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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.

EAORC NEWS – Replacing the Membership Page on the Website

The new membership page is now live. If you wish to add a comment, just send me a few kind words about EAORC and I'll include them.

You can add a comment no matter how you receive the bulletin – first-hand by email every Sunday, by copied email, by ResearchGate notification, or any way you access the bulletin.

Many thanks in anticipation, and especial thanks to those who have already responded.

Martin

ACADEMIA.EDU – Using mental bias to construct a model of cognition

In Academia Letters 1681 (2021).

LORIN FRIESEN – Using mental bias to construct a model of cognition

Immanuel Kant suggested back in 1781 that the structure of the mind causes people to interpret reality in certain ways (Smith, 2011). For instance, people believe that reality is composed of space and time because the mind thinks in terms of space and time. Kant's statements have been interpreted in many different ways (Stang, 2016), but the basic principle is that the mind is imposing its structure upon observations of physical reality. This mental imposition suggests a possible method for studying the mind. Stated briefly, a cognitive mechanism can be defined as a form of thinking that results from the structure of the mind; thinking is being pushed in directions that are cognitively natural. Cognitive mechanisms can be uncovered by looking for common thinking patterns in different fields, a methodology that could be described as semi-rigorous analogical reasoning.

https://www.academia.edu/49834467/Using_mental_bias_to_construct_a_model_of_cognition

ACADEMIA.EDU – Fossils, feet and the evolution of human bipedal locomotion

Journal of Anatomy 204, 403-416 (2004)

W. E. H. HARCOURT-SMITH & L. C. AIELLO – Fossils, feet and the evolution of human bipedal locomotion

We review the evolution of human bipedal locomotion with a particular emphasis on the evolution of the foot. We begin in the early twentieth century and focus particularly on hypotheses of an ape-like ancestor for humans and human bipedal locomotion put forward by a succession of Gregory, Keith, Morton and Schultz. We give consideration to Morton's (1935) synthesis of foot evolution, in which he argues that the foot of the common ancestor of modern humans and the African apes would be intermediate between the foot of Pan and Hylobates whereas the foot of a hypothetical early hominin would be intermediate between that of a gorilla and a modern human. From this base rooted in comparative anatomy of living primates we trace changing ideas about the evolution of human bipedalism as increasing amounts of postcranial fossil material were discovered. Attention is given to the work of John Napier and John Robinson who were pioneers in the interpretation of Plio-Pleistocene hominin skeletons in the 1960s. This is the period when the wealth of evidence from the southern African australopithecine sites was beginning to be appreciated and Olduvai Gorge was revealing its first evidence for Homo habilis. In more recent years, the discovery of the Laetoli footprint trail, the AL 288-1 (A. afarensis) skeleton, the wealth of postcranial material from Koobi Fora, the Nariokotome Homo ergaster skeleton, Little Foot (Stw 573) from Sterkfontein in South Africa, and more recently tantalizing material assigned to the new and very early taxa Orrorin tugenensis, Ardipithecus ramidus and Sahelanthropus tchadensis has fuelled debate and speculation. The varying interpretations based on this material, together with changing theoretical insights and analytical approaches, is discussed and assessed in the context of new three-dimensional morphometric analyses of australopithecine and Homo foot bones, suggesting that there may have been greater diversity in human bipedalism in the earlier phases of our evolutionary history than previously suspected.

https://www.academia.edu/3179963/Fossils_feet_and_the_evolution_of_human_bipedal_locomotion

RESEARCHGATE – White-handed gibbons discriminate context-specific song compositions

PeerJ 8:e9477 (2020)

JULIE ANDRIEU et al with KLAUS ZUBERBÜHLER – White-handed gibbons discriminate context-specific song compositions

