EAORC BULLETIN 977 – 6 March 2022

CONTENTS

NOTICES

PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.
If there is a journal you feel I should be tracking on a regular basis, let me know.
And if you have any other ideas for extending the "EAORC experience", please contact me.

ACADEMIA.EDU – Middle Pleistocene handaxes from the Korean Peninsula

Journal of Human Evolution 51, 527-536 (2006).

CHRISTOPHER J. NORTON et al – Middle Pleistocene handaxes from the Korean Peninsula

We present four biface assemblages from an archaeologically poorly known region of the Old World: Middle Pleistocene Korea. The handaxes are derived from a series of Middle Pleistocene localities in the Imjin/Hantan River Basins (IHRB) in Korea. The best known of these localities is Chongokni, although a number of equally important sites in the IHRB have been discovered and excavated over the course of the past two decades (e.g., Kumpari, Chuwoli, and Kawoli). Reanalysis of the age of the Chongokni deposits suggests a hominin occupation between 350-300 ka. Comparative study of the IHRB handaxes with the well-known bifacial implements from Olorgesailie (Kenya) and Hunsgi-Baichbal (India) indicates that the often-noted ''thick'' trait of the East Asian handaxes differs at a statistical level across the various regions of the Old World. The finds from the IHRB sites, and the Chinese sites of Bose and Dingcun that contain handaxe-like implements, question the validity of the Movius Line sensu stricto. However, why East Asian Middle Pleistocene hominins did not consistently produce more refined bifaces across broader regional and/or temporal facies, remains open to question. Thus, the absence of similar sites in wider areas of Early and Middle Pleistocene East Asia suggests that the Movius Line sensu lato is still supportable and warrants additional detailed cross-comparative studies of the stone toolkits east and west of the line.
https://www.academia.edu/27383887/Middle_Pleistocene_handaxes_from_the_Korean_Peninsula

ACADEMIA.EDU – Hominin responses to Pleistocene environmental change in Arabia and South Asia

In M.J. Head & P.L. Gibbard (eds), Early–Middle Pleistocene Transitions: The Land–Ocean Evidence. Geological Society, London, Special Publications 247, 305-319 (2005).

MICHAEL D. PETRAGLIA – Hominin responses to Pleistocene environmental change in Arabia and South Asia

Palaeoanthropologists typically outline human evolution within a framework of Pleistocene environmental change. Environmental change occurring across the Early–Middle Pleistocene transition is examined relative to patterns of hominin dispersal, ecological adaptations, cognitive advances and behavioural flexibility. Although climatic information has been used as the backdrop to human evolution, major lacunae exist in our understanding of the ecological settings where hominins

evolved. Data from investigations conducted in the Arabian peninsula and the Indian subcontinent are reviewed, indicating the nature of Palaeolithic localities and their physical settings. Although much information remains to be obtained from these terrestrial records, significant changes are recognized in the environmental and archaeological record. The Early–Middle Pleistocene transition shows some conservative trends in hominin adaptations and technology, yet it is also an interval that evidences an increasing ability to transcend environmental controls through a greater level of behavioural flexibility and innovation.
https://www.academia.edu/471297/Hominin_responses_to_Pleistocene_environmental_change_in_Arabia_and_South_Asia

ACADEMIA.EDU – Exploring the evolutionary pathways from number sense to numeracy

In Nathalie Gontier, Andy Lock & Chris Sinha (eds.), The Oxford Handbook of Human Symbolic Evolution. Oxford University Press, (2021).

