Game. Adolescents cooperated less than adults, particularly after their partner's cooperation. Computational modeling revealed that adults increased their intrinsic reward for reciprocating when their partner continued cooperating, a pattern absent in adolescents. Both computational modeling and self-reported ratings showed that adolescents did not differ from adults in building expectations of their partner's cooperation. Therefore, the reduced cooperation appears driven by a lower intrinsic reward for reciprocity, reflecting a stronger motive to prioritize self-interest, rather than a deficiency in predicting others' cooperation in social learning. These findings provide insights into the developmental trajectory of cooperation from adolescence to adulthood.
https://elifesciences.org/reviewed-preprints/106840

MICHAEL C. FRANK et al – Continuous developmental changes in word recognition support language learning across early childhood
Reviewed Preprint
Being a fluent language user involves recognizing words as they unfold in time. How does this skill develop over the course of early childhood? And how does facility in word recognition relate to the growth of vocabulary knowledge? We address these questions using data from Peekbank, an open database of experiments measuring children's eye movements during early word recognition. Combining 24 datasets from almost 2,000 children ages 1–6 years, we show that word recognition becomes faster, more accurate, and less variable across development, consistent with a process of skill learning. Factor analysis reveals covariation of word recognition speed and accuracy with children's vocabulary size in cross-sectional analysis. Further, across a range of longitudinal models, speed, accuracy, and vocabulary show coupled growth such that children with faster word recognition tend to show faster vocabulary growth. Together, these findings support the view that word recognition is a skill that develops gradually across early childhood and that this skill plays a role in supporting early language learning.
https://elifesciences.org/reviewed-preprints/109636

Frontiers in Human Neuroscience

PAPERS

WINNIE STREET et al with ROBIN I. M. DUNBAR – LLMs achieve adult human performance on higher-order theory of mind tasks
This paper examines the extent to which large language models (LLMs) are able to perform tasks which require higher-order theory of mind (ToM)—the human ability to reason about multiple mental and emotional states in a recursive manner (e.g., I think that you believe that she knows). This paper builds on prior work by introducing a handwritten test suite—Multi-Order Theory of Mind Q&A—and using it to compare the performance of five LLMs of varying sizes and training paradigms to a newly gathered adult human benchmark. We find that GPT-4 and Flan-PaLM reach adult-level and near adult-level performance on our ToM tasks overall, and that GPT-4 exceeds adult performance on 6th order inferences. Our results suggest that there is an interplay between model size and finetuning for higher-order ToM performance, and that the linguistic abilities of large models may support more complex ToM inferences. Given the important role that higher-order

ToM plays in group social interaction and relationships, these findings have significant implications for the development of a broad range of social, educational and assistive LLM applications.
https://www.frontiersin.org/journals/human-neuroscience/articles/10.3389/fnhum.2025.1633272/full

JINYI ZHANG, YE SONG & LI-HAI TAN – Investigating the Role of the Left Inferior Frontal Gyrus in Language Evolution: Insights from Comparative Neuroscience
Provisionally accepted
The evolutionary adaptation of the left inferior frontal gyrus is considered a crucial neural specialization supporting the emergence of human language. As a central node in the language network, it is linked to the temporoparietal cortex via both the ventral and dorsal pathways. These connections enable humans to combine a limited set of vocal elements into infinitely diverse, hierarchically structured sequences. Although homologous brain structures are also present in nonhuman primates, language remains a uniquely human faculty. This review synthesizes anatomical, functional, and connectivity evidence across species to trace the evolution of the left inferior frontal gyrus in support of language. We argue that language did not emerge from novel cortical areas, but through the gradual repurposing, expansion, and optimization of pre-existing fronto-temporal circuits. Human-specific innovations include vocal neuron specialization, volumetric expansion, strengthened connectivity of the arcuate fasciculus, and a functional shift within the left inferior frontal gyrus from motor control to syntactic processing. Finally, we discuss how lesion studies contribute to our understanding of the brain's potential for language acquisition and its neurobiological constraints.
https://www.frontiersin.org/journals/human-neuroscience/articles/10.3389/fnhum.2025.1726577/abstract

