

EAORC BULLETIN 905 – 18 October 2020

CONTENTS

EAORC NOTICES.....	2
PUBLICATION ALERTS	2
EAORC NEWS – Biennial Membership Check – Please Respond	2
ACADEMIA.EDU – The Still Bay points of Blombos Cave	2
PAOLA VILLA et al with CHRISTOPHER S. HENSHILWOOD – The Still Bay points of Blombos Cave (South Africa).....	2
NEWS.....	3
SCIENCE NEWS – New PLOS pricing test could signal end of scientists paying to publish free papers	3
BREAKING SCIENCE – 12,000-Year-Old Human Footprints Found in New Mexico	3
LIVESCIENCE – What's the first species humans drove to extinction?	3
LIVESCIENCE – More humans are growing an extra blood vessel in our arm that 'feeds' our hands.....	3
SCIENCE DAILY – Modern humans took detours on their way to Europe	3
SCIENCE DAILY – Monkey study suggests that they, like humans, may have 'self-domesticated'	3
SCIENCE DAILY – Climate change likely drove early human species to extinction, modeling study suggests	3
SAPIENS – Early use of fire for toolmaking.....	3
PUBLICATIONS.....	3
Current Biology	3
PAPERS.....	3
ASIF A. GHAZANFAR et al – Domestication Phenotype Linked to Vocal Behavior in Marmoset Monkeys	3
Evolutionary Anthropology	4
ARTICLES.....	4
JOHN MCNABB – Further Thoughts on the Genetic Argument for Handaxes	4
PAPERS.....	4
RAYMOND CORBEY – Baldwin effects in early stone tools	4
EMMA POMEROY et al with CHRIS STRINGER – Issues of theory and method in the analysis of Paleolithic mortuary behavior: A view from Shanidar Cave	4
Language and Cognition	4
PAPERS.....	4
MARIE HERGET CHRISTENSEN et al – Grammar is background in sentence processing	4
Nature	5
PAPERS.....	5
JULIEN LOUYS & PATRICK ROBERTS – Environmental drivers of megafauna and hominin extinction in Southeast Asia	5
Nature Communications	5
PAPERS.....	5
NIKLAS WILMING et al – Large-scale dynamics of perceptual decision information across human cortex	5
Nature Human Behaviour.....	5
ARTICLES.....	5
CHRISTOF KOCH – Hot or not	5
PAPERS.....	5
MOLLY LEWIS & GARY LUPYAN – Gender stereotypes are reflected in the distributional structure of 25 languages.....	5
BILL THOMPSON, SEÁN G. ROBERTS & GARY LUPYAN – Cultural influences on word meanings revealed through large-scale semantic alignment ..	5
CAROLINA FEHER DA SILVA & TODD A. HARE – Humans primarily use model-based inference in the two-stage task.....	6
Nature Scientific Reports.....	6
PAPERS.....	6
KIRAN PALA – Copula is an intuitive predicate of consciousness on fulfilment of knowing and judging acts	6
YOHSUKE MURASE & SEUNG KI BAEK – Five rules for friendly rivalry in direct reciprocity	6
JACOB A. MILLER et al – Sulcal morphology of ventral temporal cortex is shared between humans and other hominoids	6
BETHANY BURUM, MARTIN A. NOWAK & MOSHE HOFFMAN – An evolutionary explanation for ineffective altruism	7
New Scientist	7
NEWS	7
Stone Age people in Ireland had dark skin and were lactose-intolerant	7
Naked mole rats invade neighbouring colonies and kidnap their babies	7
ARTICLES.....	7
DAVID ROBSON – 'Ums' and 'ers' are a hidden code that helped complex language evolve.....	7