ROSLYN M. FRANK – Exploring the evolutionary pathways from number sense to numeracy

[final edited draft]

In this chapter, four stages are proposed for the evolutionary development of number systems in humans with special emphasis being given to neurocognitive and linguistic aspects of the evolutionary process. The four states are: 1) number sense — innate quantitative competence without counting and language; 2) transition to syntactic language and counting skills; 3) transition from finger-counting to numeracy; and 4) establishment of a complex numerical lexicon and its notational instantiation. Evidence drawn from the archaeological record as well as contemporary ethnographic research is used to investigate the symbolic reference gap that exists between the two biologically-given systems which allow for quantification judgements and those systems that are truly numerical in nature and hence culturally instantiated. The possible key role played by finger-counting, specifically as a bridging mechanism, in this evolutionary process is also highlighted.
https://www.academia.edu/72618272/Exploring_the_evolutionary_pathways_from_number_sense_to_numeracy

ACADEMIA.EDU – Life Histories, Metapopulation Ecology, and Innovation in the Acheulian

Paleo Anthropology 2013: 61-76 (2013).

TERRY HOPKINSON, APRIL NOWELL & MARK WHITE – Life Histories, Metapopulation Ecology, and Innovation in the Acheulian

In the course of the evolution of the genus Homo, the most profound developments in life history parameters seem to have occurred in the Lower Pleistocene. Yet Acheulian industries are widely seen as having remained essentially unchanged for some 1.3 million years or more. In reality, however, although the Acheulian did not develop in a cumulative or directional manner over its long history, it nevertheless displayed considerable levels of typological and technological diversity and variability at continental, regional, and local levels. It is at the local level that this variability is at its greatest, with prepared core technologies regarded as characteristic of the succeeding Middle Paleolithic and Middle Stone Age appearing sporadically and ephemerally in the Acheulian. It is our contention that this pattern of local, short term variability combined with global long term stasis cannot be accounted for by models asserting that the hominin makers of the Acheulian lacked the cognitive capabilities of their evolutionary successors. Instead, we argue that Acheulian hominins were cognitively capable of innovative technical behavior and often displayed it; but that, despite structural life history parameters that approached those of living Homo sapiens, relatively short childhood, juvenile, and adolescence phases, combined with small local group size, con-strained the social and developmental scope for innovation. Furthermore, we argue that metapopulation-level social, demographic, and ecological dynamics in the Acheulian, relating to group size, foraging ranges, and levels of individual migration, served to limit the lifespan of local groups and thereby reduced the likelihood of innovative behaviors disseminating through social networks and becoming fixed in cultural repertoires before the originator population became extinct. We explore the idea that the transition from the Acheulian to the ensuing Middle Paleolithic and Middle Stone Age was therefore driven not by evolutionary developments in hominin cognitive capacities, but by changes in life history and metapopulation factors.
https://www.academia.edu/10820590/Middle_Pleistocene_Life_Histories_Metapopulation_Ecology_and_Innovation_in_the_Acheulian

ACADEMIA.EDU – Were Acheulean Bifaces Deliberately Made Symmetrical?

Cambridge Archaeological Journal 29:1, 65-79 (2019).

CERI SHIPTON, CHRIS CLARKSON & ROMMY COBDEN – Were Acheulean Bifaces Deliberately Made Symmetrical? Archaeological and Experimental Evidence

Acheulean bifaces dominate the archaeological record for 1.5 million years. The meaning behind the often symmetrical forms of these tools is the topic of considerable debate, with explanations ranging from effectiveness as a cutting tool to sexual display. Some, however, question whether the symmetry seen in many Acheulean bifaces is intentional at all, with suggestions that it is merely the result of a bias in hominin perception or an inevitable consequence of bifacial flaking. In this paper we address the issue of intention in biface symmetry. First, we use transmission chain experiments designed to track symmetry trends in the replication of biface outlines. Secondly, we use archaeological data to assess the symmetry of Acheulean bifaces from British, East African and Indian assemblages in relation to reduction intensity; the degree of bifaciality; and the symmetry of four Middle Palaeolithic bifacial core assemblages. Thirdly, we look at specific examples of

the reduction sequences that produced symmetrical Acheulean cleavers at the sites of Olorgesailie CL1-1, Isinya, Chirki, Morgaon and Bhimbetka. All three lines of evidence support the notion that symmetry was a deliberately imposed property of Acheulean bifaces and not an epiphenomenon of hominin visual perception or bifacial technology.
https://www.academia.edu/37005968/Were_Acheulean_Bifaces_Deliberately_Made_Symmetrical_Archaeological_and_Experimental_Evidence

ACADEMIA.EDU – Generativity, hierarchical action & recursion in technology of Acheulean transition

Journal of Human Evolution 65:2, 93-108 (2013).