White-handed gibbons produce loud and acoustically complex songs when interacting with their neighbours or when encountering predators. In both contexts, songs are assembled from a small number of units although their composition differs in context-specific ways. Here, we investigated whether wild gibbons could infer the 'meaning' when hearing exemplars recorded in both contexts (i.e. 'duet songs' vs. 'predator songs'). We carried out a playback experiment by which we simulated the presence of a neighbouring group producing either its duet or a predator song in order to compare subjects' vocal and locomotor responses. When hearing a recording of a duet song, subjects reliably responded with their own duet song, which sometimes elicited further duet songs in adjacent groups. When hearing a recording of a predator song, however, subjects typically remained silent, apart from one of six groups which replied with its own predator song. Moreover, in two of six trials, playbacks of predator songs elicited predator song replies in non-adjacent groups. Finally, all groups showed strong anti-predator behaviour to predator songs but never to duet songs. We concluded that white-handed gibbons discriminated between the two song types and were able to infer meaning from them. We discuss the implications of these findings in light of the current debate on the evolutionary origins of syntax.

https://www.researchgate.net/publication/343400981_White-handed_gibbons_discriminate_context-specific_song_compositions

NEWS

BREAKING SCIENCE – Foodways and Plant Processing at Neolithic Çatalhöyük

Archaeologists have analyzed a rich microbotanical assemblage from Çatalhöyük, a renowned archaeological site in central Anatolia, Turkey, best known for its Neolithic occupation dated from 7100 to 6000 BCE.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/rrWnNT_jWEg/foodways-plant-processing-neolithic-catalhoyuk-09872.html?utm_source=feedburner&utm_medium=email

SAPIENS – Introducing "anthropology intelligence"

Anthropologist and journalist Gillian Tett explains the surprising ways anthropological methods and tools can help us better understand the contemporary world.

<https://sapiens.us11.list-manage.com/track/click?u=80f6cf678900daf984bf763b7&id=8840414dc2&e=dc0eff6180>

SCIENCE DAILY – Clever cockatoos learn through social interaction

Scientists have shown that cockatoos, an iconic Australian bird species, learn from each other a unique skill -- lifting garbage bin lids to gather food. The research confirms that cockatoos spread this novel behavior through social learning. This behavior by cockatoos is actually learnt, rather than a result of genetics.

<https://www.sciencedaily.com/releases/2021/07/210722142003.htm>

SCIENCE DAILY – Research 'final nail in the coffin' of Paranthropus as hard object feeders

New research debunks a long-held belief about our ancestors' eating habits.

<https://www.sciencedaily.com/releases/2021/07/210723105253.htm>

SCIENCE NEWS – Australia's cockatoos are learning dumpster diving from each other

Sulphur-crested cockatoos have distinctive yellow crests, calls, and—according to a new study—dumpster-diving skills. In recent years, some cockatoos living in the Sydney suburbs have figured out how to open household garbage cans, unlocking a food bonanza of sandwiches, fish bones, and fruit. Other cockatoos have picked up on the trick, and the behavior is quickly spreading. What's more, birds in different locations use slightly different methods to open the cans, making this the first time a parrot has been found with local foraging "subcultures," say the authors of the new paper.

<https://www.sciencemag.org/news/2021/07/australia-s-cockatoos-are-masters-dumpster-diving-and-now-they-re-learning-each-other>

SOCIETY FOR SCIENCE – Only a tiny fraction of our DNA is uniquely human

Some of the exclusively human tweaks to DNA may have played a role in brain evolution.

<http://click.societyforscience-email.com/?qs=c534ea70ed5cfe595466ceaa924ca7ae65cf6c40eaad56a90f07a7f88bd18c19ea41df367d2c036e31534f6421983659c341c9c48a9f94f522cc56a719590189>

THE CONVERSATION – Can consciousness be explained by quantum physics? A step closer to finding out

New experiments could help scientists settle the longstanding debate about whether consciousness is generated by quantum activity.

<https://theconversationuk.cmail19.com/t/r-l-tlkd kitt-khhilillah-k/>

THE CONVERSATION – When a volcanic ‘super-eruption’ caused sudden cooling, early humans got lucky

Toba eruption caused temperatures to plummet by up to 10°C in some regions – but not where most humans lived.

<https://theconversationuk.cmail19.com/t/r-l-tlkhix-khhilillah-v/>

THE CONVERSATION – Clever cockatoos in Sydney have learned to open kerbside bins

Move over, bin chickens: bin cockies are here, and scientists say they're confirming the cultural intelligence hypothesis.