PLoS Biology.....	7
PAPERS.....	7
TIM SAINBURG ,MARVIN THIELK & TIMOTHY Q. GENTNER – Finding, visualizing, and quantifying latent structure across diverse animal vocal repertoires.....	7
PNAS.....	7
PAPERS.....	7
PATRICIA L. LOCKWOOD et al – Model-free decision making is prioritized when learning to avoid harming others.....	7
MARION ROUAULT & STEPHEN M. FLEMING – Formation of global self-beliefs in the human brain.....	8
Proceedings of the Royal Society B.....	8
PAPERS.....	8
MELISSA LINN et al – Octopamine and dopamine mediate waggle dance following and information use in honeybees.....	8
Subscribe to the EAORC Bulletin	8
Unsubscribe from the EAORC Bulletin	8
Produced by and for the EAORC email group	8

EAORC 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 – Biennial Membership Check – Please Respond

2020 is a membership checking year, when I ask for confirmation that you wish to continue receiving the bulletins. So please let me know that you wish to continue by emailing me with Bulletin Yes, or something similar. If you do not wish to continue receiving the bulletin then you need do nothing.

Anyone who has not indicated they wish to continue will be taken off the list after next week's bulletin.

This biennial membership check has been in operation since 2008, and GDPR has made it even more important that it is carried out regularly.

Many thanks to everyone who has responded so far. I already have enough to ensure the continued existence of the list. Next week you will receive a separate email, either confirmation of your continued membership, or notification of your final issue.

ACADEMIA.EDU – The Still Bay points of Blombos Cave

Journal of Archaeological Science 36:2, 441-460.

PAOLA VILLA et al with CHRISTOPHER S. HENSHILWOOD – The Still Bay points of Blombos Cave (South Africa)

We present the results of a technological and morphometric analysis of all the Still Bay points ($n \approx 371$) recovered from the 1993 to 2004 excavations at Blombos Cave. We have been able to reconstruct the manufacturing sequence of the bifacial points from initial shaping, by direct internal percussion, to finished morphology, by direct marginal percussion. Identifications of impact fractures and manufacturing breaks are based on comparisons with experimental and archaeological bifacial points of verified function, i.e. Paleoindian points from bison kill sites, replicates of Solutrean points mounted as spear-heads or arrowheads and shot into adult cattle, and experimental replication on local raw materials. Our analysis shows that: (a) only a minority of the points are finished forms, and that a large number of pieces are production failures, a situation known at bifacial point production sites of later ages; (b) morphometric and impact scar analyses should take into account this process and distinguish finished points from preforms and unfinished points; (c) there were at least three different kinds of raw material sources and that there is a marked increase in the frequencies of silcrete with respect to the M2 and M3 phases at Blombos; (d) three kinds of evidence prove that some of the points were hafted axially and used as spear tips; (e) production of bifacial points was a primary activity at the site but the hypothesis of intergroup exchange of Still Bay points cannot be sustained on the basis of present evidence; and (f) the Still Bay phase appears to initiate a trend to relatively rapid changes in specialized hunting weaponry and that this innovation is congruent with other innovations such as bone tools, shell beads and engraved ochre of the M1 and M2 phases at Blombos.

https://www.academia.edu/27307328/Villa_P_Soretti_M_Henshilwood_C_S_and_Mourre_V_2009_The_Still_Bay_points_of_Blombos_Cave_South_Africa_Journal_of_Archaeological_Science

NEWS

SCIENCE NEWS – New PLOS pricing test could signal end of scientists paying to publish free papers

PLOS, the nonprofit publisher that in 2003 pioneered the open-access business model of charging authors to publish scientific articles so they are immediately free to all, this week rolled out an alternative model that could herald the end of the author-pays era. One of the new options shifts the cost of publishing open-access (OA) articles in its two most selective journals to institutions, charging them a fixed annual fee; any researcher at that institution could then publish in the PLOS journals at no additional charge.

https://www.sciencemag.org/news/2020/10/new-plos-pricing-test-could-signal-end-scientists-paying-publish-free-papers?utm_campaign=news_daily_2020-10-15&et_rid=17774313&et_cid=3521554

BREAKING SCIENCE – 12,000-Year-Old Human Footprints Found in New Mexico

An international team of researchers has discovered a long prehistoric human trackway at White Sands National Park in New Mexico, the United States. The human tracks at White Sands National Park record more than 1.5 km (0.93 miles) of an out-and-return journey.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/TMlrnVZB024/white-sands-human-footprints-08953.html?utm_source=feedburner&utm_medium=email

LIVESCIENCE – What's the first species humans drove to extinction?