C. SHIPTON et al with M.D. PETRAGLIA – Generativity, hierarchical action and recursion in the technology of the Acheulean to Middle Palaeolithic transition: A perspective from Patpara, the Son Valley, India

The Acheulean to Middle Palaeolithic transition is one of the most important technological changes that occurs over the course of human evolution. Here we examine stone artefact assemblages from Patpara and two other excavated sites in the Middle Son Valley, India, which show a mosaic of attributes associated with Acheulean and Middle Palaeolithic industries. The bifaces from these sites are very refined and generally small, but also highly variable in size. A strong relationship between flake scar density and biface size indicates extensive differential resharpening. There are relatively low proportions of bifaces at these sites, with more emphasis on small flake tools struck from recurrent Levallois cores. The eventual demise of large bifaces may be attributed to the curation of small prepared cores from which sharper, or more task-specific flakes were struck. Levallois technology appears to have arisen out of adapting aspects of handaxe knapping, including shaping of surfaces, the utilization of two inter-dependent surfaces, and the striking of invasive thinning flakes. The generativity, hierarchical organization of action, and recursion evident in recurrent Levallois technology may be attributed to improvements in working memory.
https://www.academia.edu/4076069/Generativity_hierarchical_action_and_recursion_in_the_Acheulean_to_Middle_Palaeolithic_transition_a_perspective_from_Patpara_the_Son_Valley_India

ARXIV PREPRINTS – Clustering Drives Cooperation on Reputation Networks, All Else Fixed

TAMAS DAVID-BARRETT – Clustering Drives Cooperation on Reputation Networks, All Else Fixed

Reputation-based cooperation on social networks offers a causal mechanism between graph properties and social trust. Recent papers on the `structural microfoundations` of the society used this insight to show how demographic processes, such as falling fertility, urbanisation, and migration, can alter the logic of human societies. This paper demonstrates the underlying mechanism in a way that is accessible to scientists not specialising in networks. Additionally, the paper shows that, when the size and degree of the network is fixed (i.e., all graphs have the same number of agents, who all have the same number of connections), it is the clustering coefficient that drives differences in how cooperative social networks are.
https://arxiv.org/abs/2203.00372

BIORXIV PREPRINTS – Human Group Size Puzzle: Why It Is Odd That We Live in Large Societies

TAMAS DAVID-BARRETT – Human Group Size Puzzle: Why It Is Odd That We Live in Large Societies

Human groups tend to be much larger than those of non-human primates. This is a puzzle. When ecological factors do not limit primate group size, the problem of coordination creates an upper threshold even when cooperation is guaranteed. This paper offers a simple model of group coordination towards behavioural synchrony to spell out the mechanics of group size limits, and thus show why it is odd that humans live in large societies. The findings suggest that many of our species' evolved social behaviours and culturally-maintained social technologies emerged as a solution to this problem.
https://www.biorxiv.org/content/10.1101/2022.02.18.481060v1

NEWS

SCIENCE DAILY – Mystery solved about the origin of the 30,000-year-old Venus of Willendorf

The almost 11 cm high figurine from Willendorf is one of the most important examples of early art in Europe. It is made of a rock called 'oolite' which is not found in or around Willendorf. Anthropologist, geologists and prehistorians have now found out, with the help of high-resolution tomographic images, that the material from which the Venus was carved likely comes from northern Italy. This sheds new light on the remarkable mobility of the first modern humans south and north of the Alps.
https://www.sciencedaily.com/releases/2022/02/220228095503.htm

