

CONTENTS

NOTICES	2
PUBLICATION ALERTS.....	2
ACADEMIA.EDU – The Indian Subcontinent and ‘Out of Africa I’	3
PARTH R. CHAUHAN – The Indian Subcontinent and ‘Out of Africa I’	3
ACADEMIA.EDU – Mosaic evolution in hominin phylogeny	3
ANDREA PARRAVICINI & TELMO PIEVANI – Mosaic evolution in hominin phylogeny: meanings, implications, and explanations.....	3
ACADEMIA.EDU – The Role of Coastal Adaptations in Human Evolution and Dispersal	3
MANUEL WILL, ANDREW W. KANDEL & NICHOLAS J. CONARD – Midden or Molehill: The Role of Coastal Adaptations in Human Evolution and Dispersal	3
ACADEMIA.EDU – Sterkfontein at 75.....	4
SALLY CHRISTINE REYNOLDS & JOB MUNUHE KIBII – Sterkfontein at 75: review of palaeoenvironments, fauna and archaeology from the hominin site of Sterkfontein (Gauteng Province, South Africa)	4
CONFERENCE ALERT – Second Global Animal Behaviour Twitter Conference	4
NEWS	5
NATURE BRIEFING – Medicine Nobel for ancient DNA.....	5
SAPIENS – Ape Teeth, Hominin Evolution	5
SCIENCE NEWS – Ancient DNA pioneer Svante Pääbo wins Nobel Prize in Physiology or Medicine.....	5
SOCIETY FOR SCIENCE – Genetics of human evolution wins 2022 Nobel Prize in physiology or medicine	5
THE CONVERSATION – Nobel prize: Svante Pääbo’s ancient DNA discoveries.....	5
THE CONVERSATION – Do we have free will – and do we want it? Thomas the Tank Engine offers clues	5
PUBLICATIONS	5
American Journal of Biological Anthropology	5
PAPERS	5
JEREMIAH E. SCOTT – Variation in macroevolutionary dynamics among extant primates	5
SCOTT A. WILLIAMS et al with LEE R. BERGER – Homo naledi lumbar vertebrae and a new 3D method to quantify vertebral wedging.....	5
eLife.....	6
PAPERS	6
NICHOLAS M. GREBE et al – Mountain gorillas maintain strong affiliative biases for maternal siblings despite high male reproductive skew and extensive exposure to paternal kin	6
MING LIU, STUART ANDREW WEST & GEOFF WILD – The evolution of manipulative cheating	6
Evolutionary Anthropology	6
PAPERS	6
MANVIR SINGH – Subjective selection and the evolution of complex culture	6
REVIEWS	6
ANDREA RAVIGNANI – Language evolution: Sound meets gesture?	6
CHARLES C. ROSEMAN – Will celebrating complexity get us where we need to go?	7
Frontiers in Communication.....	7
PAPERS	7
TAMAMI SHIMADA – Contact-induced grammar formation: A model from a study on Hiberno-English.....	7
Frontiers in Human Neuroscience	7
PAPERS	7
VÉRONIQUE BOULENGER et al – Up right, not right up: Primacy of verticality in both language and movement	7
SARAH I. MOSSAD et al – Characterising the spatial and oscillatory unfolding of Theory of Mind in adults using fMRI and MEG	7
DAVID KEMMERER – Revisiting the relation between syntax, action, and left BA44	8
Nature	8
NEWS	8
Geneticist who unmasked lives of ancient humans wins medicine Nobel	8
From Neanderthal genome to Nobel prize: meet geneticist Svante Pääbo	8
Nature Biotechnology	8
ARTICLES	8
JENNIFER M. MICHAUD, ALI MADANI & JAMES S. FRASER – A language model beats alphafold2 on orphans.....	8
NOELIA FERRUZ & BIRTE HÖCKER – Dreaming ideal protein structures.....	8
ELENI KOTSILITI – De novo protein design with a language model.....	8

