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NOTICES

PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, do please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.

If there is a journal you feel I should be tracking on a regular basis, do let me know.

And if you have any other ideas for extending the "EAORC experience", please contact me.

SCIENCE NEWS – Underwater caves in Mexico preserve one of the world's oldest ochre mines

Crouching as she wound her way through a pinched underground corridor, a young woman grasped a torch in one hand, soot blackening the craggy ceiling above her. Guided by stacks of stones deeper and deeper in the darkness of the cave, she finally spied her prize: a blood-red vein of rock in the fire-lit wall. It would be 10,000 years before another pair of eyes saw it again.

https://www.sciencemag.org/news/2020/07/underwater-caves-mexico-preserve-one-world-s-oldest-ochre-mines?utm_campaign=news_daily_2020-07-06&et rid=17774313&et cid=3390847

SOCIETY FOR SCIENCE – Underwater caves once hosted the Americas' oldest known ochre mines

Now-submerged chambers in Mexico's Yucatán Peninsula contain ancient evidence of extensive red ochre removal as early as 12,000 years ago.

<http://click.societyforscience->

[email.com/?qs=82d0816293fdd345aeaf93d8d68309de5f5529a54c301667e359ddb502fd4e9137f897bc06f94aca553bf6d49462b01770a05a51a513df](http://click.societyforscience-email.com/?qs=82d0816293fdd345aeaf93d8d68309de5f5529a54c301667e359ddb502fd4e9137f897bc06f94aca553bf6d49462b01770a05a51a513df)

BREAKING SCIENCE – Homo erectus Had Stocky Body Shape

An international team of researchers has created the first 3D reconstruction of the ribcage of the Turkana Boy, a skeleton of the juvenile Homo erectus — the most complete skeleton of this hominin ever found — from Nariokotome, Kenya, and compared it to those of Homo sapiens and Neanderthal.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/5YLu60fRfMA/homo-erectus-stocky-body-shape-08616.html?utm_source=feedburner&utm_medium=email

SCIENCE DAILY – Naturally perforated shells one of the earliest adornments in the Middle Paleolithic

Ancient humans deliberately collected perforated shells in order to string them together as beads, according to a new study.

<https://www.sciencedaily.com/releases/2020/07/200708150609.htm>

SCIENCE DAILY – 'Bystander Effect' not exclusive to humans

A rat is less likely to help a trapped companion if it is with other rats that aren't helping, according to new research that showed the social psychological theory of the "bystander effect" in humans is present in these long-tailed rodents.

<https://www.sciencedaily.com/releases/2020/07/200708150608.htm>

SCIENCE DAILY – Supergenes play a larger role in evolution than previously thought

Large blocks of 'plug and play' genes play a super-sized role in adaptation and may help fill lingering gaps in Darwin's theories.

<https://www.sciencedaily.com/releases/2020/07/200708125357.htm>

SCIENCE DAILY – Animals who try to sound 'bigger' are good at learning sounds

Some animals fake their body size by sounding 'bigger' than they actually are. Researchers studied 164 different mammals and found that animals who lower their voice to sound bigger are often skilled vocalists. Both strategies -- sounding bigger and learning sounds -- are likely driven by sexual selection, and may play a role in explaining the origins of human speech evolution.

<https://www.sciencedaily.com/releases/2020/07/200708105948.htm>

ACADEMIA.EDU – A Million Years of Hominin Sociality and Cognition

(2013). *BAR Publishing: Oxford, UK.*

CERI BEN KERSEY SHIPTON – A Million Years of Hominin Sociality and Cognition: Acheulean Bifaces in the Hunsgi-Balchbal Valley, India