SCIENCE NEWS – Archaeologists uncover oldest ochre workshop in East Asia

Some 40,000 years ago, a small group of foragers parked themselves on a riverbank in what is now northeastern China. Some split pebbles and bones to make small tools while others made a fire. And at least one experienced craftsperson concentrated on the primary task: grinding red, purple, and gray chunks of ochre into a vibrant powder that could have been used as paint.
https://www.science.org/content/article/archaeologists-uncover-oldest-ochre-workshop-east-asia

SOCIETY FOR SCIENCE – Africa's oldest human DNA helps unveil an ancient population shift

Long-distance mate seekers started staying closer to home about 20,000 years ago.
https://www.sciencenews.org/article/africa-oldest-human-dna-mating-long-distance-stone-age

THE CONVERSATION – Analysing DNA from ancient & modern humans to create a family tree of everyone

How we're linking together genetic material from thousands of people - modern and ancient - to trace our ancestors and the history of our evolution.
https://theconversationuk.cmail19.com/t/r-l-tylduta-khhlilahh-n/

THE CONVERSATION – Future evolution: how will humans change in the next 10,000 years?

We'll probably be less aggressive and more agreeable, but have smaller brains – a bit like a Golden Retriever, we'll be friendly, but maybe not that interesting or bright.
https://theconversationuk.cmail19.com/t/r-l-tylhhytt-khhlilahh-o/

PUBLICATIONS

Animal Behaviour

PAPERS

MASON YOUNGBLOOD & DAVID C. LAHTI – Content bias in the cultural evolution of house finch song

We used three years of house finch, Haemorhous mexicanus, song recordings spanning four decades in the introduced eastern range to assess how individual level cultural transmission mechanisms drive population level changes in birdsong. First, we developed an agent-based model (available as a new R package called 'Transmission Bias') that simulates the cultural transmission of house finch song given different parameters related to transmission biases, or biases in social learning that modify the probability of adoption of particular cultural variants. Next, we used approximate Bayesian computation and machine learning to estimate what parameter values likely generated the temporal changes in diversity in our observed data. We found evidence that strong content bias, likely targeted towards syllable complexity, plays a central role in the cultural evolution of house finch song in the New York metropolitan area. Frequency and demonstrator biases appear to be neutral or absent. Additionally, we estimated that house finch song is transmitted with extremely high fidelity. Future studies can use our simulation framework to better understand how cultural transmission and population declines influence song diversity in wild populations.
https://www.sciencedirect.com/science/article/pii/S000334722100395X

SABRINA ENGESSER & MARTA B. MANSER – Collective close calling mediates group cohesion in foraging meerkats via spatially determined differences in call rates

During group movements, many socially living and group-foraging animals produce contact calls. Contact calls typically function to coordinate and maintain cohesion among group members by providing receivers with information on the callers' location or movement-related motivation. Previous work suggests that meerkats, Suricata suricatta, also produce short-range contact calls, so-called 'close calls', while foraging to maintain group cohesion. Yet, the underlying mechanism of how meerkats coordinate cohesion via close calling is unclear. Using a combination of field observations and playback experiments we here show that foraging meerkats adjusted the call rates of their continuously produced close calls depending on their spatial position to group members. Specifically, meerkats called at higher rates when foraging at a closer distance to and when surrounded by conspecifics; however, the number of calling individuals or their call rates did not affect a subject's close call rate. Overall, close call playbacks elicited a call response in receivers and attracted them to the sound source. Our results suggest that differences in individual close call rates are determined by a meerkat's proximity to other group members, being assessed through their vocal interactions. We discuss how local differences in individual call rates may extrapolate to the group level, where emerging 'vocal hotspots' indicate areas of high individual density, in turn attracting and potentially guiding group members' movements. Hence, the described pattern illustrates a so far undocumented call mechanism where local differences in the call rates of continuously produced close calls can generate a group level pattern that mediates the cohesion of progressively moving animal groups.
https://www.sciencedirect.com/science/article/pii/S0003347221003997

eLife

PAPERS

JORGE F MEJÍAS & XIAO-JING WANG – Mechanisms of distributed working memory in a large-scale network of macaque neocortex

