

EAORC BULLETIN 1,002 – 28 August 2022

CONTENTS

NOTICES	2
PUBLICATION ALERTS.....	2
EAORC NEWS – Congratulations for 1,000th Issue.....	2
ACADEMIA.EDU – Decentering the brain: Embodied cognition and the critique of neurocentrism.....	2
SHAUN GALLAGHER – Decentering the brain: Embodied cognition and the critique of neurocentrism and narrow-minded philosophy of mind.....	2
ACADEMIA.EDU – Bear Ceremonialism in relation to three ritual healers.....	3
ROSLYN M. FRANK – Bear Ceremonialism in relation to three ritual healers: The Basque salutariyua, the French marcou and the Italian maramao.....	3
RESEARCHGATE – Symbolic Signal Use in Wild Chimpanzee Gestural Communication.....	3
JULIA CISSEWSKI & LYDIA LUNCZ – Symbolic Signal Use in Wild Chimpanzee Gestural Communication? A Theoretical Framework.....	3
RESEARCHGATE – Disentangling Neolithic cuisine: archaeological evidence at Çatalhöyük East.....	3
LARA GONZÁLEZ CARRETERO et al – Disentangling Neolithic cuisine: archaeological evidence for 9,000-year-old food preparation practices and cooking techniques at Çatalhöyük East.....	3
NEWS	4
NATURE BRIEFING – Did this ancient hominin walk upright?.....	4
SCIENCE NEWS – Human ancestors were walking upright 7 million years ago, ancient limb bone suggests.....	4
SCIENCE NEWS – ‘Phenomenal’ ancient DNA data set gives clues to origin of farming & early languages.....	4
SOCIETY FOR SCIENCE – 7-million-year-old limb fossils may be from the earliest known hominid.....	4
THE CONVERSATION – Breakthrough shows humans were already standing on their own two feet 7mya.....	4
OTHER NEWS – SPRINGER – Archaeological sites in reservoirs and the Dolmen de Guadalperal.....	4
ENRIQUE CERRILLO-CUENCA, JOSÉ JUAN DE SANJOSÉ BLASCO, PRIMITIVA BUENO RAMÍREZ, JUAN ANTONIO PÉREZ, RODRIGO DE BALBIN-BEHRMANN & MANUEL SÁNCHEZ FERNÁNDEZ – Emergent heritage: the digital conservation of archaeological sites in reservoirs and the case of the Dolmen de Guadalperal (Spain).....	4
PUBLICATIONS	4
Current Biology.....	4
PAPERS	4
CHRISTINA RIEHL & ZACHARIAH FOX SMART – Climate fluctuations influence variation in group size in a cooperative bird.....	4
NIR OFIR & AYELET N. LANDAU – Neural signatures of evidence accumulation in temporal decisions.....	5
PATRICIA L. LOCKWOOD – Distinct neural representations for prosocial and self-benefiting effort.....	5
eLife.....	5
PAPERS	5
DARSHANA Z NARAYANAN et al – Prenatal development of neonatal vocalizations.....	5
KEVIN J MILLER, MATTHEW M BOTVINICK & CARLOS D BRODY – Value representations in the rodent orbitofrontal cortex drive learning, not choice.....	6
Nature.....	6
NEWS	6
Seven-million-year-old femur suggests ancient human relative walked upright.....	6
ARTICLES	6
DANIEL E. LIEBERMAN – Standing up for the earliest bipedal hominins.....	6
PAPERS	6
G. DAVER et al – Postcranial evidence of late Miocene hominin bipedalism in Chad.....	6
ABIGAIL S. GREENE et al – Brain–phenotype models fail for individuals who defy sample stereotypes.....	6
Nature Communications.....	7
PAPERS	7
FANG-CHENG YEH – Population-based tract-to-region connectome of the human brain and its hierarchical topology.....	7
Nature Scientific Reports.....	7
PAPERS	7
CHEN Si et al – Modelling representations in speech normalization of prosodic cues.....	7
GIOVANNI GRANATO et al – A computational model of inner speech supporting flexible goal-directed behaviour in Autism.....	7
ALEX S. MEARING et al with JUDITH M. BURKART – The evolutionary drivers of primate scleral coloration.....	7
TIAGO FALÓTICO et al – Stone tools differences across three capuchin monkey populations: food’s physical properties, ecology, and culture.....	8
VIVIANE SLON et al with RON SHIMELMITZ – Extended longevity of DNA preservation in Levantine Paleolithic sediments, Sefunim Cave, Israel.....	8
PLoS One.....	8

PAPERS.....	8
STEPHEN A. GALLO & KAREN B. SCHMALING – Peer review: Risk and risk tolerance	8
LILLA MAGYARI, CSABA PLÉH & BÁLINT FORGÁCS – The Hungarian hubris syndrome	8
KATHERINE MCAULIFFE, NATALIE BENJAMIN & FELIX WARNEKEN – Reward type influences adults’ rejections of inequality in a task designed for children.....	9
MARTHA M. ROBBINS, SYLVIA ORTMANN & NICOLE SEILER – Dietary variability of western gorillas (<i>Gorilla gorilla gorilla</i>).....	9
TRISTAN CARTER & VASSILIS KILIKOGLU – Raw material choices and technical practices as indices of cultural change: Characterizing obsidian consumption at ‘Mycenaean’ Quartier Nu, Malia (Crete)	9
SOFIA C. SAMPER-CARRO et al with CERI SHIPTON – Talking Dead. New burials from Tron Bon Lei (Alor Island, Indonesia) inform on the evolution of mortuary practices from the terminal Pleistocene to the Holocene in Southeast Asia	9
XIAOJIA TANG, SHUI SHEN & XIN SU – From rammed earth to stone wall: Chronological insight into the settlement change of the Lower Xiajiadian culture	10
MAHO NAKAGAWA, MATHIEU LEFEBVRE & ANNE STENGER – Long-lasting effects of incentives and social preference: A public goods experiment	10
Science.....	10
ARTICLES.....	10
BENJAMIN S. ARBUCKLE & ZOE SCHWANDT – Ancient genomes and West Eurasian history.....	10
PAPERS.....	10
IOSIF LAZARIDIS et mul with DAVID REICH – The genetic history of the Southern Arc: A bridge between West Asia and Europe.....	10
IOSIF LAZARIDIS et mul with DAVID REICH – A genetic probe into the ancient and medieval history of Southern Europe and West Asia	11
IOSIF LAZARIDIS et mul with DAVID REICH – Ancient DNA from Mesopotamia suggests distinct Pre-Pottery and Pottery Neolithic migrations into Anatolia	11
SUBSCRIBE to the EAORC Bulletin	11
UNSUBSCRIBE from the EAORC Bulletin	11
PRODUCED BY AND FOR THE EAORC EMAIL GROUP.....	11

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.