The Acheulean spans over 1.5 million years of human history, during which time brain size increases from around 850 cubic centimetres in early Homo erectus, to 1300 cubic centimetres in Homo heidelbergensis, with body size remaining approximately constant. This book analyzes behaviour at the well-preserved locale of Isampur Quarry, India, in order to discern some of the socio-cognitive capacities of early Acheulean hominins. Experimental, artefactual and spatial evidence are used to reconstruct hominin behaviour at Isampur Quarry, which is unusual in having the entire reduction sequence of biface manufacture preserved at a single locale. The Isampur Quarry evidence suggests that Acheulean hominins had a

propensity for imitation and shared intentionality. These abilities may have been the basis for an iconic gestural communication system, which was used in co-ordinating co-operative activities. Isampur is situated in a regional context by comparing its bifaces with those from five other sites in the same valley, including one around 1 million years younger. Comparison with a further four well known sites from around the world provide a global context for Isampur. Bifaces are compared using three-dimensional geometric morphometrics to determine which sites have bifaces with similar morphologies. The study suggests that the dominant pattern of inter-site variation in biface shape is chronological, with bifaces become smaller, thinner and relatively wider over time. A broader comparative study using published metric data confirms this pattern and suggests that the trend corresponds to the increase in brain size during the Acheulean. It is concluded that there is a chronological trajectory of increasing motor skill and the hierarchical organisation of dynamic action plans during the Acheulean. This evidence is used to support the hypothesis that during the Acheulean, there was a transition from an iconic gestural communication system, to symbolic and syntactic vocal language.

[https://www.academia.edu/3095793/A Million Years of Hominin Sociality and Cognition Acheulean bifaces in the Hungari-Baichbal Valley India?email_work_card=minimal-title](https://www.academia.edu/3095793/A_Million_Years_of_Hominin_Sociality_and_Cognition_Acheulean_bifaces_in_the_Hungari-Baichbal_Valley_India?email_work_card=minimal-title)

THE CONVERSATION – How the brain builds a sense of self from the people around us – new research

How does the brain distinguish between the "self" and the "other"? A new study gives a clue.

<https://theconversationuk.cmail19.com/t/r-l-jkiygly-khhilillah-n/>

PUBLICATIONS

Animal Behaviour

PAPERS

JAVIER SIERRO, JAIME SIERRO & HANS SLABBEKOORN – Experimental test of the communicative value of syllable diversity and syllable switching in the common chiffchaff

All songbirds have their own species-specific song, and vocal variety among individuals of the same species is used for communication. Some aspects of vocal variety have been shown to relate to sender characteristics and thus to convey a potential message to receivers. During playback experiments, individuals show different response patterns, which provide evidence for perception, and thus meaning, of the vocal variety. Here, we tested the impact of two types of vocal variety: syllable diversity and syllable switching in the common chiffchaff, *Phylloscopus collybita*, in two separate playback experiments. We found that syllable diversity was a relatively fixed trait and that variation among individuals was likely to reflect some male quality triggering responses of different intensity. Higher rates of syllable switching did not elicit different responses but songs after playback showed that it is a dynamic trait, potentially contributing to motivational signalling together with other song parameters. The resolution of analyses in our experiments revealed subtle changes in vocal features over time in unprecedented detail. This approach unveiled an intricate combination of various vocal features during the response that may complement each other during vocal interactions. We believe future studies would benefit from the same resolution, through which one can explore advanced levels in animal communication.

https://www.sciencedirect.com/science/article/abs/pii/S0003347220301147?dgcid=raven_sd_via_email

Current Biology

ARTICLES

PETER J. MAKOVICKY & SUSHMA REDDY – Evolution: Brainier Birds

A groundbreaking study of brain evolution across birds and dinosaurs reveals potential drivers of increased brain size including biogeography and ecology. The most dramatic change occurred in the Neoaves after the Cretaceous-Paleogene extinction rather than earlier in bird evolution.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(20\)30664-3?dgcid=raven_jbs_etoc_email](https://www.cell.com/current-biology/fulltext/S0960-9822(20)30664-3?dgcid=raven_jbs_etoc_email)

PAPERS

TOSHITAKA N. SUZUKI – Other Species' Alarm Calls Evoke a Predator-Specific Search Image in Birds