PAPERS	8
RATUL CHOWDHURY et al – Single-sequence protein structure prediction using a language model and deep learning	8
Nature Communications	9
PAPERS	9
SAPTARSHI PAL & CHRISTIAN HILBE – Reputation effects drive the joint evolution of cooperation and social rewarding	9
NOELIA FERRUZ, STEFFEN SCHMIDT & BIRTE HÖCKER – ProtGPT2 is a deep unsupervised language model for protein design	9
Nature Human Behaviour.....	9
PAPERS	9
CHRISTOPHER COX et al – A systematic review and Bayesian meta-analysis of the acoustic features of infant-directed speech.....	9
Nature Machine Intelligence	9
ARTICLES	9
NOELIA FERRUZ & BIRTE HÖCKER – Controllable protein design with language models.....	9
Nature Scientific Reports.....	10
PAPERS	10
DIEGO ESCRIBANO et al – Chimpanzees organize their social relationships like humans	10
SZYMON TALAGA & ANDRZEJ NOWAK – Structural measures of similarity and complementarity in complex networks.....	10
ALAN S. R. FERMIN et al – The neuroanatomy of social trust predicts depression vulnerability	10
Nature Translational Psychiatry.....	11
PAPERS	11
MICHAEL DANNEMANN et al – Neandertal introgression partitions the genetic landscape of neuropsychiatric disorders and associated behavioral phenotypes.....	11
New Scientist	11
NEWS	11
Nobel prize awarded for study of human evolution using ancient DNA	11
REVIEWS	11
CHRIS STOKEL-WALKER – Two eye-opening new books delve into the world of animal communication	11
PLoS One.....	11
PAPERS	11
LEIDY CUBILLOS-PINILLA & FRANZISKA EMMERLING – Taking the chance!–Interindividual differences in rule-breaking	11
MATTHEW CHENNELLS et al – Coordinated decision-making boosts altruistic motivation—But not trust.....	11
DIANA PILI-MOSS – Long-term memory predictors of adult language learning at the interface between syntactic form and meaning	12
EUGÉNIE GAUVRIT ROUX – Socio-economic dynamics of Magdalenian hunter-gatherers: Functional perspective	12
LISETTE IBANEZ & HAYET SAADAOU – An experimental investigation on the dark side of emotions and its aftereffects	12
Science.....	12
NEWS	12
Ancient DNA pioneer Svante Pääbo wins Nobel Prize in Physiology or Medicine.....	12
Trends in Cognitive Sciences	13
PAPERS	13
OLAF SPORNS – The complex brain: connectivity, dynamics, information.....	13
NICK CHATER – The computational society.....	13
Trends in Ecology and Evolution.....	13
PAPERS	13
ARYEH H. MILLER, JAMES T. STROUD & JONATHAN B. LOSOS – The ecology and evolution of key innovations	13
SUBSCRIBE to the EAORC Bulletin	13
UNSUBSCRIBE from the EAORC Bulletin	13
PRODUCED BY AND FOR THE EAORC EMAIL GROUP	13

NOTICES

PUBLICATION ALERTS

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

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

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

ACADEMIA.EDU – The Indian Subcontinent and ‘Out of Africa I’

In J.G. Fleagle, J.J. Shea, F.E. Grine, A.L. Baden, R.E. Leakey (eds.), *Out of Africa I: The First Hominin Colonization of Eurasia*, 145-164 (2010).

PARTH R. CHAUHAN – The Indian Subcontinent and ‘Out of Africa I’

The last few decades of paleoanthropological research has raised important issues about the rate and chrono-geographical extent of early hominin dispersals from Africa into Eurasia. Owing to its geographic position, the Indian subcontinent has a pivotal role to play in addressing such issues. This ecologically diverse landmass critically lies between the three sources of the oldest Homo fossils in the Old World and a southern route of expansion from Africa to Southeast Asia, through this region, has often been inferred. Claims of Plio-Pleistocene Oldowan assemblages have been made since the 1960s and come from the Narmada Valley in central India and from the Siwalik Hills in northern Pakistan and northern India. This paper critically reviews each of these claims and broadly discusses associated Plio-Pleistocene environments and geographic routes of entry. A large majority of these reported occurrences represents unsubstantiated claims and require further scientific verification through additional evidence. Tentative scenarios for the current absence of paleoanthropological evidence older than the Middle Pleistocene are also briefly discussed. This current lack of Oldowan assemblages, however, does not reflect an unquestionable absence of hominin occupation in the region. Ecologically conducive environments in the form of open grasslands, a seasonal monsoon regime, diverse fauna and eco-habitats (i.e., diverse hunting/scavenging opportunities), and an abundance of water and stone resources suggest the possible earlier presence of hominins in South Asia. Obviously, much more field research is required to test and confirm their early presence/absence in this geographically important region of the Old World. https://www.academia.edu/1261934/The_Indian_Subcontinent_and_Out_of_Africa_I

ACADEMIA.EDU – Mosaic evolution in hominin phylogeny

In *Journal of Anthropological Sciences* 97, 1-24 (2019).