EAORC NEWS – Congratulations for 1,000th Issue

Thank you for the 1,000th issue. So many of us benefit from your work. We are truly grateful.

Joyce Benenson

Congratulations on passing the millennial milestone!

Keep up the good work, and best wishes.

Anthony Grant

ACADEMIA.EDU – Decentering the brain: Embodied cognition and the critique of neurocentrism

In Constructivist Foundations, 14:1, 8-21. (2018).

SHAUN GALLAGHER – Decentering the brain: Embodied cognition and the critique of neurocentrism and narrow-minded philosophy of mind

Challenges by embodied, enactive, extended and ecological approaches to cognition have provided good reasons to shift away from neurocentric theories. Classic cognitivist accounts tend towards internalism, representationalism and methodological individualism. Such accounts not only picture the brain as the central and almost exclusive mechanism of cognition, they also conceive of brain function in terms that ignore the dynamical relations among brain, body and environment. I review four areas of research (perception, action/ agency, self, social cognition) where enactivist accounts have shown alternative ways of thinking about the brain. Taken together, such analyses form a comprehensive alternative to the classic conceptions of cognitivist, computational neuroscience. Such considerations motivate the need to re-think our understanding of how the brain itself works. They suggest that the best explanation of brain function may be found in the mixed vocabularies of embodied and situated cognition, developmental psychology, ecological psychology, dynamic systems theory, applied linguistics, the theory of affordances and material engagement, rather than the narrow vocabulary of computational neuroscience. This account is consistent with an enactivist-constructivist approach to cognition.

https://www.academia.edu/78063901/Decentering_the_Brain_Embodied_Cognition_and_the_Critique_of_Neurocentrism_and_Narrow_Minded_Philosophy_of_Mind

ACADEMIA.EDU – Bear Ceremonialism in relation to three ritual healers

In Enrico Comba & Daniele Ormezzano (eds.), Uomini e Orsi: Morfologia del Selvaggio. Accademia University Press: Torino: Italy. (2015).

ROSLYN M. FRANK – Bear Ceremonialism in relation to three ritual healers: The Basque salutariyua, the French marcou and the Italian maramao

Throughout all of Europe we find examples of folk-belief assigning special qualities to the seventh-born son or daughter of a family. At times these attributes were positive, at times negative. However, they always had a magical aura about them (Bloch, [1924] 1983). For the most part, these beliefs have been written off as superstitious residue from times past and as a result little attention has been paid to documenting the concrete social practices associated with them. An exception to this tendency is the work of Marc Bloch, who in 1924, called attention to the supernatural powers attributed to the seventh son and at times, to the seventh daughter, born after an uninterrupted series of children of the same sex, remarking that seventh-born children were credited with a “particular supernatural power” (Bloch, [1924] 1983: 293, 296). Specifically, Bloch noted that from at least the 16th century onwards, children born into a seventh position in their family supposedly had the power to heal by touch. Such extraordinary people, often deemed sorcerers, even devils, were also referred to by a variety of expressions such as mahr (German) or murawa (Polish) and consequently they had the ambivalent privilege of tapping into powers that were inaccessible to normal humans. Specifically, they were viewed as having healing and divinatory powers, which could entail shape-shifting (Vaz da Silva, 2003). That is, those individuals were endowed with the ability to take the form of an animal. From the point of view of modern Western thought this belief causes the dividing line between humans and animals to become blurred. Nonetheless, that blurring or fusion of two natures would be in accordance with the cosmology of native peoples in other parts of the world, especially contemporary hunter-gatherers, where such animistic beliefs also prevail (Bird-David, 1999; Brightman, 2002; Ingold, 2000; Willerslev, 2007).

https://www.academia.edu/85283423/Bear_Ceremonialism_in_relation_to_three_ritual_healers_The_Basque_salutariyua_the_French_marcou_and_the_Italian_maramao

RESEARCHGATE – Symbolic Signal Use in Wild Chimpanzee Gestural Communication

In Frontiers in Psychology 12, 718414 (2021).

JULIA CISSEWSKI & LYDIA LUNCZ – Symbolic Signal Use in Wild Chimpanzee Gestural Communication? A Theoretical Framework

Symbolic communication is not obvious in the natural communicative repertoires of our closest living relatives, the great apes. However, great apes do show symbolic competencies in laboratory studies. This includes the understanding and the use of human-provided abstract symbols. Given this evidence for the underlying ability, the apparent failure to make use of it in the wild is puzzling. We provide a theoretical framework for identifying basic forms of symbolic signal use in chimpanzee natural communication. In line with the laboratory findings, we concentrate on the most promising domain to investigate, namely gesture, and we provide a case study in this area. We suggest that evidence for basic symbolic signal use would consist of the presence of two key characteristics of symbolic communication, namely arbitrariness and conventionalization. Arbitrariness means that the linkage between the form of the gesture and its meaning shows no obvious logical or otherwise motivated connection. Conventionalization means that the gesture is shared at the group-level and is thus socially learned, not innate. Further, we discuss the emergence and transmission of these gestures. Demonstrating this basic form of symbolic signal use would indicate that the symbolic capacities revealed by laboratory studies also find their expression in the natural gestural communication of our closest living relatives, even if only to a limited extent. This theoretical article thus aims to contribute to our understanding of the developmental origins of great ape gestures, and hence, arguably, of human symbolic communication. It also has a very practical aim in that by providing clear criteria and by pointing out potential candidates for symbolic communication, we give fieldworkers useful prerequisites for identifying and analyzing signals which may demonstrate the use of great apes' symbolic capacities in the wild.

https://www.researchgate.net/publication/357314009_Symbolic_Signal_Use_in_Wild_Chimpanzee_Gestural_Communication_A_Theoretical_Framework

RESEARCHGATE – Disentangling Neolithic cuisine: archaeological evidence at Çatalhöyük East

In Ian Hodder & Christina Tsoraki (eds.), Communities at Work: The Making of Çatalhöyük (Monograph 55), British Institute at Ankara (2021).