The dodo? The woolly mammoth? Think again.

<https://www.livescience.com/first-human-caused-animal-extinction.html>

LIVESCIENCE – More humans are growing an extra blood vessel in our arm that 'feeds' our hands

Picturing how our species might appear in the far future often invites wild speculation over stand-out features such as height, brain size, and skin complexion. Yet subtle shifts in our anatomy today demonstrate how unpredictable evolution can be.

<https://www.livescience.com/extra-blood-vessel-found-humans-evolving.html>

SCIENCE DAILY – Modern humans took detours on their way to Europe

Favourable climatic conditions influenced the sequence of settlement movements of Homo sapiens in the Levant on their way from Africa to Europe. In a first step, modern humans settled along the coast of the Mediterranean Sea. Only then did they spread out into the Sinai desert and the eastern Jordanian Rift Valley.

<https://www.sciencedaily.com/releases/2020/10/201014114619.htm>

SCIENCE DAILY – Monkey study suggests that they, like humans, may have 'self-domesticated'

Scientists determined that changing an infant monkey's verbal development also changed a physical marker of domesticity: a patch of white fur on its forehead. This is the first study linking the degree of a social trait with the size of a physical sign of domestication, in any species.

<https://www.sciencedaily.com/releases/2020/10/201015134219.htm>

SCIENCE DAILY – Climate change likely drove early human species to extinction, modeling study suggests

Of the six or more different species of early humans, all belonging to the genus Homo, only we Homo sapiens have managed to survive. Now, a study combining climate modeling and the fossil record in search of clues to what led to all those earlier extinctions suggests that climate change -- the inability to adapt to either warming or cooling temperatures -- likely played a major role in sealing their fate.

<https://www.sciencedaily.com/releases/2020/10/201015111729.htm>

SAPIENS – Early use of fire for toolmaking

A new study, borrowing techniques from artificial intelligence research, suggests hominins in the eastern Mediterranean forged flint blades in flame, a task that requires creating and controlling heat.

<https://sapiens.us11.list-manage.com/track/click?u=80f6cf678900daf984bf763b7&id=2a822abe0c&e=dc0eff6180>

PUBLICATIONS

Current Biology

PAPERS

ASIF A. GHAZANFAR et al – Domestication Phenotype Linked to Vocal Behavior in Marmoset Monkeys

The domestication syndrome refers to a set of traits that are the by-products of artificial selection for increased tolerance toward humans. One hypothesis is that some species, like humans and bonobos, "self-domesticated" and have been under selection for that same suite of domesticated phenotypes. However, the evidence for this has been largely circumstantial.

Here, we provide evidence that, in marmoset monkeys, the size of a domestication phenotype—a white facial fur patch—is linked to their degree of affiliative vocal responding. During development, the amount of parental vocal feedback experienced influences the rate of growth of this facial white patch, and this suggests a mechanistic link between the two phenotypes, possibly via neural crest cells. Our study provides evidence for links between vocal behavior and the development of morphological phenotypes associated with domestication in a nonhuman primate.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(20\)31419-6?dgcid=raven_jbs_aip_email](https://www.cell.com/current-biology/fulltext/S0960-9822(20)31419-6?dgcid=raven_jbs_aip_email)