Many animals produce vocal alarm signals when they detect a predator, and heterospecific species sharing predators often eavesdrop on and respond to these calls. Despite the widespread occurrence of interspecific eavesdropping in animals, its underlying cognitive process remains to be elucidated. If alarm calls, like human referential words, denote a specific predator type (e.g., "snake!"), then receivers may retrieve a mental image of the predator when hearing these calls. Here, using a recently developed experimental paradigm, I test whether heterospecific alarm calls evoke a predator-specific visual search image in wild birds. During playback of snake-specific alarm calls produced by Japanese tits (*Parus minor*), coal tits (*Periparus ater*) approach a wooden stick being moved in a snake-like manner. However, coal tits do not approach the same stick when hearing other call types or if the stick's movement is dissimilar to that of a snake. Thus, Japanese tit snake alarms cause coal tits to specifically enhance visual attention to snakelike objects. These results provide experimental evidence for the evocation of visual search images by heterospecific alarm calls, highlighting the importance of integrating cross-modal information in interspecific eavesdropping.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(20\)30578-9?dgcid=raven_jbs_etoc_email](https://www.cell.com/current-biology/fulltext/S0960-9822(20)30578-9?dgcid=raven_jbs_etoc_email)

ADAM BULLEY et al with THOMAS SUDDENDORF – Children Devise and Selectively Use Tools to Offload Cognition

From maps sketched in sand to supercomputing software, humans ubiquitously enhance cognitive performance by creating and using artifacts that bear mental load. This extension of information processing into the environment has taken center stage in debates about the nature of cognition in humans and other animals. How does the human mind acquire such strategies? In two experiments, we investigated the developmental origins of cognitive offloading in 150 children aged between 4 and 11 years. We created a memory task in which children were required to recall the location of hidden targets. In one experiment, participants were provided with a pre-specified cognitive offloading opportunity: an option to mark the target locations with tokens during the hiding period. Even 4-year-old children quickly adopted this external strategy and, in line with a metacognitive account, children across ages offloaded more often when the task was more difficult. In a second experiment, we provided children with the means to devise their own cognitive offloading strategy. Very few younger children spontaneously devised a solution, but by ages 10 and 11, nearly all did so. In a follow-up test phase, a simple prompt greatly increased the rate at which the younger children devised an offloading strategy. These findings suggest that sensitivity to the difficulties of thinking arises early in development and improves throughout the early school years, with children learning to modify the world around them to compensate for their cognitive limits.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(20\)30851-4?dgcid=raven_jbs_aip_email](https://www.cell.com/current-biology/fulltext/S0960-9822(20)30851-4?dgcid=raven_jbs_aip_email)

Journal of Archaeological Method & Theory

PAPERS

MANUEL VAQUERO & FRANCESCA ROMAGNOLI – Searching for Lazy People: the Significance of Expedient Behavior in the Interpretation of Paleolithic Assemblages

A quick glance at the evolution of lithic assemblages throughout prehistory highlights a great variability in the time and effort invested in technological activities. This variability has been related to differences in the technological organization of human groups, giving rise to the distinction proposed by Binford between curated and expedient technologies. Curation has been the subject of much discussion with regard to its definition and archaeological implications, but expediency has received comparatively less interest from researchers. Nevertheless, expedient technologies are ubiquitous in the archaeological record and represent a large proportion of prehistoric lithic assemblages, even becoming clearly dominant in certain chronological and/or regional contexts. The aim of this paper is to characterize expedient technologies as low-cost strategies that can be identified in all the stages of the lithic production sequence, from raw material provisioning to tool manufacture. However, we will focus our attention on core reduction technologies, emphasizing the consequences of distinguishing between expedient and formal reduction strategies. Finally, some implications of expediency in archaeological interpretation will be discussed, focusing on the significance of expedient technologies in the cultural ascription of lithic assemblages.

<https://link.springer.com/article/10.1007/s10816-017-9339-x?sap-outbound-id=3CBB180477EE4842CB246BC602FAE28C8185A9D8>

Nature Scientific Reports

PAPERS

GRÉGOIRE BOULINGUEZ-AMBROISE et al – Human-like maternal left-cradling bias in monkeys is altered by social pressure

About 66–72% of human mothers cradle their infants on their left side. Given that left-cradling exposes the baby's face to the mother's left visual field (i.e., mainly projected to her right hemisphere) and is altered by emotional states such as stress, maternal left-cradling was interpreted as reflecting right-hemispheric dominance for emotional processing. Whether this phenomenon is unique to human evolution is still in debate. In the present study we followed 44 olive baboon (*Papio anubis*) mothers and their infants in different social groups. We found that a maternal cradling bias exists and is predominantly towards the left in a similar proportion as in humans, but shifts toward a right bias in mothers living in high density groups. The sensitivity of left-cradling to social pressure highlights its potential links with the mother's stress as reported in humans. Our finding clearly illustrates the phylogenetic continuity between humans and Old-World monkeys concerning this lateralization and its potential links with hemispheric specialization for emotions, inherited from a common ancestor 25–35 million years ago.