LARA GONZÁLEZ CARRETERO et al – Disentangling Neolithic cuisine: archaeological evidence for 9,000-year-old food preparation practices and cooking techniques at Çatalhöyük East

Çatalhöyük provides an ideal site for the study of Neolithic cooking practices and ‘cuisine’ (that is, style or method of cooking and a selected set of ingredients) and changes in those practices over time. Previous research into food preparation and cooking at Çatalhöyük has mainly focused on the potential ingredients from the archaeobotanical and zooarchaeological data and on the possible technologies used for the preparation of meals, such as pottery, ground stone tools, fire installations, clay balls etc. However, little has been said about the actual choice of ingredients and the different processes behind the preparation of food and meals at Çatalhöyük. This chapter aims to disentangle the chaîne opératoire of food at Çatalhöyük East (sensu Hayden 2001), from the procurement of ingredients to food consumption.

https://www.researchgate.net/publication/362620818_Disentangling_Neolithic_cuisine_archaeological_evidence_for_9000-year-old_food_preparation_practices_and_cooking_techniques_at_Catalhoyuk_East

NEWS

NATURE BRIEFING – Did this ancient hominin walk upright?

An ancient human relative, Sahelanthropus tchadensis, might have walked on two legs seven million years ago. S. tchadensis could be the earliest known member of the hominin lineage, the evolutionary branch that includes the common ancestor of humans and chimpanzees and ends with modern humans. The theory is based on a battered fossil leg bone that was discovered in Chad more than 20 years ago. But some scientists are not convinced that the femur's traits prove the creature stood tall.

<https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=4804537be5&e=1db4b9a19b>

SCIENCE NEWS – Human ancestors were walking upright 7 million years ago, ancient limb bone suggests

Sahelanthropus may have been the first bipedal member of human lineage, but experts say more evidence is needed.

<https://www.science.org/content/article/human-ancestors-were-walking-upright-7-million-years-ago-ancient-limb-bone-suggests>

SCIENCE NEWS – ‘Phenomenal’ ancient DNA data set gives clues to origin of farming & early languages

Trio of studies suggests new homeland for earliest Indo-European speakers and traces movements of ancient Greeks, Imperial Romans.

<https://www.science.org/content/article/phenomenal-ancient-dna-data-set-provides-clues-origin-farming-early-languages>

SOCIETY FOR SCIENCE – 7-million-year-old limb fossils may be from the earliest known hominid

An earlier report on one of the bones of a 7-million-year-old creature that may have walked upright has triggered scientific misconduct charges.

<http://click.societyforscience->

email.com/?qs=0e1c973ac53d3e7a3cbcad8bfa6efa072d1782b0868c3e9c1b03afecca55501a4c7ad49301c2908e00574a621fb1d0830f56ea6597d74a57d5d001faed8f2684

THE CONVERSATION – Breakthrough shows humans were already standing on their own two feet 7mya

New research shows our oldest ancestors were able to walk as well as evolve in trees.

<https://theconversationuk.cmail19.com/t/r-l-tyukyulk-khhliiah-e/>

OTHER NEWS – SPRINGER – Archaeological sites in reservoirs and the Dolmen de Guadalperal

ENRIQUE CERRILLO-CUENCA, JOSÉ JUAN DE SANJOSÉ BLASCO, PRIMITIVA BUENO RAMÍREZ, JUAN ANTONIO PÉREZ, RODRIGO DE BALBIN-BEHRMANN & MANUEL SÁNCHEZ FERNÁNDEZ – Emergent heritage: the digital conservation of archaeological sites in reservoirs and the case of the Dolmen de Guadalperal (Spain)

The dolmen of Guadalperal (Spain) became well known in 2019 when the waters of the reservoir in which it had long been submerged became so depleted as to leave it above water and highly visible. This gave rise to great media and social polemic. In this study, we deal with the ‘recovery’ of the dolmen using digital techniques, including a strategy of geometrical documentation of long, medium and short-range through the use of terrestrial laser scanning (TLS) and photogrammetry. The result is a set of products that trace the changes that have taken place in the monument since its excavation in 1925, the identification of conditions affecting it and the acquisition of new information on the decorated supports that formed part of the megalithic architecture. To do so, the time during which it was accessible (i.e., not underwater) was used to acquire the only heritage information currently available on the monument. This new information offers a complete assessment of a megalithic monument using a protocol that is exportable to other sites submerged in lakes or reservoirs.

https://www.researchgate.net/publication/354658626_Emergent_heritage_the_digital_conservation_of_archaeological_sites_in_reservoirs_and_the_case_of_the_Dolmen_de_Guadalperal_Spain

PUBLICATIONS

Current Biology

PAPERS

CHRISTINA RIEHL & ZACHARIAH FOX SMART – Climate fluctuations influence variation in group size in a cooperative bird

Variation in group size is ubiquitous in social animals, but explaining the range of group sizes seen in nature remains challenging. Group-living species occur most frequently in climatically unpredictable environments, such that the costs and benefits of sociality may change from year to year. It is, therefore, possible that variation in climate may help to maintain a

range of group sizes, but this hypothesis is rarely tested empirically. Here, we examine selection on breeding group size in the greater ani (*Crotophaga major*), a tropical bird that nests in cooperative groups containing multiple co-breeders and non-breeding helpers. We found that larger groups experience lower nest predation (due to cooperative nest defense) but suffer higher nestling starvation (due to intra-clutch competition). Long-term data revealed that the relative magnitude of these costs and benefits depends on climate, with frequent changes across years in the strength and direction of selection on group size. In wet years, individual reproductive success was higher in large groups than in small groups, whereas the opposite was true in dry years. This was partly a consequence of competition among nestlings in large clutches, which suffered significantly higher mortality in dry years than in wet years. Averaged over the 13-year study period, annual reproductive success was approximately equal for females in small and large groups. These results suggest that temporal changes in the direction of selection may help explain the persistence of a range of group sizes and that a full understanding of the selective pressures shaping sociality requires long-term fitness data.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(22\)01206-4](https://www.cell.com/current-biology/fulltext/S0960-9822(22)01206-4)