iScience

PAPERS

JULIA ARIAS-MARTORELL et al – Ape-like locomotor adaptations in the radius of the stem catarrhine Pliobates shed light on hominoid evolution
The 11.6. Ma pliopithecoid Pliobates was initially misinterpreted as a stem hominoid owing to multiple apelike postcranial features. Using 3D geometric morphometrics, we compare its radial shape with that of extant and extinct catarrhines to make locomotor inferences. The round and beveled radial head of Pliobates resembles that of modern apes, which we interpret as functionally related to efficient forearm rotation. This contrasts with its more plesiomorphic distal radius and proximal ulna, suggesting that Pliobates was more adapted for climbing than forelimb-dominated suspension, and unable to perform gibbon-like ricochetal brachiation. Our results illustrate the mosaic and stepwise evolution of the catarrhine elbow and support the view that an apelike proximal radial morphology evolved multiple times as a climbing rather than suspensory adaptation. This agrees with the possibility that several features of the hominoid elbow were originally selected for climbing and subsequently co-opted for suspensory locomotion.
https://www.cell.com/iscience/fulltext/S2589-0042(25)02883-4

Journal of Language Evolution

PAPERS

SEÁN G ROBERTS, KATERYNA KRYKONIUK & FIONA M JORDAN – The arena of language evolution: the emergence of symbolic referential signals in a common task framework
We present the common task framework approach to testing causal theories about the evolution of language. There are now many theories about how symbolic communication emerged, but less work trying to compare, synthesize and test these theories. We suggest that the first step is to formalize the theories as causal graphs using tools from the field of causal inference. This helps recognize the critical causal links that differentiate theories. The second step is to use methods from lab-based experimental semiotics to specify a 'common task' or 'arena': an experimental environment and a task for individuals to complete. The different theories suggest different designs for this arena, and the experimental results can be used as a measure of the relative success of each theory. In this paper, we provide an example from anthropological theories of the emergence of symbolic communication, suggesting that an effective arena contains an asymmetry of information, division of labour and contextually distal meanings. We run experiments in arenas based on collaborative construction and fire maintenance. The results indicate that the effectiveness of pointing can limit the emergence of symbolic signals, a problem that has previously not been worked into theories. In this way, we hope the common task framework can be used as a method to further develop theories of language evolution.
https://academic.oup.com/jole/article/10/1/lzaf001/8321660

ALICIA M CHEN et al – Discrete and systematic communication in a continuous signal-meaning space
Human spoken language uses a continuous stream of acoustic signals to communicate about continuous features of the world, by using discrete forms—words—that segment the world into categories. Here we investigate how discreteness (the segmentation of a continuous signal space into discrete forms) and systematicity (the consistent alignment of these forms with what they refer to in the world) can emerge under communicative pressure. In an exploratory study, participants were paired with one another and played a game in which they varied the pitch of auditory signals to communicate about a

continuous color space, generalizing from a small, shared set of signal-color pairings. The emergent systems exhibited both discreteness and systematicity, but only systematicity robustly predicted successful communication. These findings offer insight into the cognitive strategies that could support the creation and evolution of language, highlighting how pressures for effective communication can shape continuous signal spaces into structured, learnable systems.
https://academic.oup.com/jole/article-abstract/10/1/lzaf003/8342268

SEÁN G ROBERTS et al – Get data early, get data often, iterate constantly: an explorative, participatory approach to studying language evolution
We argue that, as well as an empirical approach borrowed from experimental psychology, studies of language evolution can also benefit from an explorative, participatory approach. This is based on a reflection on an experimental semiotics study where the process of arriving at an effective experimental design was equally valuable for developing the theory as the final results of the experiment. We suspect that this process is commonplace in many studies, but there is no formal method for documenting or exploiting any insights gained. We present methods from video game design and ethnography as candidates for addressing this gap and suggest they can be used in a hybrid approach that combines an exploratory phase of cyclic iteration with a final, more traditional linear phase. We illustrate these methods with two case studies and argue that a participatory approach can harness the creative power of our participants and help us reveal important aspects of our theories.
https://academic.oup.com/jole/article/10/1/lzaf006/8362096

SILVIA BENAVIDES-VARELA et al – A focus on vowels in young human infants and animals: early sensitivities in language processing
Very early in life, from a few weeks to 5 months of age, human infants tend to focus on vowels over consonants to process words. In the present review, we discuss recent evidence suggesting that, just like young infants, nonhuman animals also tend to focus on vowels to identify sequences of sounds. This early use of vowels to recognize words might be linked to acoustic properties that are orthogonal to lexical processing. For example, vowels tend to be more salient than consonants, in the sense that vowels tend to be longer, more stable and are produced with more intensity than consonants. Thus, the recent data with nonhuman animals sheds a new light on this early stage of phoneme processing as the result of biological, and evolutionary relevant predispositions.
https://academic.oup.com/jole/article-abstract/10/1/lzaf005/8285118