ANDREA PARRAVICINI & TELMO PIEVANI – Mosaic evolution in hominin phylogeny: meanings, implications, and explanations

In paleoanthropological literature, the use of the term “mosaic” (mosaic evolution, mosaic trait, mosaic species, and so on) is becoming more and more frequent. In order to promote a clarification of the use of the concept in literature, we propose here a classification in three different meanings of the notion of mosaic in human evolution: 1) morphological (inter-specific and intra-specific) instability in a certain phase of a branched phylogeny; 2) multiple trajectories and versions of the same adaptive trait in a branched phylogeny; 3) the trait itself as a complex mosaic of sub-traits with different phylogenetic stories (as is the case in language). We argue that the relevance of such mosaic patterns needs a macro-evolutionary interpretation, which takes into consideration the interaction between general selective pressures (promoting different versions of the same adaptation) and a cladogenetic approach in which speciation played a crucial role, due to ecological instability, habitat fragmentation, and geographical dispersals in human evolution.

https://www.academia.edu/39736163/Mosaic_evolution_in_hominin_phylogeny_meanings_implications_and_explanations_Journal_of_Anthropological_Sciences_97_2019

ACADEMIA.EDU – The Role of Coastal Adaptations in Human Evolution and Dispersal

Journal of World Prehistory 32, 33-72 (2019).

MANUEL WILL, ANDREW W. KANDEL & NICHOLAS J. CONARD – Midden or Molehill: The Role of Coastal Adaptations in Human Evolution and Dispersal

Coastal adaptations have become an important topic in discussions about the evolution and dispersal of Homo sapiens. However, the actual distribution and potential relevance of coastal adaptations (broadly, the use of coastal resources and settlement along shorelines) in these processes remains debated, as is the claim that Neanderthals exhibited similar behaviors. To assess both questions, we performed a systematic review comparing coastal adaptations of H. sapiens during the African Middle Stone Age (MSA) with those of contemporaneous Neanderthals during the European Middle Paleolithic. In both species, systematic use of marine resources and coastal landscapes constitutes a consistent behavioral signature over ~ 100,000 years (MIS 6–3) in several regions of Africa and Europe. We found more similarities than differences between Neanderthals and modern humans, with remaining disparities all in degree rather than kind. H. sapiens exploited a wider range of marine resources—particularly shellfish—more intensively. MSA shellfish-bearing sites are also more often associated with intense occupations on coastal landscapes, and more evidence of complex material culture such as shell beads. In terms of broader ramifications, Pleistocene coastal adaptations are best conceived of as an ‘add-on’ to previous adaptive strategies, complementing more frequently exploited inland resources and landscapes. Still, Neanderthals and modern humans increased their dietary breadth and quality, and added options for occupation and range expansion along coastlines. Potential evolutionary implications of these multi-generational behaviors include higher intakes of brain-selective nutrients as a basis for neurobiological changes connected to increased cognitive capacities, but also greater reproductive success, dispersal abilities and behavioral flexibility. Whether gradual differences between modern humans and Neanderthals stimulated different evolutionary trajectories is a question for future research.

https://www.academia.edu/38288855/Midden_or_Molehill_The_Role_of_Coastal_Adaptations_in_Human_Evolution_and_Dispersal

ACADEMIA.EDU – Sterkfontein at 75

In Palaeontologia Africana 46, 59-88 (2011).

SALLY CHRISTINE REYNOLDS & JOB MUNUHE KIBII – Sterkfontein at 75: review of palaeoenvironments, fauna and archaeology from the hominin site of Sterkfontein (Gauteng Province, South Africa)

Seventy-five years after Robert Broom's discovery of the first adult Australopithecus in 1936, the Sterkfontein Caves (Gauteng Province, South Africa) remains one of the richest and most informative fossil hominin sites in the world. The deposits record hominin and African mammal evolution from roughly 2.6 million years (Ma) until the Upper Pleistocene. Earlier excavation efforts focused on the Member 4 australopithecine-bearing breccia and the Member 5 stone tool-bearing breccias of Oldowan and Early Acheulean age. Ronald J. Clarke's 1997 programme of understanding the cave deposits as a whole led to the discovery of the near-complete StW 573 Australopithecus skeleton in the Member 2 deposit of the Silberberg Grotto, and the exploration of lesser-known deposits such as the Jacovec Cavern, Name Chamber and the Lincoln Cave. Our aim is to produce a cogent synthesis of the environments, palaeodietary information, fauna and stone artefacts as recorded in the Sterkfontein sequence. We begin with an overview of the site and early accounts of the interpretations of the site-formation processes, after which we discuss each Member in turn and summarize the various types of evidence published so far. Finally, we review the most pertinent debates about the site, including the ages of Sterkfontein Member 2 and 4, and the types of habitats represented at the site through time.