NIR OFIR & AYELET N. LANDAU – Neural signatures of evidence accumulation in temporal decisions

Cognitive models of interval timing can be formulated as an accumulation-to-bound process. However, the physiological manifestation of such processes has not yet been identified. We used electroencephalography (EEG) to measure the neural responses of participants while they performed a temporal bisection task in which they were requested to categorize the duration of visual stimuli as short or long. We found that the stimulus-offset and response-locked activity depends on both stimulus duration and the participants' decision. To relate this activity to the underlying cognitive processes, we used a drift-diffusion model. The model includes a noisy accumulator starting with the stimulus onset and a decision threshold. According to the model, a stimulus duration will be categorized as "long" if the accumulator reaches the threshold during stimulus presentation. Otherwise, it will be categorized as "short." We found that at the offset of stimulus presentation, an EEG response marks the distance of the accumulator from the threshold. Therefore, this model offers an accurate description of our behavioral data as well as the EEG response using the same two model parameters. We then replicated this finding in an identical experiment conducted in the tactile domain. We also extended this finding to two different temporal ranges (sub- and supra-second). Taken together, the work provides a new way to study the cognitive processes underlying temporal decisions, using a combination of behavior, EEG, and modeling.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(22\)01238-6](https://www.cell.com/current-biology/fulltext/S0960-9822(22)01238-6)

PATRICIA L. LOCKWOOD – Distinct neural representations for prosocial and self-benefiting effort

Prosocial behaviors—actions that benefit others—are central to individual and societal well-being. Although the mechanisms underlying the financial and moral costs of prosocial behaviors are increasingly understood, this work has often ignored a key influence on behavior: effort. Many prosocial acts are effortful, and people are averse to the costs of exerting them. However, how the brain encodes effort costs when actions benefit others is unknown. During fMRI, participants completed a decision-making task where they chose in each trial whether to "work" and exert force (30%–70% of maximum grip strength) or "rest" (no effort) for rewards (2–10 credits). Crucially, on separate trials, they made these decisions either to benefit another person or themselves. We used a combination of multivariate representational similarity analysis and model-based univariate analysis to reveal how the costs of prosocial and self-benefiting efforts are processed. Strikingly, we identified a unique neural signature of effort in the anterior cingulate gyrus (ACCg) for prosocial acts, both when choosing to help others and when exerting force to benefit them. This pattern was absent for self-benefiting behaviors. Moreover, stronger, specific representations of prosocial effort in the ACCg were linked to higher levels of empathy and higher subsequent exerted force to benefit others. In contrast, the ventral tegmental area and ventral insula represented value preferentially when choosing for oneself and not for prosocial acts. These findings advance our understanding of the neural mechanisms of prosocial behavior, highlighting the critical role that effort has in the brain circuits that guide helping others.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(22\)01287-8](https://www.cell.com/current-biology/fulltext/S0960-9822(22)01287-8)

eLife

PAPERS

DARSHANA Z NARAYANAN et al – Prenatal development of neonatal vocalizations

Human and non-human primates produce rhythmical sounds as soon as they are born. These early vocalizations are important for soliciting the attention of caregivers. How they develop remains a mystery. The orofacial movements necessary for producing these vocalizations have distinct spatiotemporal signatures. Therefore, their development could potentially be tracked over the course of prenatal life. We densely and longitudinally sampled fetal head and orofacial movements in marmoset monkeys using ultrasound imaging. We show that orofacial movements necessary for producing rhythmical vocalizations differentiate from a larger movement pattern that includes the entire head. We also show that signature features of marmoset infant contact calls emerge prenatally as a distinct pattern of orofacial movements. Our results establish that aspects of the sensorimotor development necessary for vocalizing occur prenatally, even before the production of sound.

<https://elifesciences.org/articles/78485>

KEVIN J MILLER, MATTHEW M BOTVINICK & CARLOS D BRODY – Value representations in the rodent orbitofrontal cortex drive learning, not choice

Humans and animals make predictions about the rewards they expect to receive in different situations. In formal models of behavior, these predictions are known as value representations, and they play two very different roles. Firstly, they drive choice: the expected values of available options are compared to one another, and the best option is selected. Secondly, they support learning: expected values are compared to rewards actually received, and future expectations are updated accordingly. Whether these different functions are mediated by different neural representations remains an open question. Here we employ a recently-developed multi-step task for rats that computationally separates learning from choosing. We investigate the role of value representations in the rodent orbitofrontal cortex, a key structure for value-based cognition. Electrophysiological recordings and optogenetic perturbations indicate that these representations do not directly drive choice. Instead, they signal expected reward information to a learning process elsewhere in the brain that updates choice mechanisms.

<https://elifesciences.org/articles/64575>

Nature

NEWS

Seven-million-year-old femur suggests ancient human relative walked upright

Formal description of the leg bone, which belongs to *Sahelanthropus tchadensis*, comes two decades after it was discovered.

<https://www.nature.com/articles/d41586-022-02313-7>

ARTICLES

DANIEL E. LIEBERMAN – Standing up for the earliest bipedal hominins

A leg bone and two arm bones of a hominin from Chad suggest that, seven million years ago, around the time that the human and chimpanzee lineages split, early hominins were bipedal but were also able to climb trees.