<https://theconversationuk.cmail20.com/t/r-l-tlkuyuid-khhilillah-g/>

PUBLICATIONS

Frontiers in Neuroscience

PAPERS

ALESSANDRO DELL'ANNA, MARC LEMAN & ANNAMARIA BERTI – Musical Interaction Reveals Music as Embodied Language

Life and social sciences often focus on the social nature of music (and language alike). In biology, for example, the three main evolutionary hypotheses about music (i.e., sexual selection, parent-infant bond, and group cohesion) stress its intrinsically social character (Honing et al., 2015). Neurobiology thereby has investigated the neuronal and hormonal underpinnings of musicality for more than two decades (Chanda and Levitin, 2013; Salimpoor et al., 2015; Mehr et al., 2019). In line with these approaches, the present paper aims to suggest that the proper way to capture the social interactive nature of music (and, before it, musicality), is to conceive of it as an embodied language, rooted in culturally adapted brain structures (Clarke et al., 2015; D'Ausilio et al., 2015). This proposal heeds Ian Cross' call for an investigation of music as an “interactive communicative process” rather than “a manifestation of patterns in sound” (Cross, 2014), with an emphasis on its embodied and predictive (coding) aspects (Clark, 2016; Leman, 2016; Koelsch et al., 2019). In the present paper our goal is: (i) to propose a framework of music as embodied language based on a review of the major concepts that define joint musical action, with a particular emphasis on embodied music cognition and predictive processing, along with some relevant neural underpinnings; (ii) to summarize three experiments conducted in our laboratories (and recently published), which provide evidence for, and can be interpreted according to, the new conceptual framework. In doing so, we draw on both cognitive musicology and neuroscience to outline a comprehensive framework of musical interaction, exploring several aspects of making music in dyads, from a very basic proto-musical action, like tapping, to more sophisticated contexts, like playing a jazz standard and singing a hockey melody. Our framework combines embodied and predictive features, revolving around the concept of joint agency (Pacherie, 2012; Keller et al., 2016; Bolt and Loehr, 2017). If social interaction is the “default mode” by which human brains communicate with their environment (Hari et al., 2015), music and musicality conceived of as an embodied language may arguably provide a route toward its navigation.

<https://www.frontiersin.org/articles/10.3389/fnins.2021.667838/full>

Language and Cognition

PAPERS

ANA PAULA SOARES et al – Literacy effects on artificial grammar learning (AGL) with letters and colors: evidence from preschool and primary school children

Literacy affects many aspects of language and cognition, including the shift from a more holistic mode of processing to a more analytical part-based mode of processing. Here we examined whether this shift impacts the ability of preschool and primary school children to learn the rules underlying a finite-state grammar using an artificial grammar learning (AGL) paradigm implemented with either linguistic (letters) or non-linguistic (colors) materials to further examine if children's AGL performance was modulated by type of stimuli. Both tasks involved a training phase in which half of the preschool children and half of the primary school children were exposed to a set of either letter or color strings without any information about the rules underlying the construction of those strings. Later, in the test phase, they were asked to decide whether a new set of letter or color strings conformed to those rules to test grammar learning. Results showed that only primary school children showed evidence of learning, and, importantly, only with colors. These findings seem to support the view that learning to read promotes reliance on smaller linguistic units that might hinder the ability of first-graders to learn the rules underlying finite-state grammars implemented with linguistic materials.

<https://www.cambridge.org/core/journals/language-and-cognition/article/abs/literacy-effects-on-artificial-grammar-learning-agl-with-letters-and-colors-evidence-from-preschool-and-primary-school-children/682BD47546F35FEB08ECA3D17E6A2092>

Nature Communications

PAPERS

EVONNE MCARTHUR, DAVID C. RINKER & JOHN A. CAPRA – Quantifying the contribution of Neanderthal introgression to the heritability of complex traits

Eurians have ~2% Neanderthal ancestry, but we lack a comprehensive understanding of the genome-wide influence of Neanderthal introgression on modern human diseases and traits. Here, we quantify the contribution of introgressed alleles to the heritability of more than 400 diverse traits. We show that genomic regions in which detectable Neanderthal ancestry remains are depleted of heritability for all traits considered, except those related to skin and hair. Introgressed variants themselves are also depleted for contributions to the heritability of most traits. However, introgressed variants shared across multiple Neanderthal populations are enriched for heritability and have consistent directions of effect on several traits with potential relevance to human adaptation to non-African environments, including hair and skin traits, autoimmunity, chronotype, bone density, lung capacity, and menopause age. Integrating our results, we propose a model in which selection against introgressed functional variation was the dominant trend (especially for cognitive traits); however, for a few traits, introgressed variants provided beneficial variation via uni-directional (e.g., lightening skin color) or bi-directional (e.g., modulating immune response) effects.