Neural activity underlying working memory is not a local phenomenon but distributed across multiple brain regions. To elucidate the circuit mechanism of such distributed activity, we developed an anatomically constrained computational model of large-scale macaque cortex. We found that mnemonic internal states may emerge from inter-areal reverberation, even in a regime where none of the isolated areas is capable of generating self-sustained activity. The mnemonic activity pattern along the cortical hierarchy indicates a transition in space, separating areas engaged in working memory and those which do

not. A host of spatially distinct attractor states is found, potentially subserving various internal processes. The model yields testable predictions, including the idea of counterstream inhibitory bias, the role of prefrontal areas in controlling distributed attractors, and the resilience of distributed activity to lesions or inactivation. This work provides a theoretical framework for identifying large-scale brain mechanisms and computational principles of distributed cognitive processes.
https://elifesciences.org/articles/72136

PAUL B SHARP et al – Humans perseverate on punishment avoidance goals in multigoal reinforcement learning
Managing multiple goals is essential to adaptation, yet we are only beginning to understand computations by which we navigate the resource-demands entailed in so doing. Here, we sought to elucidate how humans balance reward seeking and punishment avoidance goals, and relate this to variation in its expression within anxious individuals. To do so, we developed a novel multigoal pursuit task that includes trial-specific instructed goals to either pursue reward (without risk of punishment) or avoid punishment (without the opportunity for reward). We constructed a computational model of multigoal pursuit to quantify the degree to which participants could disengage from the pursuit goals when instructed to, as well as devote less model-based resources towards goals that were less abundant. In general, participants (n=192) were less flexible in avoiding punishment than in pursuing reward. Thus, when instructed to pursue reward, participants often persisted in avoiding features that had previously been associated with punishment, even though at decision time these features were unambiguously benign. In a similar vein, participants showed no significant downregulation of avoidance when punishment avoidance goals were less abundant in the task. Importantly, we show preliminary evidence that individuals with chronic worry may have difficulty disengaging from punishment avoidance when instructed to seek reward. Taken together, the findings demonstrate that people avoid punishment less flexibly than they pursue reward. Future studies should test in larger samples whether a difficulty to disengage from punishment avoidance contributes to chronic worry.
https://elifesciences.org/articles/74402

Frontiers in Communication

PAPERS

MICHAEL P. BLACK et al – Story, Metaphor, and Altruism in Cross-Cultural Teaching and Learning
The Emory-Tibet Science Initiative (ETSI) is a cross-cultural exchange of Western and Tibetan Buddhist education and scholarship. In this partnership between the Dalai Lama Foundation and Emory University, two visiting Western scientists to Sera, Gaden, and Drepung Monasteries and two monastics who studied at Emory University reflect on their experiences teaching and learning from Western and Buddhist perspectives as part of the ETSI program. Specifically, authors explore the power of story, metaphor, and altruism in Buddhist and Western ways of teaching and learning. Authors consider the pedagogical similarities between (1) the variations of the Greek Method of Loci (Memory Palace) and the paintings and temple decorations found throughout Tibetan architecture and (2) the role of altruism and intrinsic motivation in learning outcomes. Current psychological and neurobiological evidence for the increased recall of episodic memories present in both Buddhist and Western use of story, metaphor, and intrinsic motivation associated with altruism will highlight the underlying principles that support these ancient methods. Finally, considerations on how each perspective informs the other is discussed, as well as practical suggestions for integrating methods across cultures.
https://www.frontiersin.org/articles/10.3389/fcomm.2022.749012/full