Evolutionary Anthropology

ARTICLES

JOHN MCNABB – Further Thoughts on the Genetic Argument for Handaxes

The Acheulean handaxe has always been considered a social phenomenon. Corbey et al. provide a major challenge to this argument, arguing quite rightly, that it has never been independently established that handaxe temporal depth is a product of intergenerational social learning. They take a number of assumptions integral to the social argument and suggest, using parsimony, that a genetic explanation is equally as plausible for each of them. Complex structures, in hierarchically nested routines of action, can be built in the natural world by organisms following predetermined genetic sequences of actions triggered by external circumstances. However, there are some important points that the genetic argument dismisses that demonstrate an unequivocal social origin for the Acheulean handaxe. This article identifies those points and restores them to the debate. Parsimony affirms a social basis for handaxes and does not require a theoretical genetic predisposition.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.21809?campaign=woletoc>

PAPERS

RAYMOND CORBEY – Baldwin effects in early stone tools

A sizeable dataset comprising millions of lithic artifacts sampling over two million years of early paleolithic tool technology from Africa and Eurasia is now available. The widespread presupposition of an exclusively cultural, that is, socially learned, nature of early stone tools from at least Acheulean times onwards has been challenged by researchers who hypothesize that these tools, a crucial element of early hominin survival strategies, may partly have been under genetic control, next to the effects of various other determinants. The discussion this hypothesis has sparked off in the present journal is here explored somewhat further, focusing on the Baldwin effect.

<https://onlinelibrary.wiley.com/doi/full/10.1002/evan.21864?campaign=woletoc>

EMMA POMEROY et al with CHRIS STRINGER – Issues of theory and method in the analysis of Paleolithic mortuary behavior: A view from Shanidar Cave

Mortuary behavior (activities concerning dead conspecifics) is one of many traits that were previously widely considered to have been uniquely human, but on which perspectives have changed markedly in recent years. Theoretical approaches to hominin mortuary activity and its evolution have undergone major revision, and advances in diverse archeological and paleoanthropological methods have brought new ways of identifying behaviors such as intentional burial. Despite these advances, debates concerning the nature of hominin mortuary activity, particularly among the Neanderthals, rely heavily on the rereading of old excavations as new finds are relatively rare, limiting the extent to which such debates can benefit from advances in the field. The recent discovery of in situ articulated Neanderthal remains at Shanidar Cave offers a rare opportunity to take full advantage of these methodological and theoretical developments to understand Neanderthal mortuary activity, making a review of these advances relevant and timely.

<https://onlinelibrary.wiley.com/doi/full/10.1002/evan.21854?campaign=woletoc>

Language and Cognition

PAPERS

MARIE HERGET CHRISTENSEN et al – Grammar is background in sentence processing

Boye and Harder (2012) claim that the grammatical–lexical distinction has to do with discourse prominence: lexical elements can convey discursively primary (or foreground) information, whereas grammatical elements cannot (outside corrective contexts). This paper reports two experiments that test this claim. Experiment 1 was a letter detection study, in which readers were instructed to mark specific letters in the text. Experiment 2 was a text-change study, in which participants were asked to register omitted words. Experiment 2 showed a main effect of word category: readers attend more to words in lexical elements (e.g., full verbs) than to those in grammatical elements (e.g., auxiliaries). Experiment 1 showed an interaction: attention to letters in focused constituents increased more for grammatical words than for lexical words. The results suggest that the lexical–grammatical contrast does indeed guide readers' attention to words.

<https://www.cambridge.org/core/journals/language-and-cognition/article/grammar-is-background-in-sentence-processing/A3D154C6FD4C036678E1B619BF69E0FE>

Nature PAPERS

JULIEN LOUYS & PATRICK ROBERTS – Environmental drivers of megafauna and hominin extinction in Southeast Asia