<https://www.nature.com/articles/s41467-021-24582-y>

Nature Scientific Reports

PAPERS

LARA M. SOUTHERN, TOBIAS DESCHNER & SIMONE PIKA – Lethal coalitionary attacks of chimpanzees (*Pan troglodytes troglodytes*) on gorillas (*Gorilla gorilla gorilla*) in the wild

Intraspecific violence, including lethal interactions, is a relatively common phenomenon in mammals. Contrarily, interspecies violence has mainly been investigated in the context of predation and received most research attention in carnivores. Here, we provide the first information of two lethal coalitionary attacks of chimpanzees (*Pan troglodytes troglodytes*) on another hominid species, western lowland gorillas (*Gorilla gorilla gorilla*), that occur sympatrically in the Loango National Park in Gabon. In both events, the chimpanzees significantly outnumbered the gorillas and victims were infant gorillas. We discuss these observations in light of the two most widely accepted theoretical explanations for interspecific lethal violence, predation and competition, and combinations of the two-intraguild predation and interspecific killing. Given these events meet conditions proposed to trigger coalitional killing of neighbours in chimpanzees, we also discuss them in light of chimpanzees' intraspecific interactions and territorial nature. Our findings may spur further research into the complexity of interspecies interactions. In addition, they may aid in combining field data from extant models with the Pliocene hominid fossil record to better understand behavioural adaptations and interspecific killing in the hominin lineage.

<https://www.nature.com/articles/s41598-021-93829-x>

ADAM B. ROHRLACH et al with JOHANNES KRAUSE – Using Y-chromosome capture enrichment to resolve haplogroup H2 shows new evidence for a two-path Neolithic expansion to Western Europe

Uniparentally-inherited markers on mitochondrial DNA (mtDNA) and the non-recombining regions of the Y chromosome (NRY), have been used for the past 30 years to investigate the history of humans from a maternal and paternal perspective. Researchers have preferred mtDNA due to its abundance in the cells, and comparatively high substitution rate. Conversely, the NRY is less susceptible to back mutations and saturation, and is potentially more informative than mtDNA owing to its longer sequence length. However, due to comparatively poor NRY coverage via shotgun sequencing, and the relatively low and biased representation of Y-chromosome variants on capture assays such as the 1240 k, ancient DNA studies often fail to utilize the unique perspective that the NRY can yield. Here we introduce a new DNA enrichment assay, coined YMCA (Y-mappable capture assay), that targets the "mappable" regions of the NRY. We show that compared to low-coverage shotgun sequencing and 1240 k capture, YMCA significantly improves the mean coverage and number of sites covered on the NRY, increasing the number of Y-haplogroup informative SNPs, and allowing for the identification of previously undiscovered variants. To illustrate the power of YMCA, we show that the analysis of ancient Y-chromosome lineages can help to resolve Y-chromosomal haplogroups. As a case study, we focus on H2, a haplogroup associated with a critical event in European human history: the Neolithic transition. By disentangling the evolutionary history of this haplogroup, we further elucidate the two separate paths by which early farmers expanded from Anatolia and the Near East to western Europe.

<https://www.nature.com/articles/s41598-021-94491-z>

New Scientist

NEWS

Meet the puzzle-solving gorillas shedding light on how speech evolved

There are many ways that our great ape relatives can remind us of ourselves: through their anatomy, cleverness and social relationships, for instance. But never has the resemblance been so striking for me as today, when I watch gorillas carrying out a very human past-time: solving puzzles.