HEDVIG SKIRGÅRD – A sea of languages: predicting the number of languages per island group in Remote Oceania
There are more than 7,000 languages on our planet today, but they are not evenly distributed. There are over 100 languages in Vanuatu, but only one in Sāmoa. Why might this be? This paper explores this question for one particular region: Remote Oceania. Remote Oceania comprises the eastern Solomon Islands (Temotu), Vanuatu, New Caledonia, Fiji, Polynesia and Micronesia. The region features large differences in language richness, with some islands having 20 languages and many having only one. This paper explores one hypothesis as to why this might be: more levels of political complexity reduces language diversification. In this study, we evaluate the strength of this claim by modelling political complexity as a predictor of language richness together with other relevant factors such as time-depth, size of island, rainfall, etc. The results show that political complexity has a significant effect, but that it is not robust. Taking into account phylogenetic non-independence, in particular, reduces the effect, suggesting that there are relevant unaccounted for variables which are phylogenetically structured. The paper discusses further limitations of the study and possible expansions in the research area.
https://academic.oup.com/jole/article/10/1/lzae011/8166523

BENEDICT KING, TIHOMIR RANGELOV & MARY WALWORTH – Phylogenetic ancestral state reconstruction of bilabial trills in the languages of Malekula Island (Vanuatu), and the historical evolution of rare sound changes
It is unknown how rare sound changes appear and spread through the lexicon. The bilabial trills of Malekula are one such example of a rare sound, and the recent assembly of a lexical database for Vanuatu (the Vanuatu Voices database) affords a unique opportunity for a quantitative historical analysis. We built a linguistic phylogeny of Malekula languages, and performed phylogenetic ancestral state reconstruction of fourteen semantic values which exhibit bilabial trills to track their historical evolution. We found a surprising degree of dynamism, with trills spreading gradually through the lexicon and showing frequent losses and reappearances. Our results are consistent with frequent borrowing of trills between neighbouring languages. We suggest that the rapid dynamism and evidence for borrowing are explained by the low functional load and identity attachment of trills respectively.
https://academic.oup.com/jole/article/10/1/lzaf004/8317788

Nature Humanities & Social Sciences Communications

PAPERS

DAVIDE BASSI et al – Drawing digital lines: pattern analysis of divisive rhetoric in social network discussions
Social dialogue is a cornerstone for political decision-making and maintaining mutual understanding between diverse societal groups when addressing collective challenges. However, this dialogue is increasingly strained in digital environments where

users regularly encounter opposing viewpoints. While research has examined how political actors strategically leverage divisive rhetoric, less attention has been paid to how ordinary users utilize these devices in everyday online interactions. This study investigates how users employ divisive rhetorical strategies across social networks, examining the relationships between topic controversiality, user stance, and interactive patterns. Through a large-scale analysis of 146K YouTube comments on immigration and climate change discussions—two highly polarizing topics in contemporary discourse. The research combines computational methods for rhetoric mining with network analysis to track patterns of user interaction and manifestation of divisive rhetoric. Our analysis reveals three key findings: (1) Controversial topics elicit significantly higher frequencies of divisive rhetorical strategies compared to non-controversial ones, with distinct patterns across topics; (2) Users demonstrating strong stance commitment (Pro and Contra) use significantly more divisive rhetoric with parallel patterns, regardless of ideological position, distinguishing them from neutral users; (3) Users strategically adapt their rhetorical behavior to their interlocutor's stance, suggesting that stance intensity rather than specific ideological content drives rhetorical similarity. Framed through Social Identity Theory, we conceptualize these wedge rhetorical devices as an interactive toolkit that users deploy to navigate social positioning in deindividualized discussions, either reinforcing solidarity among users sharing similar positions or creating distinctions from those holding opposing views. This study shows how computational methods can effectively track and analyze the ways citizens strategically navigate social positioning on sensitive issues, contributing to our understanding of online political discourse dynamics.
https://www.nature.com/articles/s41599-025-06277-7

Nature Neuroscience

PAPERS

STEPHAN KROHN et al – Fractal analysis of brain shape formation predicts age and genetic similarity in human newborns