<https://www.nature.com/articles/d41586-022-02226-5>

PAPERS

G. DAVER et al – Postcranial evidence of late Miocene hominin bipedalism in Chad

Bipedal locomotion is one of the key adaptations that define the hominin clade. Evidence of bipedalism is known from postcranial remains of late Miocene hominins as early as 6 million years ago (Ma) in eastern Africa^{1,2,3,4}. Bipedality of *Sahelanthropus tchadensis* was hitherto inferred about 7 Ma in central Africa (Chad) based on cranial evidence^{5,6,7}. Here we present postcranial evidence of the locomotor behaviour of *S. tchadensis*, with new insights into bipedalism at the early stage of hominin evolutionary history. The original material was discovered at locality TM 266 of the Toros-Ménalla fossiliferous area and consists of one left femur and two, right and left, ulnae. The morphology of the femur is most parsimonious with habitual bipedality, and the ulnae preserve evidence of substantial arboreal behaviour. Taken together, these findings suggest that hominins were already bipeds at around 7 Ma but also suggest that arboreal clambering was probably a significant part of their locomotor repertoire.

<https://www.nature.com/articles/s41586-022-04901-z>

ABIGAIL S. GREENE et al – Brain–phenotype models fail for individuals who defy sample stereotypes

Individual differences in brain functional organization track a range of traits, symptoms and behaviours. So far, work modelling linear brain–phenotype relationships has assumed that a single such relationship generalizes across all individuals, but models do not work equally well in all participants. A better understanding of in whom models fail and why is crucial to revealing robust, useful and unbiased brain–phenotype relationships. To this end, here we related brain activity to phenotype using predictive models—trained and tested on independent data to ensure generalizability—and examined model failure. We applied this data-driven approach to a range of neurocognitive measures in a new, clinically and demographically heterogeneous dataset, with the results replicated in two independent, publicly available datasets. Across all three datasets, we find that models reflect not unitary cognitive constructs, but rather neurocognitive scores intertwined with sociodemographic and clinical covariates; that is, models reflect stereotypical profiles, and fail when applied to individuals who defy them. Model failure is reliable, phenotype specific and generalizable across datasets. Together, these results highlight the pitfalls of a one-size-fits-all modelling approach and the effect of biased phenotypic measures on the interpretation and utility of resulting brain–phenotype models. We present a framework to address these issues so that such models may reveal the neural circuits that underlie specific phenotypes and ultimately identify individualized neural targets for clinical intervention.

<https://www.nature.com/articles/s41586-022-05118-w>

Nature Communications

PAPERS

FANG-CHENG YEH – Population-based tract-to-region connectome of the human brain and its hierarchical topology

Connectome maps region-to-region connectivities but does not inform which white matter pathways form the connections. Here we constructed a population-based tract-to-region connectome to fill this information gap. The constructed connectome quantifies the population probability of a white matter tract innervating a cortical region. The results show that ~85% of the tract-to-region connectome entries are consistent across individuals, whereas the remaining (~15%) have substantial individual differences requiring individualized mapping. Further hierarchical clustering on cortical regions revealed dorsal, ventral, and limbic networks based on the tract-to-region connective patterns. The clustering results on white matter bundles revealed the categorization of fiber bundle systems in the association pathways. This tract-to-region connectome provides insights into the connective topology between cortical regions and white matter bundles. The derived hierarchical relation further offers a categorization of gray and white matter structures.

<https://www.nature.com/articles/s41467-022-32595-4>

Nature Scientific Reports

PAPERS

CHEN SI et al – Modelling representations in speech normalization of prosodic cues

The lack of invariance problem in speech perception refers to a fundamental problem of how listeners deal with differences of speech sounds produced by various speakers. The current study is the first to test the contributions of mentally stored distributional information in normalization of prosodic cues. This study starts out by modelling distributions of acoustic cues from a speech corpus. We proceeded to conduct three experiments using both naturally produced lexical tones with estimated distributions and manipulated lexical tones with f0 values generated from simulated distributions. State of the art statistical techniques have been used to examine the effects of distribution parameters in normalization and identification curves with respect to each parameter. Based on the significant effects of distribution parameters, we proposed a probabilistic parametric representation (PPR), integrating knowledge from previously established distributions of speakers with their indexical information. PPR is still accessed during speech perception even when contextual information is present. We also discussed the procedure of normalization of speech signals produced by unfamiliar talker with and without contexts and the access of long-term stored representations.

<https://www.nature.com/articles/s41598-022-18838-w>

GIOVANNI GRANATO et al – A computational model of inner speech supporting flexible goal-directed behaviour in Autism

Experimental and computational studies propose that inner speech boosts categorisation skills and executive functions, making human behaviour more focused and flexible. In addition, many clinical studies highlight a relationship between poor inner-speech and an executive impairment in autism spectrum condition (ASC), but contrasting findings are reported. Here we directly investigate the latter issue through a previously implemented and validated computational model of the Wisconsin Cards Sorting Tests. In particular, the model was applied to explore potential individual differences in cognitive flexibility and inner speech contribution in autistic and neurotypical participants. Our model predicts that the use of inner-speech could increase along the life-span of neurotypical participants but would be reduced in autistic ones. Although we found more attentional failures (i.e., wrong behavioural rule switches) in autistic children/teenagers and more perseverative behaviours in autistic young/older adults, only autistic children and older adults exhibited a lower performance (i.e., fewer consecutive correct rule switches) than matched control groups. Overall, our results corroborate the idea that the reduced use of inner speech could represent a disadvantage for autistic children and autistic older adults. Moreover, the results suggest that cognitive-behavioural therapies should focus on developing inner speech skills in autistic children as this could provide cognitive support throughout their whole life span.

<https://www.nature.com/articles/s41598-022-18445-9>

ALEX S. MEARING et al with JUDITH M. BURKART – The evolutionary drivers of primate scleral coloration

The drivers of divergent scleral morphologies in primates are currently unclear, though white sclerae are often assumed to underlie human hyper-cooperative behaviours. Humans are unusual in possessing depigmented sclerae whereas many other extant primates, including the closely-related chimpanzee, possess dark scleral pigment. Here, we use phylogenetic generalized least squares (PGLS) analyses with previously generated species-level scores of proactive prosociality, social tolerance (both n = 15 primate species), and conspecific lethal aggression (n = 108 primate species) to provide the first quantitative, comparative test of three existing hypotheses. The 'self-domestication' and 'cooperative eye' explanations predict white sclerae to be associated with cooperative, rather than competitive, environments. The 'gaze camouflage' hypothesis predicts that dark scleral pigment functions as gaze direction camouflage in competitive social environments. Notably, the experimental evidence that non-human primates draw social information from conspecific eye movements is unclear, with the latter two hypotheses having recently been challenged. Here, we show that white sclerae in primates are associated with increased cooperative behaviours whereas dark sclerae are associated with reduced cooperative behaviours

and increased conspecific lethal violence. These results are consistent with all three hypotheses of scleral evolution, suggesting that primate scleral morphologies evolve in relation to variation in social environment.