Southeast Asia has emerged as an important region for understanding hominin and mammalian migrations and extinctions. High-profile discoveries have shown that Southeast Asia has been home to at least five members of the genus *Homo*. Considerable turnover in Pleistocene megafauna has previously been linked with these hominins or with climate change, although the region is often left out of discussions of megafauna extinctions. In the traditional hominin evolutionary core of Africa, attempts to establish the environmental context of hominin evolution and its association with faunal changes have long been informed by stable isotope methodologies. However, such studies have largely been neglected in Southeast Asia. Here we present a large-scale dataset of stable isotope data for Southeast Asian mammals that spans the Quaternary period. Our results demonstrate that the forests of the Early Pleistocene had given way to savannahs by the Middle Pleistocene, which led to the spread of grazers and extinction of browsers—although geochronological limitations mean that not all samples can be resolved to glacial or interglacial periods. Savannahs retreated by the Late Pleistocene and had completely disappeared by the Holocene epoch, when they were replaced by highly stratified closed-canopy rainforest. This resulted in the ascendency of rainforest-adapted species as well as *Homo sapiens*—which has a unique adaptive plasticity among hominins—at the expense of savannah and woodland specialists, including *Homo erectus*. At present, megafauna are restricted to rainforests and are severely threatened by anthropogenic deforestation.

<https://www.nature.com/articles/s41586-020-2810-y>

Nature Communications PAPERS

NIKLAS WILMING et al – Large-scale dynamics of perceptual decision information across human cortex

Perceptual decisions entail the accumulation of sensory evidence for a particular choice towards an action plan. An influential framework holds that sensory cortical areas encode the instantaneous sensory evidence and downstream, action-related regions accumulate this evidence. The large-scale distribution of this computation across the cerebral cortex has remained largely elusive. Here, we develop a regionally-specific magnetoencephalography decoding approach to exhaustively map the dynamics of stimulus- and choice-specific signals across the human cortical surface during a visual decision. Comparison with the evidence accumulation dynamics inferred from behavior disentangles stimulus-dependent and endogenous components of choice-predictive activity across the visual cortical hierarchy. We find such an endogenous component in early visual cortex (including V1), which is expressed in a low (<20 Hz) frequency band and tracks, with delay, the build-up of choice-predictive activity in (pre-) motor regions. Our results are consistent with choice- and frequency-specific cortical feedback signaling during decision formation.

<https://www.nature.com/articles/s41467-020-18826-6>

Nature Human Behaviour ARTICLES

CHRISTOF KOCH – Hot or not

Electrical stimulation of the human cortex, undertaken for brain surgery, triggers percepts and feelings. A new study documents an ordering principle to these effects: the farther removed from sensory input or motor output structures, the less likely it is that a region contributes to consciousness.

<https://www.nature.com/articles/s41562-020-0925-7>

PAPERS

MOLLY LEWIS & GARY LUPYAN – Gender stereotypes are reflected in the distributional structure of 25 languages

Cultural stereotypes such as the idea that men are more suited for paid work and women are more suited for taking care of the home and family, may contribute to gender imbalances in science, technology, engineering and mathematics (STEM) fields, among other undesirable gender disparities. Might these stereotypes be learned from language? Here we examine whether gender stereotypes are reflected in the large-scale distributional structure of natural language semantics. We measure gender associations embedded in the statistics of 25 languages and relate these to data on an international dataset of psychological gender associations ($N = 656,636$). People's implicit gender associations are strongly predicted by gender associations encoded in the statistics of the language they speak. These associations are further related to the extent that languages mark gender in occupation terms (for example, 'waiter'/'waitress'). Our pattern of findings is consistent with the possibility that linguistic associations shape people's implicit judgements.

<https://www.nature.com/articles/s41562-020-0918-6>

BILL THOMPSON, SEÁN G. ROBERTS & GARY LUPYAN – Cultural influences on word meanings revealed through large-scale semantic alignment

If the structure of language vocabularies mirrors the structure of natural divisions that are universally perceived, then the meanings of words in different languages should closely align. By contrast, if shared word meanings are a product of shared culture, history and geography, they may differ between languages in substantial but predictable ways. Here, we analysed

the semantic neighbourhoods of 1,010 meanings in 41 languages. The most-aligned words were from semantic domains with high internal structure (number, quantity and kinship). Words denoting natural kinds, common actions and artefacts aligned much less well. Languages that are more geographically proximate, more historically related and/or spoken by more-similar cultures had more aligned word meanings. These results provide evidence that the meanings of common words vary in ways that reflect the culture, history and geography of their users.