The neonatal period represents a critical phase of human brain development. During this time, the brain shows a dramatic increase in size, but how its morphology emerges in early life remains largely unknown. Here we show that human newborns undergo a rapid formation of brain shape, beyond the expected growth in brain size. Using fractal dimensionality (FD) analysis of structural neuroimaging data, we show that brain shape strongly reflects infant maturity beyond differences in brain size, significantly outperforms brain size in predicting infant age at scan (mean error approximately 4 days), detects signatures of premature birth that are not captured by brain size, is systematically more sensitive to genetic variability among infants and is superior in predicting which newborns are twin siblings, with up to 97% accuracy. Additionally, FD captures age and genetic information significantly better than earlier morphological measures, including cortical thickness, curvature, gyrification, sulcation, surface area and the T1-weighted/T2-weighted ratio. These findings identify the formation of brain shape as a fundamental maturational process in human brain development and show that, biologically, FD should be interpreted as a developmental marker of early-life brain maturity, which is rooted in geometry rather than size.
https://www.nature.com/articles/s41593-025-02107-w

Nature Scientific Reports

PAPERS

JOANNA DUDA-GOŁAWSKA et al – Vocalisations are coupled with movement of all limbs throughout infancy

Early speech development involves learning complex motor actions under constantly changing body proportions and biomechanics. However, the motor underpinnings of infant vocal production are largely unknown. The key question is whether vocal production (a complex motor action) is related to limb movements at the early stages of learning to speak. We tracked the development of coupling between limb movements and vocalisations in infants at 4, 6, 9 and 12 months of age. Limb movements were tightly coupled with vocalisation onsets at all time points across infancy. The initiation of speech-like vocalisations in early life is accompanied by movements of legs and arms. These findings suggest that the coupling of limb movements with vocalisation could be a potential mechanism supporting vocal production in early infancy, as well as a likely precursor to the emergence of gestures.
https://www.nature.com/articles/s41598-025-28388-6

PLoS One

PAPERS

HANNAH SHEPPARD et al – Understanding and assessing personality across cultures: A scoping review

Previous reviews of personality trait instruments have questioned whether meaningful cross-cultural comparisons of personality can be made. Personality, however, extends beyond personality traits. The current scoping review utilized McAdams's Three-Layer framework of personality to assess the cross-cultural validity of measures of traits, characteristic adaptations, and life narratives to deepen the understanding of whether personality can be effectively assessed across different cultures. 233 publications were identified from searching scientific databases, leading international journals in personality and assessment, and databases for specific personality instruments between the 23rd of January and the 5th of June 2024. The review identified models of personality that have been empirically or theoretically supported across different cultures, focusing on measures that are structurally equivalent across cultures and have strong validity estimates within non-

Western cultures. This review principally focused on cross-cultural research published in English within the last 20 years (2004–2024), and concentrated on broad integrative models of personality, which investigate a myriad of personality constructs, such as personality traits, values, and beliefs. The majority of publications (59%) utilized personality trait models when assessing personality across-cultures. Although no instruments demonstrated evidence of full cross-cultural scalar invariance, the NEO-Personality Inventory Revised, and the International Personality Item Pool 120-item representation of the NEO-PI-R demonstrated the strongest evidence for validity and reliability in their cross-cultural personality trait assessment. The Schwartz values measure, the 21-item Portrait Values Questionnaire, also demonstrated acceptable psychometric properties and partial scalar measurement invariance across cultures. Some measures were found to perform well within specific cultures. Nonetheless, this review cautions against making inferences about differences in average levels of personality between cultures due to the lack of scalar invariance across nearly all personality measures.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0338521

TAMAR ROSENBERG-YEFET et al – Late Acheulian stone-working by the riverbank: Patterns of continuity and change reflected in Jaljulia lithic assemblages, Israel