MARIANO GONZÁLEZ & OLUPEMI OLUDARE – The Speech Surrogacy Systems of the Yoruba Dùndún and Bàtá Drums. On the Interface Between Organology and Phonology
This paper explores the interdependence between organology and phonology in the Yoruba dùndún and bàtá drums. We analyze how the specific features of these drums, such as corpus shape, size, kind and number of membranes, and playing techniques affect their systems of speech surrogacy. The study relies on field recordings collected by the authors in Lagos, Nigeria, in February 2020, featuring drummed performances of Yoruba sentences previously unknown to the informants. The recorded sentences were transcribed and analyzed comparatively, which allows us to characterize systematic regularities in the speech-to-drum mapping. Observing how the intrinsic characteristics of language sounds (pitch, duration, intensity and spectrum) are addressed by means of the organologic and acoustic properties of the dùndún and the bàtá, we conclude that these drums' different properties foster distinct speech surrogacy systems. Alongside a consideration of native perspectives on speech surrogacy, we propose an understanding of drum languages as platforms capable of supporting the development of native theories on sound and language.
https://www.frontiersin.org/articles/10.3389/fcomm.2021.652542/full

Frontiers in Ecology and Evolution

PAPERS

GREGORIO DE CHEVALIER et al – Cost-Benefit Trade-Offs of Aquatic Resource Exploitation in the Context of Hominin Evolution
While the exploitation of aquatic fauna and flora has been documented in several primate species to date, the evolutionary contexts and mechanisms behind the emergence of this behavior in both human and non-human primates remain largely overlooked. Yet, this issue is particularly important for our understanding of human evolution, as hominins represent not

only the primate group with the highest degree of adaptedness to aquatic environments, but also the only group in which true coastal and maritime adaptations have evolved. As such, in the present study we review the available literature on primate foraging strategies related to the exploitation of aquatic resources and their putative associated cognitive operations. We propose that aquatic resource consumption in extant primates can be interpreted as a highly site-specific behavioral expression of a generic adaptive foraging decision-making process, emerging in sites at which the local cost-benefit trade-offs contextually favor aquatic over terrestrial foods. Within this framework, we discuss the potential impacts that the unique intensification of this behavior in hominins may have had on the evolution of the human brain and spatial ecology.
https://www.frontiersin.org/articles/10.3389/fevo.2022.812804/full

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Nature

PAPERS

FA-GANG WANG, et al with FRANCESCO D'ERRICO & MICHAEL PETRAGLIA – Innovative ochre processing and tool use in China 40,000 years ago

Homo sapiens was present in northern Asia by around 40,000 years ago, having replaced archaic populations across Eurasia after episodes of earlier population expansions and interbreeding. Cultural adaptations of the last Neanderthals, the Denisovans and the incoming populations of H. sapiens into Asia remain unknown. Here we describe Xiamabei, a well-preserved, approximately 40,000-year-old archaeological site in northern China, which includes the earliest known ochre-processing feature in east Asia, a distinctive miniaturized lithic assemblage with bladelet-like tools bearing traces of hafting, and a bone tool. The cultural assembly of traits at Xiamabei is unique for Eastern Asia and does not correspond with those found at other archaeological site assemblages inhabited by archaic populations or those generally associated with the expansion of H. sapiens, such as the Initial Upper Palaeolithic. The record of northern Asia supports a process of technological innovations and cultural diversification emerging in a period of hominin hybridization and admixture.
https://www.nature.com/articles/s41586-022-04445-2

Nature Scientific Reports

PAPERS

GERHARD W. WEBER et al – The microstructure and the origin of the Venus from Willendorf

The origin and key details of the making of the ~ 30,000 year old Venus from Willendorf remained a secret since its discovery for more than a hundred years. Based on new micro-computed tomography scans with a resolution of 11.5 µm, our analyses can explain the origin as well as the choice of material and particular surface features. It allowed the identification of internal structure properties and a chronological assignment of the Venus oolite to the Mesozoic. Sampling numerous oolite occurrences ranging ~ 2500 km from France to the Ukraine, we found a strikingly close match for grain size distribution near Lake Garda in the Southern Alps (Italy). This might indicate considerable mobility of Gravettian people and long-time transport of artefacts from South to North by modern human groups before the Last Glacial Maximum.
https://www.nature.com/articles/s41598-022-06799-z