<https://www.nature.com/articles/s41598-022-18275-9>

TIAGO FALÓTICO et al – Stone tools differences across three capuchin monkey populations: food's physical properties, ecology, and culture

Robust capuchin monkeys (*Sapajus*) are known for processing mechanically challenging foods, having morphological adaptations to do so. However, several populations go beyond body limitations by using stone tools to expand their food range. Those populations use stones in a variety of ways, goals, and with different frequencies. Stone tool size correlates with the food's resistance within some populations. However, we have no detailed comparisons to identify if this correlation is the same across populations. This study described and compared stone raw material availability, food's physical properties (hardness and elasticity), and stone tool weight in three populations of bearded capuchin monkeys (*Sapajus libidinosus*), including a newly described site (Chapada dos Veadeiros National Park, CVNP). The differences we observed regarding stone tool weight selection among sites were not correlated to the food's physical properties we analyzed. Lithic resource availability could partly explain some differences in the stone tools used. However, the tool weight differences are larger than the raw material variance across sites, meaning some distinctions are possible behavioral traditions, such as the same fruit (*Hymenaea*) being processed with bigger than needed tools in CVNP than in the other two sites. Capuchin monkey behavioral variability in stone tool use can be caused by several interacting factors, from ecological to cultural.

<https://www.nature.com/articles/s41598-022-18661-3>

VIVIANE SLON et al with RON SHIMELMITZ – Extended longevity of DNA preservation in Levantine Paleolithic sediments, Sefunim Cave, Israel

Paleogenomic research can elucidate the evolutionary history of human and faunal populations. Although the Levant is a key land-bridge between Africa and Eurasia, thus far, relatively little ancient DNA data has been generated from this region, since DNA degrades faster in warm climates. As sediments can be a source of ancient DNA, we analyzed 33 sediment samples from different sedimentological contexts in the Paleolithic layers of Sefunim Cave (Israel). Four contained traces of ancient Cervidae and Hyaenidae mitochondrial DNA. Dating by optical luminescence and radiocarbon indicates that the DNA comes from layers between 30,000 and 70,000 years old, surpassing theoretical expectations regarding the longevity of DNA deposited in such a warm environment. Both identified taxa are present in the zooarchaeological record of the site but have since gone extinct from the region, and a geoarchaeological study suggests little movement of the sediments after their deposition, lending further support to our findings. We provide details on the local conditions in the cave, which we hypothesize were particularly conducive to the long-term preservation of DNA—information that will be pertinent for future endeavors aimed at recovering ancient DNA from the Levant and other similarly challenging contexts.

<https://www.nature.com/articles/s41598-022-17399-2>

PLoS One

PAPERS

STEPHEN A. GALLO & KAREN B. SCHMALING – Peer review: Risk and risk tolerance

Peer review, commonly used in grant funding decisions, relies on scientists' ability to evaluate research proposals' quality. Such judgments are sometimes beyond reviewers' discriminatory power and could lead to a reliance on subjective biases, including preferences for lower risk, incremental projects. However, peer reviewers' risk tolerance has not been well studied. We conducted a cross-sectional experiment of peer reviewers' evaluations of mock primary reviewers' comments in which the level and sources of risks and weaknesses were manipulated. Here we show that proposal risks more strongly predicted reviewers' scores than proposal strengths based on mock proposal evaluations. Risk tolerance was not predictive of scores but reviewer scoring leniency was predictive of overall and criteria scores. The evaluation of risks dominates reviewers' evaluation of research proposals and is a source of inter-reviewer variability. These results suggest that reviewer scoring variability may be attributed to the interpretation of proposal risks, and could benefit from intervention to improve the reliability of reviews. Additionally, the valuation of risk drives proposal evaluations and may reduce the chances that risky, but highly impactful science, is supported.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0273813>

LILLA MAGYARI, CSABA PLÉH & BÁLINT FORGÁCS – The Hungarian hubris syndrome

Powerful figures, such as politicians, who show a behavioural pattern of exuberant self-confidence, recklessness, and contempt for others may be the subject of the acquired personality disorder, the hubris syndrome, which has been demonstrated to leave its mark on speech patterns. Our study explores characteristic language patterns of Hungarian prime ministers (PMs) with a special emphasis on one of the key indicators of hubris, the shift from the first person "I" to "we" in spontaneous speech. We analyzed the ratio of the first-person singular ("I") and plural ("we") pronouns and verbal inflections in the spontaneous parliamentary speeches of four Hungarian PMs between 1998–2018. We found that Viktor Orbán during his second premiership (2010–2014) used first person plural relative to singular inflections more often than the other three PMs during their terms. Orbán and another Hungarian PM, Ferenc Gyurcsány, who were re-elected at some point showed an increased ratio of first-person plural vs. singular inflections and personal pronouns by their second term, likely reflecting

increasing hubristic tendencies. The results show that the ratio of “I” and “we” usually studied in English texts also show changes in a structurally different language, Hungarian. This finding suggests that it is extended periods of premiership that may increase hubristic behaviour in political leaders, not only experiencing excessive power. The results are particularly elucidating regarding the role of re-elections in political leaders’ hubristic speech—and behaviour.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0273226>

KATHERINE MCAULIFFE, NATALIE BENJAMIN & FELIX WARNEKEN – Reward type influences adults’ rejections of inequality in a task designed for children