The Lower Paleolithic Late Acheulian marks an exceptional phase in human cultural evolution, encompassing notable transformations and innovations across Africa and Western Eurasia alongside the persistence of well-practiced Acheulian modes of adaptation. Lithic transformations mentioned here include innovative stone-working technologies such as prepared cores, Quina-like scrapers and possible origin of systematic blade production. These innovations provide a glance into potential changes in technological organization of lithic production that might reflect innovative modes of adaptation oriented towards changes in economy, environment and world-views of these early hominin groups. The open-air, Late Acheulian site of Jaljulia makes a significant contribution to the study of this transformative phase at the very end of the long Acheulian tradition in the Levant. The site was excavated to a relatively large extent (ca. 80m2) and the excavation yielded rich lithic assemblages of typical Late Acheulian technological components from several localities, dated to ca. 500–3/200 ka. The lithic assemblages are mostly dominated by flake-production, flake-tools, and numerous Handaxes. This paper presents the comprehensive analyses of the flint assemblages from five Jaljulia localities (Localities A–E). The results presented and discussed here are intriguing, as all five assemblages encompass components that could be regarded as forbearers of post-Acheulian industries. The use of prepared cores might signal an early appearance of the Middle Paleolithic Levallois concepts, and in order to stress this point, these cores are termed here “proto-Levallois”. Quina-like scrapers and blades are prominent, possibly reflecting the early adoption of technologies that became more common in the post-Acheulian, Acheuleo-Yabrudian cultural complex of the Levant. Based on this remarkable lithic repertoire, this paper discusses possible patterns of continuity and change in lithic production from the Late Acheulian to later industries and suggests refinements to the reduction trajectories variability.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0338540

DALIT MILSHTEIN, AHMAD SERHAN & SIMONE SHAMAY-TSOORY – If I were you Minority and majority members evaluate relevancy and subjective experience differently while putting themselves in the other’s shoes

Previous research suggests that asymmetrical power relations between minority and majority groups manifest in various cognitive biases. However, the underlying processes driving these differences remain unclear. Here we examine whether minority and majority groups exhibit differences in their basic ability to imagine outgroup-related scenarios. In two experiments, we asked participants from the majority (Israeli Jews) and minority (Israeli Arabs) groups to put themselves in their respective outgroups’ shoes. The results indicated that majority members perceived outgroup-related themes as less imaginable, relevant, and plausible to themselves compared to the minority group. These findings suggest that an individual’s social power and hierarchical position within society may influence their ability to imagine themselves and others, subsequently contributing to intergroup bias.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0338558

Science

ARTICLES

SIDDHARTH S. GOPALAN & TODD A. CASTOE – Divergent destinies of polymorphism

Lizards maintain or lose color variation through interactions between genetics, selection, and plasticity
https://www.science.org/doi/10.1126/science.aed4903

PAPERS

AMMON CORL et al with RASMUS NIELSEN – The genetics, evolution, and maintenance of a biological rock-paper-scissors game

Side-blotched lizards (Uta stansburiana) play a biological rock-paper-scissors game in which three differently colored male morphs utilize alternative mating strategies. We identified the genetic basis of this polymorphism, which was previously posited to arise from three alleles at one locus. Orange usurper and blue mate-guarder morphs are associated with two divergent haplotypes in the regulatory region of the sepiapterin reductase gene, but yellow sneaker morphs appear to arise through phenotypic plasticity from the same genetic background as blue morphs. Our simulations show that rock-paper-

scissors dynamics can better maintain a polymorphism with a genetic system of two alleles plus plasticity than with a three-allele system. This form of balancing selection that combines genetic determination with phenotypic plasticity expands the possibilities for how stable polymorphisms arise in nature.
https://www.science.org/doi/10.1126/science.adw8265

TOBIAS ULLER et al – Adaptive spread of a sexually selected syndrome eliminates an ancient color polymorphism in wall lizards

Genetically determined color morphs are found in many animals. Polymorphism can be maintained by social selection if competitive interactions allow each morph to increase in frequency when rare. This reliance on negative frequency–dependent selection should make color polymorphism vulnerable to the appearance of novel phenotypes that disrupt competitive interactions among morphs. We show that the origin and adaptive spread of a sexually selected syndrome in common wall lizards (Podarcis muralis) selectively eliminates alleles coding for alternative color morphs that have been maintained for millions of years. The results demonstrate how the arrival of a novel phenotype can disrupt balancing selection, providing a link between rapid phenotypic evolution and the loss of color polymorphisms.
https://www.science.org/doi/10.1126/science.adx3708

MENGPING JIANG et al – Neural basis of cooperative behavior in biological and artificial intelligence systems

Cooperation—the process by which individuals coordinate their actions to achieve shared benefits—is fundamental to human and animal societies and increasingly critical in artificial intelligence (AI). Cooperation often requires sophisticated integration of self-monitoring, partner observation, context-dependent decision-making, and precise temporal coordination. However, the neural mechanisms and computational principles that enable such coordination remain poorly understood in both domains.