NANXI LIU et al – Mental construction of object symbols from meaningless elements by Japanese macaques (Macaca fuscata)

When writing an object's name, humans mentally construct its spelling. This capacity critically depends on use of the dual-structured linguistic system, in which meaningful words are represented by combinations of meaningless letters. Here we search for the evolutionary origin of this capacity in primates by designing dual-structured bigram symbol systems where different combinations of meaningless elements represent different objects. Initially, we trained Japanese macaques (Macaca fuscata) in an object-bigram symbolization task and in a visually-guided bigram construction task. Subsequently, we conducted a probe test using a symbolic bigram construction task. From the initial trial of the probe test, the Japanese macaques could sequentially choose the two elements of a bigram that was not actually seen but signified by a visually presented object. Moreover, the animals' spontaneous choice order bias, developed through the visually-guided bigram construction learning, was immediately generalized to the symbolic bigram construction test. Learning of dual-structured symbols by the macaques possibly indicates pre-linguistic adaptations for the ability of mentally constructing symbols in the common ancestors of humans and Old World monkeys.
https://www.nature.com/articles/s41598-022-07563-z

BAR EFRATI et al – Function, life histories, and biographies of Lower Paleolithic patinated flint tools from Late Acheulian Revadim, Israel

Flint tools exhibiting modified patinated surfaces ("double patina", or post-patination flaked items) provide a glimpse into Paleolithic lithic recycling, stone economy, and human choices. Different life cycles of such items are visually evident by the presence of fresh new modified surfaces alongside old patinated ones (according to color and texture differences). New modifications testify to a gap in time between the previous life cycle of the patinated flaked item and its new one. The aim of the current study is to reconstruct the functional properties and life cycles of a sample of modified patinated flaked tools from Late Acheulian Revadim, Israel by applying use-wear and residue analyses. The results of the functional study allow a

better understanding of the practical reasoning behind the collection and recycling of old flint tools, while additional inputs from theoretical and methodological advancements assist in reconstructing their probable role in the worldviews of the site's inhabitants.
https://www.nature.com/articles/s41598-022-06823-2

New Scientist

NEWS

Largest ever family tree of humanity reveals our species' history
A genealogy of humans constructed from thousands of genomes gives us clues about where our species first evolved and how we spread across the world.
https://www.newscientist.com/article/2309566-largest-ever-family-tree-of-humanity-reveals-our-species-history/#ixzz7MZGx9h13

PLoS One

PAPERS

MOHAMMAD SALAHSHOUR, VINCENT OBERHAUSER & MATTEO SMERLAK – The cost of noise: Stochastic punishment falls short of sustaining cooperation in social dilemma experiments
Identifying mechanisms able to sustain costly cooperation among self-interested agents is a central problem across social and biological sciences. One possible solution is peer punishment: when agents have an opportunity to sanction defectors, classical behavioral experiments suggest that cooperation can take root. Overlooked from standard experimental designs, however, is the fact that real-world human punishment—the administration of justice—is intrinsically noisy. Here we show that stochastic punishment falls short of sustaining cooperation in the repeated public good game. As punishment noise increases, we find that contributions decrease and punishment efforts intensify, resulting in a 45% drop in gains compared to a noiseless control. Moreover, we observe that uncertainty causes a rise in antisocial punishment, a mutually harmful behavior previously associated with societies with a weak rule of law. Our approach brings to light challenges to cooperation that cannot be explained by economic rationality and strengthens the case for further investigations of the effect of noise—and not just bias—on human behavior.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0263028

PNAS

PAPERS

FRANCIS MOLLICA et al – The forms and meanings of grammatical markers support efficient communication
Functionalist accounts of language suggest that forms are paired with meanings in ways that support efficient communication. Previous work on grammatical marking suggests that word forms have lengths that enable efficient production, and work on the semantic typology of the lexicon suggests that word meanings represent efficient partitions of semantic space. Here we establish a theoretical link between these two lines of work and present an information-theoretic analysis that captures how communicative pressures influence both form and meaning. We apply our approach to the grammatical features of number, tense, and evidentiality and show that the approach explains both which systems of feature values are attested across languages and the relative lengths of the forms for those feature values. Our approach shows that general information-theoretic principles can capture variation in both form and meaning across languages.
https://www.pnas.org/doi/10.1073/pnas.2025993118