<https://www.nature.com/articles/s41562-020-0924-8>

CAROLINA FEHER DA SILVA & TODD A. HARE – Humans primarily use model-based inference in the two-stage task

Distinct model-free and model-based learning processes are thought to drive both typical and dysfunctional behaviours. Data from two-stage decision tasks have seemingly shown that human behaviour is driven by both processes operating in parallel. However, in this study, we show that more detailed task instructions lead participants to make primarily model-based choices that have little, if any, simple model-free influence. We also demonstrate that behaviour in the two-stage task may falsely appear to be driven by a combination of simple model-free and model-based learning if purely model-based agents form inaccurate models of the task because of misconceptions. Furthermore, we report evidence that many participants do misconceive the task in important ways. Overall, we argue that humans formulate a wide variety of learning models. Consequently, the simple dichotomy of model-free versus model-based learning is inadequate to explain behaviour in the two-stage task and connections between reward learning, habit formation and compulsion.

<https://www.nature.com/articles/s41562-020-0905-y>

Nature Scientific Reports

PAPERS

KIRAN PALA – Copula is an intuitive predicate of consciousness on fulfilment of knowing and judging acts

The recent investigations into knowledge and its elements viz facts, skills and objects have become prominent in various subfields of philosophy and other areas like linguistics, cognitive science, neuroscience and artificial intelligence. These investigations have been mainly on understanding the relation between the intentionality and its referential entities to know how they enrich knowledge with their existence. This article starts with an exploration of the fundamental aspects of judgemental sense from the knowledge origins perspective. To explain the consequences of this, I start with reconstructing the notion of categorial intuitions described in Husserl's sixth Logical Investigations by relating it to 'knowledge origination' as an intuitive fulfilment of signifying acts. This offers a relation of perceptual synthesis, operating implicitly among the signifying intentions upon grasping intended objects, in view of language structures such as copulas. This leads to the synthesis of intuitive aspects mainly from the categorial elements for a judgemental sense or thinking and the attitude from the very sphere of perception. The tension between categorial intuitions is understood as foundational acts and founded acts. Husserl's sixth Logical Investigation describes the notion of passive synthesis, the genesis of categoriality in every realm of sensibility that allows one to formulate the relational role among the 'act of knowing' and phenomenological approaches to the judgemental sense. Thus, the investigation focuses on perceptual judgements and categories, which fulfils the judgemental sense of categorial elements and attitude.

<https://www.nature.com/articles/s41599-020-00616-6>

YOHSUKE MURASE & SEUNG KI BAEK – Five rules for friendly rivalry in direct reciprocity

Direct reciprocity is one of the key mechanisms accounting for cooperation in our social life. According to recent understanding, most of classical strategies for direct reciprocity fall into one of two classes, 'partners' or 'rivals'. A 'partner' is a generous strategy achieving mutual cooperation, and a 'rival' never lets the co-player become better off. They have different working conditions: For example, partners show good performance in a large population, whereas rivals do in head-to-head matches. By means of exhaustive enumeration, we demonstrate the existence of strategies that act as both partners and rivals. Among them, we focus on a human-interpretable strategy, named 'CAPRI' after its five characteristic ingredients, i.e., cooperate, accept, punish, recover, and defect otherwise. Our evolutionary simulation shows excellent performance of CAPRI in a broad range of environmental conditions.