We developed parallel experimental paradigms that allow direct comparison between biological and AI systems. For biological studies, we created a behavioral task in which pairs of mice must coordinate their nose poke actions within precise time windows to receive mutual rewards, combined with microendoscopic calcium imaging of the anterior cingulate cortex (ACC)—a region implicated in social cognition and decision-making. Simultaneously, we trained pairs of artificial agents using multiagent reinforcement learning to perform an analogous coordination task, which provided complete access to their "neural" computations and enabled precise experimental manipulations that are challenging in biological systems. This comparative approach allowed us to examine whether similar computational principles govern cooperation across biological and artificial systems.

We found that mice can indeed learn to coordinate their actions for mutual benefits. Detailed behavioral analysis revealed that successful coordination depends on key social behavioral strategies that include approach, waiting, and interaction behaviors. These three preparatory behaviors increased substantially over the course of training and were more prominent during successful trials. Our neural recordings revealed that ACC neurons encoded different aspects of the cooperative process, including correct versus missed coordinative decisions, the three preparatory behaviors, and key decision-making processes. Furthermore, partner location was strongly represented in ACC activity, especially during moments requiring coordination decisions. Animals with stronger neural representations of behaviors and partner information showed better cooperative performance. Lastly, chemogenetic and optogenetic silencing experiments demonstrate that ACC activity causally contributes to cooperative behavior—inhibiting ACC neurons reduced cooperative success, impaired social behavioral strategies, and decreased the precision of coordinated actions.

Artificial agents trained on an analogous mutual cooperation task developed strikingly similar behavioral strategies and neural representations. Like mice, successful artificial agents exhibited waiting behavior—pausing when their partner was far away and coordinating their movements to minimize distance differences. Analysis of the agents' recurrent neural networks revealed enhanced representations of partner-related information, paralleling our observations in mouse ACC. Furthermore, artificial neurons encoding key behavioral decisions—"hold" and "proceed"—emerged during training, and selectively disrupting these neurons impaired cooperative performance.

Our findings reveal that successful cooperation in mice emerges from the combination of partner information, social behavioral strategies, and context-dependent decision-making processes. The ACC serves as a critical processing hub, representing partner information, behavioral strategies, and coordination decisions. The remarkable convergence between mouse ACC activity and artificial neural network dynamics suggests that these principles represent fundamental organizational requirements for any intelligent system engaged in real-time cooperation. These findings advance our understanding of the neural basis of social behavior and demonstrate the power of comparative approaches that bridge neuroscience and AI.

{Didn't it occur to them to get AI or Grammarly to cut this abstract down below the TLDR threshold?}
https://www.science.org/doi/10.1126/science.adw8151

Science Advances

PAPERS

SCOTT A. WILLIAMS et al – Earliest evidence of hominin bipedalism in Sahelanthropus tchadensis

Bipedalism is a key adaptation that differentiates hominins (humans and our extinct relatives) from living and fossil apes. The earliest putative hominin, Sahelanthropus tchadensis (~7 million years old), was originally represented by a cranium, the reconstruction of which suggested to its discoverers that Sahelanthropus carried its head in a manner similar to known bipedal hominins. Recently, two partial ulnae and a femur shaft were announced as evidence in support of the contention that Sahelanthropus was an early biped, but those interpretations have been challenged. Here, while we find that both limb bones are most similar in size and geometric morphometric shape to chimpanzees (genus Pan), we demonstrate that their relative proportion is more hominin-like. Furthermore, we confirm two features linked to hominin-like hip and knee function and identify a femoral tubercle, a feature only found in bipedal hominins. Our results suggest that Sahelanthropus was an early biped that evolved from a Pan-like Miocene ape ancestor.
https://www.science.org/doi/10.1126/sciadv.adv0130

JESSICA I. CEREZO-ROMÁN et al – Earliest evidence for intentional cremation of human remains in Africa

Human cremation on an open pyre demands intensive labor, communal resources, and sensory exposures. We report the earliest evidence for intentional cremation in Africa, the oldest in situ adult pyre in the world, and one of only a few associated with hunter-gatherers. A large cremation feature at Hora 1 in Malawi dates to ~9500 years ago and contains the remains of a small, gracile adult with evidence for perimortem defleshing and postcremation manipulation. Subsequent revisiting of the site to build fires in the same place provided additional pyrotechnological spectacles. High-resolution, multiproxy reconstruction of the ritual associated with cremation and its subsequent deposition demonstrates complex mortuary practices among ancient African foraging groups with substantial social investment and use of natural landscape features as persistent mortuary monuments.
https://www.science.org/doi/10.1126/sciadv.adz9554

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