<https://www.nature.com/articles/s41598-020-68020-3>

PLoS One

PAPERS

DANIELLA E. BAR-YOSEF MAYER et al with OFER BAR-YOSEF – On holes and strings: Earliest displays of human adornment in the Middle Palaeolithic

Glycymeris shell beads found in Middle Palaeolithic sites are understood to be artifacts collected by modern humans for symbolic use. In Misliya Cave, Israel, dated to 240–160 ka BP, Glycymeris shells were found that were neither perforated nor manipulated; nevertheless, transportation to the cave is regarded as symbolic. In about 120 ka BP at Qafzeh Cave, Israel, modern humans collected naturally perforated Glycymeris shells also for symbolic use. Use-wear analyses backed by experiments demonstrate that the Qafzeh shells were suspended on string, thus suggesting that the collection of perforated

shells was intentional. The older Misliya shells join a similar finding from South Africa, while the later-dated perforated shells from Qafzeh resemble other assemblages from North Africa and the Levant, also dated to about 120 ka BP. We conclude that between 160 ka BP and 120 ka BP there was a shift from collecting complete valves to perforated ones, which reflects both the desire and the technological ability to suspend shell beads on string to be displayed on the human body.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0234924>

PNAS

PAPERS

LARRY WASSERMAN, AADITYA RAMDAS & SIVARAMAN BALAKRISHNAN – Universal inference

We propose a general method for constructing confidence sets and hypothesis tests that have finite-sample guarantees without regularity conditions. We refer to such procedures as “universal.” The method is very simple and is based on a modified version of the usual likelihood-ratio statistic that we call “the split likelihood-ratio test” (split LRT) statistic. The (limiting) null distribution of the classical likelihood-ratio statistic is often intractable when used to test composite null hypotheses in irregular statistical models. Our method is especially appealing for statistical inference in these complex setups. The method we suggest works for any parametric model and also for some nonparametric models, as long as computing a maximum-likelihood estimator (MLE) is feasible under the null. Canonical examples arise in mixture modeling and shape-constrained inference, for which constructing tests and confidence sets has been notoriously difficult. We also develop various extensions of our basic methods. We show that in settings when computing the MLE is hard, for the purpose of constructing valid tests and intervals, it is sufficient to upper bound the maximum likelihood. We investigate some conditions under which our methods yield valid inferences under model misspecification. Further, the split LRT can be used with profile likelihoods to deal with nuisance parameters, and it can also be run sequentially to yield anytime-valid P values and confidence sequences. Finally, when combined with the method of sieves, it can be used to perform model selection with nested model classes.

<https://www.pnas.org/content/early/2020/07/02/1922664117.abstract?etoc>

EVAN M. GORDON et al – Default-mode network streams for coupling to language and control systems

The human brain is organized into large-scale networks identifiable using resting-state functional connectivity (RSFC). These functional networks correspond with broad cognitive domains; for example, the Default-mode network (DMN) is engaged during internally oriented cognition. However, functional networks may contain hierarchical substructures corresponding with more specific cognitive functions. Here, we used individual-specific precision RSFC to test whether network substructures could be identified in 10 healthy human brains. Across all subjects and networks, individualized network subdivisions were more valid—more internally homogeneous and better matching spatial patterns of task activation—than canonical networks. These measures of validity were maximized at a hierarchical scale that contained ~83 subnetworks across the brain. At this scale, nine DMN subnetworks exhibited topographical similarity across subjects, suggesting that this approach identifies homologous neurobiological circuits across individuals. Some DMN subnetworks matched known features of brain organization corresponding with cognitive functions. Other subnetworks represented separate streams by which DMN couples with other canonical large-scale networks, including language and control networks. Together, this work provides a detailed organizational framework for studying the DMN in individual humans.