<https://www.newscientist.com/article/2284063-meet-the-puzzle-solving-gorillas-shedding-light-on-how-speech-evolved/#ixzz71OFzzC9I>

PLoS One

PAPERS

EDGAR ANDRADE-LOTERO & ROBERT L. GOLDSTONE – Self-organized division of cognitive labor

Often members of a group benefit from dividing the group's task into separate components, where each member specializes their role so as to accomplish only one of the components. While this division of labor phenomenon has been observed with respect to both manual and cognitive labor, there is no clear understanding of the cognitive mechanisms allowing for its emergence, especially when there are multiple divisions possible and communication is limited. Indeed, maximization of expected utility often does not differentiate between alternative ways in which individuals could divide labor. We developed an iterative two-person game in which there are multiple ways of dividing labor, but in which it is not possible to explicitly negotiate a division. We implemented the game both as a human experimental task and as a computational model. Our results show that the majority of human dyads can finish the game with an efficient division of labor. Moreover, we fitted our computational model to the behavioral data, which allowed us to explain how the perceived similarity between a player's actions and the task's focal points guided the players' choices from one round to the other, thus bridging the group dynamics and its underlying cognitive process. Potential applications of this model outside cognitive science include the improvement of cooperation in human groups, multi-agent systems, as well as human-robot collaboration.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0254532>

PNAS

PAPERS

BENJAMIN A. BLACK et al – Global climate disruption and regional climate shelters after the Toba supereruption

The Toba eruption ~74,000 y ago was the largest volcanic eruption since the start of the Pleistocene and represents an important test case for understanding the effects of large explosive eruptions on climate and ecosystems. However, the magnitude and repercussions of climatic changes driven by the eruption are strongly debated. High-resolution paleoclimate and archaeological records from Africa find little evidence for the disruption of climate or human activity in the wake of the eruption in contrast with a controversial link with a bottleneck in human evolution and climate model simulations predicting strong volcanic cooling for up to a decade after a Toba-scale eruption. Here, we use a large ensemble of high-resolution Community Earth System Model (CESM1.3) simulations to reconcile climate model predictions with paleoclimate records, accounting for uncertainties in the magnitude of Toba sulfur emissions with high and low emission scenarios. We find a near-zero probability of annual mean surface temperature anomalies exceeding 4 °C in most of Africa in contrast with near 100% probabilities of cooling this severe in Asia and North America for the high sulfur emission case. The likelihood of strong decreases in precipitation is low in most of Africa. Therefore, even Toba sulfur release at the upper range of plausible estimates remains consistent with the muted response in Africa indicated by paleoclimate proxies. Our results provide a probabilistic view of the uneven patterns of volcanic climate disruption during a crucial interval in human evolution, with implications for understanding the range of environmental impacts from past and future supereruptions.

<https://www.pnas.org/content/118/29/e2013046118.abstract?etoc>

Science Advances

COMMENTARIES

JONATHAN RAWSKI, WILLIAM IDSARDI & JEFFREY HEINZ – Comment on “Nonadjacent dependency processing in monkeys, apes, and humans”

We comment on the technical interpretation of the study of watson et al. And caution against their conclusion that the behavioral evidence in their experiments points to nonhuman animals' ability to learn syntactic dependencies, because their results are also consistent with the learning of phonological dependencies in human languages.

<https://advances.sciencemag.org/content/7/30/eabg0455>

STUART K. WATSON et al with JUDITH M. BURKART & SIMON W. TOWNSEND – Reply to comment on “Nonadjacent dependency processing in monkeys, apes, and humans”

Rawski et al. Revisit our recent findings suggesting the latent ability to process nonadjacent dependencies (“non-ads”) in monkeys and apes. Specifically, the authors question the relevance of our findings for the evolution of human syntax. We argue that (i) these conclusions hinge upon an assumption that language processing is necessarily hierarchical, which remains an open question, and (ii) our goal was to probe the foundational cognitive mechanisms facilitating the processing of syntactic non-ads—namely, the ability to recognize predictive relationships in the input.

<https://advances.sciencemag.org/content/7/30/eabj1517>

Scientific American

ARTICLES

CAITLIN O'CONNELL – Play Is Serious Business for Elephants

Young dogs, apes and other animals develop skills needed to survive and reproduce

<https://www.scientificamerican.com/article/play-is-serious-business-for-elephants/>

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