Science Advances

PAPERS

SINA M. SCHALBETTER – Adolescence is a sensitive period for prefrontal microglia to act on cognitive development
The prefrontal cortex (PFC) is a cortical brain region that regulates various cognitive functions. One distinctive feature of the PFC is its protracted adolescent maturation, which is necessary for acquiring mature cognitive abilities in adulthood. Here, we show that microglia, the brain's resident immune cells, contribute to this maturational process. We find that transient and cell-specific deficiency of prefrontal microglia in adolescence is sufficient to induce an adult emergence of PFC-associated impairments in cognitive functions, dendritic complexity, and synaptic structures. While prefrontal microglia deficiency in adolescence also altered the excitatory-inhibitory balance in adult prefrontal circuits, there were no cognitive sequelae when prefrontal microglia were depleted in adulthood. Thus, our findings identify adolescence as a sensitive period for prefrontal microglia to act on cognitive development.
https://www.science.org/doi/full/10.1126/sciadv.abi6672

Trends in Cognitive Sciences

ARTICLES

SHANE STEINERT-THRELKELD – Explaining semantic typology, forms and all
By modeling both meaning and form in terms of efficient communication, Mollica et al. advance the state of the art in explaining the restricted variation exhibited in the world's languages. This opens an exciting path towards explanations of linguistic typology capturing the full richness of the form-meaning mappings in the world's languages.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00037-7

PAPERS

ADELE E. GOLDBERG & FERNANDA FERREIRA – Good-enough language production
Our ability to comprehend and produce language is one of humans' most impressive skills, but it is not flawless. We must convey and interpret messages via a noisy channel in ever-changing contexts and we sometimes fail to access an optimal combination of words and grammatical constructions. Here, we extend the notion of good-enough (GN) comprehension to GN production, which allows us to unify a wide range of phenomena including overly vague word choices, agreement errors, resumptive pronouns, transfer effects, and children's overextensions and regularizations. We suggest these all involve the accessing and production of a 'GN' option when a more-optimal option is inaccessible. The role of accessibility highlights the need to relate memory encoding and retrieval processes to language comprehension and production.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00020-1

THOMAS F. CHARTIER & JOËL FAGOT – Associative symmetry: a divide between humans and nonhumans?
Anthropocentrism can bias scientific conclusions. As a case study, we challenge the 40-year-old associative symmetry dogma, supposed to cognitively set apart humans from other species. Out of 37 human studies surveyed, only three truly demonstrate symmetry, of which only one (on five participants) suggests that symmetry is spontaneously formed.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00024-9

Trends in Neurosciences

PAPERS

CLAY B. HOLROYD – Interbrain synchrony: on wavy ground
In recent years the study of dynamic, between-brain coupling mechanisms has taken social neuroscience by storm. In particular, interbrain synchrony (IBS) is a putative neural mechanism said to promote social interactions by enabling the functional integration of multiple brains. In this article, I argue that this research is beset with three pervasive and interrelated problems. First, the field lacks a widely accepted definition of IBS. Second, IBS wants for theories that can guide the design and interpretation of experiments. Third, a potpourri of tasks and empirical methods permits undue flexibility when testing the hypothesis. These factors synergistically undermine IBS as a theoretical construct. I finish by recommending measures that can address these issues.
{I suggest that IBS has two other problems to solve. Does it have causation (an identifiable mechanism that enchains brains) or is it just correlation (brains thinking about the same thing tend to behave in roughly similar ways). The second problem is … IBS? Hasn't that contraction already been successfully colonised by Irritable Bowel Syndrome?}
https://www.cell.com/trends/neurosciences/fulltext/S0166-2236(22)00036-4

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