In the context of economic games, adults sacrifice money to avoid unequal outcomes, showing so-called inequity aversion. Child-friendly adaptations of these games have shown that children, too, show inequity aversion. Moreover, inequity aversion shows a clear developmental trajectory, with young children rejecting only disadvantageously unequal distributions and older children rejecting both disadvantageously and advantageously unequal distributions. However, based on existing work, it is difficult to compare adult and child responses to inequity because (1) adapting economic games to make them child-friendly may importantly alter the dynamics of the fairness interaction and (2) adult work typically uses abstract rewards such as money while work with children typically uses more concrete rewards like candy, stickers or toys. Here we adapted the Inequity Game—a paradigm designed to study children’s responses to inequality in isolation from other concerns—to test inequity aversion in adults (N = 104 pairs). We manipulated whether participants made decisions about concrete rewards (candy) or abstract rewards (tokens that could be traded in for money). We found that, like children, adults rejected unequal payoffs in this task. Additionally, we found that reward type mattered: adults rejected disadvantageous—but not advantageous—monetary distributions, yet rejected both disadvantageous and advantageous candy distributions. These findings allow us to draw clearer comparisons across child and adult responses to unfairness and help paint a fuller picture of inequity aversion in humans.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0272710>

MARTHA M. ROBBINS, SYLVIA ORTMANN & NICOLE SEILER – Dietary variability of western gorillas (*Gorilla gorilla gorilla*)

Spatial and temporal variability in the availability of food resources will lead to variation in a species’ diet, which can then influence patterns of space use, sociality, and life history characteristics. Despite such potential impacts, little information is available about dietary variability for some species with large geographical ranges. Here we quantify the diet and nutritional content of plants consumed by western lowland gorillas (*Gorilla gorilla gorilla*) in Loango National Park, Gabon over a 2.6 year period and make comparisons with two study sites located 800 km away. The major foods consumed by the Loango gorillas differed greatly from the other two study sites, but gorillas at all three locations spent a similar proportion of feeding time consuming herbaceous vegetation and tree leaves (~ 50%) and fruit (35%). The Loango gorillas spent approximately 10% of feeding time eating nuts, which were not consumed at the other two study sites. Gorillas at those sites spent about 5% of feeding time eating insects, which were not consumed by Loango gorillas. Even though the species composition of the diet differed among the three sites, the nutritional composition of the major food items differed very little, suggesting that western gorillas consume foods of similar nutritional values to meet their dietary needs. This study shows the flexibility of diet of a species with a wide geographic distribution, which has implications for understanding variation in life history characteristics and can be useful for conservation management plans.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0271576>

TRISTAN CARTER & VASSILIS KILIKOGLU – Raw material choices and technical practices as indices of cultural change: Characterizing obsidian consumption at ‘Mycenaean’ Quartier Nu, Malia (Crete)

This paper takes a practice-based approach to the study of cultural identity, focusing on how raw material and technical choices involved in the production of quotidian tools served to both reproduce, and reflect a social group’s very way of being. We then consider the (dis)continuity of obsidian blade-making traditions from Middle–Late Bronze Age Malia (north-central Crete), i.e., before and after a period of island-wide destructions, and appearance of foreign elements believed to reflect the arrival of a population from the Greek mainland (Mycenaeans). Methodologically this involves an integrated, ‘thick description’ obsidian characterisation study to detail long-term cultural traditions, including the use of Neutron Activation Analysis (NAA) to source the raw materials of 36 artifacts. The results show a significant degree of continuity in the community’s lithic traditions, suggesting that many of the innovative features at Malia can be interpreted in terms of local factions appropriating new and foreign means of social distinction, rather than wholesale changes in community composition.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0273093>

SOFIA C. SAMPER-CARRO et al with CERI SHIPTON – Talking Dead. New burials from Tron Bon Lei (Alor Island, Indonesia) inform on the evolution of mortuary practices from the terminal Pleistocene to the Holocene in Southeast Asia

Burial elaborations are a human behaviour that, in recent contexts can inform on social diversification, belief systems, and the introduction of new practices resulting from migration or cultural transmission. The study of mortuary practices in Mainland and Island Southeast Asia has revealed complex and diverse treatments of the deceased. This paper contributes to

this topic with the description of three new burials excavated in Tron Bon Lei (Alor Island, Indonesia) dated to 7.5, 10, and 12 kya cal BP. In addition to the bioskeletal profiles and palaeohealth observations, we propose the adoption of archaeothanatological methods to characterise burial types in the region. Through the analysis of skeletal element representation, body position, articulation, and grave associations, we provide an example of a holistic approach to mortuary treatments in the Lesser Sunda Islands. Our results provide significant new data for understanding the evolution and diversification of burial practices in Southeast Asia, contributing to a growing body of literature describing prehistoric socio-cultural behaviour in this region.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0267635>

XIAOJIA TANG, SHUI SHEN & XIN SU – From rammed earth to stone wall: Chronological insight into the settlement change of the Lower Xiajiadian culture

In this article, we investigate the chronological change of settlements of the Lower Xiajiadian (LXJD) culture in northeast China. On the basis of excavation data, two types of settlements can be identified based on the methods of site construction: earthen (rammed earth/mudbrick) settlements and stone-constructed settlements. After integrating and reanalyzing all published ¹⁴C radiocarbon data of different LXJD sites, we argue that there is a clear chronological difference between these two types of settlements. It is revealed by the OxCal model that settlements built with earthen structures are generally earlier than those constructed with stones, and the changes in settlement spatial distribution and constructive material largely happened after 1500 BC. By means of correlation analysis with other related archaeological evidence, we suggest that the underlying social dynamics that contributed to LXJD settlement changes can be explored through multiple prospects.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0273161>

MAHO NAKAGAWA, MATHIEU LEFEBVRE & ANNE STENGER – Long-lasting effects of incentives and social preference: A public goods experiment