<https://www.nature.com/articles/s41598-020-73855-x>

JACOB A. MILLER et al – Sulcal morphology of ventral temporal cortex is shared between humans and other hominoids

Hominoid-specific brain structures are of particular importance in understanding the evolution of human brain structure and function, as they are absent in mammals that are widely studied in the extended neuroscience field. Recent research indicates that the human fusiform gyrus (FG), which is a hominoid-specific structure critical for complex object recognition, contains a tertiary, longitudinal sulcus (mid-fusiform sulcus, MFS) that bisects the FG into lateral and medial parallel gyri. The MFS is a functional and architectonic landmark in the human brain. Here, we tested if the MFS is specific to the human FG or if the MFS is also identifiable in other hominoids. Using magnetic resonance imaging and cortical surface reconstructions in 30 chimpanzees and 30 humans, we show that the MFS is also present in chimpanzees. The MFS is relatively deeper and cortically thinner in chimpanzees compared to humans. Additional histological analyses reveal that the MFS is not only present in humans and chimpanzees, but also in bonobos, gorillas, orangutans, and gibbons. Taken together, these results reveal that the MFS is a sulcal landmark that is shared between humans and other hominoids. These results require a

reconsideration of the sulcal patterning in ventral temporal cortex across hominoids, as well as revise the compensation theory of cortical folding.

<https://www.nature.com/articles/s41598-020-73213-x>

BETHANY BURUM, MARTIN A. NOWAK & MOSHE HOFFMAN – An evolutionary explanation for ineffective altruism

We donate billions to charities each year, yet much of our giving is ineffective. Why are we motivated to give but not to give effectively? Building on evolutionary game theory, we argue that donors evolved (genetically or culturally) to be insensitive to efficacy because people tend not to reward efficacy, as social rewards tend to depend on well-defined and highly observable behaviours. We present five experiments testing key predictions of this account that are difficult to reconcile with alternative accounts based on cognitive or emotional limitations. Namely, we show that donors are more sensitive to efficacy when helping themselves or their families. Moreover, social rewarders don't condition on efficacy or other difficult-to-observe behaviours, such as the amount donated.

<https://www.nature.com/articles/s41562-020-00950-4>

New Scientist

NEWS

Stone Age people in Ireland had dark skin and were lactose-intolerant

Some Stone Age people in Ireland left the bodies of their dead to decompose in a natural rocky chamber on a mountain. Genetic analysis of two of these bodies shows they had darker skin, like many people in Europe at the time, and suggests they lived in fairly large communities.

<https://www.newscientist.com/article/2256812-stone-age-people-in-ireland-had-dark-skin-and-were-lactose-intolerant/#ixzz6b2g5DGqS>

Naked mole rats invade neighbouring colonies and kidnap their babies

Naked mole rats go to war. The sociable little mammals have been observed invading neighbouring populations and even kidnapping newborn pups, who become workers in the conquering colony.

<https://www.newscientist.com/article/2256695-naked-mole-rats-invade-neighbouring-colonies-and-kidnap-their-babies/#ixzz6b2gxZgp>

ARTICLES

DAVID ROBSON – 'Ums' and 'ers' are a hidden code that helped complex language evolve

Filler words such as uh, mmm and huh may seem inarticulate, but without them human communication would be far less sophisticated.

<https://www.newscientist.com/article/mg24833041-100-ums-and-ers-are-a-hidden-code-that-helped-complex-language-evolve/#ixzz6b2fXkYYU>

PLoS Biology

PAPERS

TIM SAINBURG ,MARVIN THIELK & TIMOTHY Q. GENTNER – Finding, visualizing, and quantifying latent structure across diverse animal vocal repertoires

This is an uncorrected proof.