<https://www.pnas.org/content/early/2020/06/30/2005238117.abstract?etoc>

AMAURY AVRIL et al – Maternal effect killing by a supergene controlling ant social organization

Supergenes underlie striking polymorphisms in nature, yet the evolutionary mechanisms by which they arise and persist remain enigmatic. These clusters of linked loci can spread in populations because they captured coadapted alleles or by selfishly distorting the laws of Mendelian inheritance. Here, we show that the supergene haplotype associated with multiple-queen colonies in Alpine silver ants is a maternal effect killer. All eggs from heterozygous queens failed to hatch when they did not inherit this haplotype. Hence, the haplotype specific to multiple-queen colonies is a selfish genetic element that enhances its own transmission by causing developmental arrest of progeny that do not carry it. At the population level, such transmission ratio distortion favors the spread of multiple-queen colonies, to the detriment of the alternative haplotype associated with single-queen colonies. Hence, selfish gene drive by one haplotype will impact the evolutionary dynamics of alternative forms of colony social organization. This killer hidden in a social supergene shows that large nonrecombining genomic regions are prone to cause multifarious effects across levels of biological organization.

{So genetic fitness does not always operate through competition at the phenotypic level, it can operate through competition at the genotypic level.}

<https://www.pnas.org/content/early/2020/07/06/2003282117.abstract?etoc>

Proceedings of the Royal Society B

PAPERS

G. SANSALONE et al – Variation in the strength of allometry drives rates of evolution in primate brain shape

Large brains are a defining feature of primates, as is a clear allometric trend between body mass and brain size. However, important questions on the macroevolution of brain shape in primates remain unanswered. Here we address two: (i), does

the relationship between the brain size and its shape follow allometric trends and (ii), is this relationship consistent over evolutionary time? We employ three-dimensional geometric morphometrics and phylogenetic comparative methods to answer these questions, based on a large sample representing 151 species and most primate families. We found two distinct trends regarding the relationship between brain shape and brain size. Hominoidea and Cercopithecoidea showed significant evolutionary allometry, whereas no allometric trends were discernible for Strepsirrhini, Colobinae or Platyrrhini. Furthermore, we found that in the taxa characterized by significant allometry, brain shape evolution accelerated, whereas for taxa in which such allometry was absent, the evolution of brain shape decelerated. We conclude that although primates in general are typically described as large-brained, strong allometric effects on brain shape are largely confined to the order's representatives that display more complex behavioural repertoires.

<https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.0807>

Trends in Cognitive Sciences

PAPERS

DANIEL J. HORSCHLER, EVAN L. MACLEAN & LAURIE R. SANTOS – Do Non-Human Primates Really Represent Others' Beliefs?

Over two decades of research have produced compelling evidence that non-human primates understand some psychological states in other individuals but are unable to represent others' beliefs. Recently, three studies employing anticipatory looking (AL) paradigms reported that non-human primates do show hints of implicitly understanding the beliefs of others. However, measures of AL have been increasingly scrutinized in the human literature owing to extensive replication problems. We argue that new reports of belief representation in non-human primates using AL should be interpreted cautiously because of methodological and theoretical challenges paralleling trends in the human literature. We explore how future work can address these challenges, and conclude by identifying new evolutionary questions raised by the prospect that non-human primates implicitly represent others' beliefs without an explicit belief representation system that guides fitness-relevant behavior.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(20\)30133-9?dgcid=raven_jbs_etoc_email](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(20)30133-9?dgcid=raven_jbs_etoc_email)

MAXIME DEREK & ALEX MESOUDI – Cumulative Cultural Evolution within Evolving Population Structures

Our species has the peculiar ability to accumulate cultural innovations over multiple generations, a phenomenon termed 'cumulative cultural evolution' (CCE). Recent years have seen a proliferation of empirical and theoretical work exploring the interplay between demography and CCE. This has generated intense discussion about whether demographic models can help explain historical patterns of cultural changes. Here, we synthesize empirical and theoretical studies from multiple fields to highlight how both population size and structure can shape the pool of cultural information that individuals can build upon to innovate, present the potential pathways through which humans' unique social structure might promote CCE, and discuss whether humans' social networks might partly result from selection pressures linked to our extensive reliance on culturally accumulated knowledge.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(20\)30107-8?dgcid=raven_jbs_etoc_email](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(20)30107-8?dgcid=raven_jbs_etoc_email)

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