This paper addresses the question of the effectiveness and permanence of temporary incentives to contribute to a public good. Using a common experimental framework, we investigate the effects of a recommendation that takes the form of an exhortative message to contribute, a monetary punishment and a non-monetary reward to sustain high levels of contributions. In particular, we shed light on the differential impact these mechanisms have on heterogeneous types of agents. The results show that all three incentives increase contributions compared to a pre-phase where there is no incentive. Monetary sanctions lead to the highest contributions, but a sudden drop in contributions is observed once the incentive to punish is removed. On the contrary, Recommendation leads to the lowest contributions but maintains a long-lasting impact in the Post-policy phase. In particular, it makes free-riders increase their contribution over time in the post-incentive phase. Finally, non-monetary reward backfires against those who are weakly conditional cooperators. Our findings emphasize the importance of designing and maintaining incentives not only for free-riders, but for strong and weak conditional cooperators as well, depending on characteristics of the incentives.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0273014>

Science

ARTICLES

BENJAMIN S. ARBUCKLE & ZOE SCHWANDT – Ancient genomes and West Eurasian history

Storytelling with ancient DNA reveals challenges and potential for writing new histories

<https://www.science.org/doi/10.1126/science.add9059>

PAPERS

IOSIF LAZARIDIS et mul with DAVID REICH – The genetic history of the Southern Arc: A bridge between West Asia and Europe

For thousands of years, humans moved across the “Southern Arc,” the area bridging Europe through Anatolia with West Asia. We report ancient DNA data from 727 individuals of this region over the past 11,000 years, which we co-analyzed with the published archaeogenetic record to understand the origins of its people. We focused on the Chalcolithic and Bronze Ages about 7000 to 3000 years ago, when Indo-European language speakers first appeared.

Genetic data are relevant for understanding linguistic evolution because they can identify movement-driven opportunities for language spread. We investigated how the changing ancestral landscape of the Southern Arc, as reflected in DNA, corresponds to the structure inferred by linguistics, which links Anatolian (e.g., Hittite and Luwian) and Indo-European (e.g., Greek, Armenian, Latin, and Sanskrit) languages as twin daughters of a Proto-Indo-Anatolian language.

Steppe pastoralists of the Yamnaya culture initiated a chain of migrations linking Europe in the west to China and India in the East. Some people across the Balkans (about 5000 to 4500 years ago) traced almost all their genes to this expansion. Steppe migrants soon admixed with locals, creating a tapestry of diverse ancestry from which speakers of the Greek, Paleo-Balkan, and Albanian languages arose.

The Yamnaya expansion also crossed the Caucasus, and by about 4000 years ago, Armenia had become an enclave of low but pervasive steppe ancestry in West Asia, where the patrilineal descendants of Yamnaya men, virtually extinct on the steppe, persisted. The Armenian language was born there, related to Indo-European languages of Europe such as Greek by their shared Yamnaya heritage.

Neolithic Anatolians (in modern Turkey) were descended from both local hunter-gatherers and Eastern populations of the Caucasus, Mesopotamia, and the Levant. By about 6500 years ago and thereafter, Anatolians became more genetically homogeneous, a process driven by the flow of Eastern ancestry across the peninsula. Earlier forms of Anatolian and non-Indo-European languages such as Hattic and Hurrian were likely spoken by migrants and locals participating in this great mixture.

Anatolia is remarkable for its lack of steppe ancestry down to the Bronze Age. The ancestry of the Yamnaya was, by contrast, only partly local; half of it was West Asian, from both the Caucasus and the more southern Anatolian-Levantine continuum. Migration into the steppe started by about 7000 years ago, making the later expansion of the Yamnaya into the Caucasus a return to the homeland of about half their ancestors.

All ancient Indo-European speakers can be traced back to the Yamnaya culture, whose southward expansions into the Southern Arc left a trace in the DNA of the Bronze Age people of the region. However, the link connecting the Proto-Indo-European-speaking Yamnaya with the speakers of Anatolian languages was in the highlands of West Asia, the ancestral region shared by both.

<https://www.science.org/doi/10.1126/science.abm4247>

IOSIF LAZARIDIS et mul with DAVID REICH – A genetic probe into the ancient and medieval history of Southern Europe and West Asia

Literary and archaeological sources have preserved a rich history of Southern Europe and West Asia since the Bronze Age that can be complemented by genetics. Mycenaean period elites in Greece did not differ from the general population and included both people with some steppe ancestry and others, like the Griffin Warrior, without it. Similarly, people in the central area of the Urartian Kingdom around Lake Van lacked the steppe ancestry characteristic of the kingdom's northern provinces. Anatolia exhibited extraordinary continuity down to the Roman and Byzantine periods, with its people serving as the demographic core of much of the Roman Empire, including the city of Rome itself. During medieval times, migrations associated with Slavic and Turkic speakers profoundly affected the region.

<https://www.science.org/doi/10.1126/science.abq0755>

IOSIF LAZARIDIS et mul with DAVID REICH – Ancient DNA from Mesopotamia suggests distinct Pre-Pottery and Pottery Neolithic migrations into Anatolia

We present the first ancient DNA data from the Pre-Pottery Neolithic of Mesopotamia (Southeastern Turkey and Northern Iraq), Cyprus, and the Northwestern Zagros, along with the first data from Neolithic Armenia. We show that these and neighboring populations were formed through admixture of pre-Neolithic sources related to Anatolian, Caucasus, and Levantine hunter-gatherers, forming a Neolithic continuum of ancestry mirroring the geography of West Asia. By analyzing Pre-Pottery and Pottery Neolithic populations of Anatolia, we show that the former were derived from admixture between Mesopotamian-related and local Epipaleolithic-related sources, but the latter experienced additional Levantine-related gene flow, thus documenting at least two pulses of migration from the Fertile Crescent heartland to the early farmers of Anatolia.

<https://www.science.org/doi/10.1126/science.abq0762>

SUBSCRIBE to the EAORC Bulletin

If you would like to subscribe to this free weekly newsletter, please contact martin.edwardes@btopenworld.com.

UNSUBSCRIBE from the EAORC Bulletin

Send an email to martin.edwardes@btopenworld.com with the subject "EAORC unsubscribe".

PRODUCED BY AND FOR THE EAORC EMAIL GROUP

EAORC is a fee-free academic internet news service and has no commercial sponsorship or other commercial interests.

EAORC website information is at <http://martinedwardes.me.uk/eaorc/>

If you have received this bulletin, and are unhappy about receiving it, please contact martin.edwardes@btopenworld.com.