Animals produce vocalizations that range in complexity from a single repeated call to hundreds of unique vocal elements patterned in sequences unfolding over hours. Characterizing complex vocalizations can require considerable effort and a deep intuition about each species' vocal behavior. Even with a great deal of experience, human characterizations of animal communication can be affected by human perceptual biases. We present a set of computational methods for projecting animal vocalizations into low dimensional latent representational spaces that are directly learned from the spectrograms of vocal signals. We apply these methods to diverse datasets from over 20 species, including humans, bats, songbirds, mice, cetaceans, and nonhuman primates. Latent projections uncover complex features of data in visually intuitive and quantifiable ways, enabling high-powered comparative analyses of vocal acoustics. We introduce methods for analyzing vocalizations as both discrete sequences and as continuous latent variables. Each method can be used to disentangle complex spectro-temporal structure and observe long-timescale organization in communication.

<https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1008228>

PNAS

PAPERS

PATRICIA L. LOCKWOOD et al – Model-free decision making is prioritized when learning to avoid harming others

Moral behavior requires learning how our actions help or harm others. Theoretical accounts of learning propose a key division between "model-free" algorithms that cache outcome values in actions and "model-based" algorithms that map actions to outcomes. Here, we tested the engagement of these mechanisms and their neural basis as participants learned to avoid painful electric shocks for themselves and a stranger. We found that model-free decision making was prioritized when

learning to avoid harming others compared to oneself. Model-free prediction errors for others relative to self were tracked in the thalamus/caudate. At the time of choice, neural activity consistent with model-free moral learning was observed in subgenual anterior cingulate cortex (sgACC), and switching after harming others was associated with stronger connectivity between sgACC and dorsolateral prefrontal cortex. Finally, model-free moral learning varied with individual differences in moral judgment. Our findings suggest moral learning favors efficiency over flexibility and is underpinned by specific neural mechanisms.

<https://www.pnas.org/content/early/2020/10/13/2010890117.abstract?etoc>

MARION ROUAULT & STEPHEN M. FLEMING – Formation of global self-beliefs in the human brain

Humans create metacognitive beliefs about their performance across many levels of abstraction—from local confidence in individual decisions to global estimates of our skills and abilities. Despite a rich literature on the neural basis of local confidence judgements, how global self-performance estimates (SPEs) are constructed remains unknown. Using functional magnetic resonance imaging, we scanned human subjects while they performed several short blocks of tasks and reported on which task they think they performed best, providing a behavioral proxy for global SPEs. In a frontoparietal network sensitive to fluctuations in local confidence, we found that activity within ventromedial prefrontal cortex and precuneus was additionally modulated by global SPEs. In contrast, activity in ventral striatum was associated with subjects' global SPEs irrespective of fluctuations in local confidence, and predicted the extent to which global SPEs tracked objective task difficulty across individuals. Our findings reveal neural representations of global SPEs that go beyond the tracking of local confidence, and lay the groundwork for understanding how a formation of global self-beliefs may go awry in conditions characterized by distorted self-evaluation.

<https://www.pnas.org/content/early/2020/10/14/2003094117.abstract?etoc>

Proceedings of the Royal Society B

PAPERS

MELISSA LINN et al – Octopamine and dopamine mediate waggle dance following and information use in honeybees

Honeybees can be directed to profitable food sources by following waggle dances performed by other bees. Followers can often choose between using this social information or relying on memories about food sources they have visited in the past, so-called private information. While the circumstances that favour the use of either social or private information have received considerable attention, still little is known about the neurophysiological basis of information use. We hypothesized that octopamine and dopamine, two biogenic amines with important functions in reward signalling and learning, affect dance use in honeybees. We orally administered octopamine and dopamine when bees collected food at artificial feeders and tested if this affected interest in dance information about a new food source. We predicted that octopamine reduces interest in dances and strengthens private information use via an increase in the perceived value of the previously exploited resource. Since dopamine has been shown to lower reward perception, we expected it to act in the opposite direction. Octopamine-treated foragers indeed followed 32% fewer dances than control bees and increased the use of private information. Conversely, dopamine-treated bees followed dances 15% longer than control bees, but surprisingly did not use social information more. Overall, our results suggest that biogenic amine signalling affects interactions among dancers and dance followers and, thus, information flow about high-quality food sources.

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