https://www.academia.edu/88127751/Sterkfontein_at_75_review_of_palaeoenvironments_fauna_and_archaeology_from_the_hominin_site_of_Sterkfontein_Gauteng_Province_South_Africa

CONFERENCE ALERT – Second Global Animal Behaviour Twitter Conference

We are Animal behaviour Live, an international online platform promoting sustainable and inclusive events fully broadcast online on YouTube. We are glad to announce that this year we are hosting the third edition of the Animal Behaviour Live: Annual Online Congress on the 17th and 18th of November 2022. In line with our ethos, the event is free of charge to all researchers from the community. To ensure that everyone can participate, the congress will be divided into 6 sessions (3 sessions per day):

* Session 1: 7h-10h UTC+0

* Session 2: 14h-17h UTC+0

* Session 3: 21h-24h UTC+0

Over these different sessions, you will be able to attend 5 plenaries and 24 short presentations, as well as other little surprises. In parallel, it will also be possible to watch a series of posters during the whole congress.

Our plenary speakers so far are:

* Pr. Madeleine Beekman, Emeritus Professor of Evolutionary Biology, The University of Sydney, Australia. She will talk about why she loves studying honeybees.

* Pr. Elizabeth Tibbetts, Professor of Ecology and Evolutionary Biology at the University of Michigan, USA. She will talk about how communication, cognition, and flexible hormone titres mediate social competence in paper wasps.

* Pr. Hema Somanathan, Professor at the School of Biology of the Indian Institute of Science Education and Research, Thiruvananthapuram, India. She will talk about bees beyond twilight.

* Pr. Erica van de Waal, Professor at the Department of Ecology and Evolution, University of Lausanne, Switzerland. She will talk about lab cognition going wild with field experiments on vervet monkeys.

* Pr. Leticia Avilés, Professor at the University of British Columbia, Vancouver, Canada.

For more information and to register, please visit our website: <http://www.animalbehaviour.live/index.html>.

This year's conference will include a satellite workshop on how to apply the STRANGE guidelines

(<https://doi.org/10.1038/d41586-020-01751-5>), a new framework for animal behaviour research that will help to avoid sampling bias and to improve data reproducibility. An extra (free) registration is necessary to participate in this workshop: <https://forms.gle/7MneWBULxqicR1W96>. From these registrations, we will pick several participants willing to take part in the discussion with the STRANGE authors about the issues our community often faces when reporting animal behaviour and what can be done about it. Let us know in the form if you would like to be chosen to act as one such representative of our community and interact live with the authors.

Our organisation is small (we are 7 early career researchers working on a voluntary basis) and the success of this event is based on the support of our community. For this reason, we would be particularly grateful if you could spread the word about this event to your colleagues and collaborators who you think may benefit from participating in the congress. If you have a twitter account, you can also follow us (@AnimalBehavLive) and RT our announcement about the congress. We would like to thank you for your help and hope to see you at the Animal Behaviour Live: Annual Online Conference 2022. Dr Natacha Rossi (she/her) <https://profiles.sussex.ac.uk/p579686-natacha-rossi>

NEWS

NATURE BRIEFING – Medicine Nobel for ancient DNA

This year's Nobel Prize in Physiology or Medicine has been awarded to the 'godfather' of the fiercely competitive field of palaeogenomics. Svante Pääbo, a geneticist at the Max Planck Institute for Evolutionary Anthropology in Germany, pioneered the use of precious snippets of DNA in fossils that are tens of thousands of years old to study human evolution. His work has led to the sequencing of the Neanderthal genome and the discovery of the group of hominins called the Denisovans.

<https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=3c8e08956a&e=1db4b9a19b>

SAPIENS – Ape Teeth, Hominin Evolution

Two scientists examine how 17-million-year-old ape teeth can offer insights into early human evolution.

<https://sapiens.us11.list-manage.com/track/click?u=80f6cf678900daf984bf763b7&id=5d649d7a51&e=dc0eff6180>

SCIENCE NEWS – Ancient DNA pioneer Svante Pääbo wins Nobel Prize in Physiology or Medicine

By sequencing genomes of extinct hominins, Pääbo explored "what makes us uniquely human".

<https://www.science.org/content/article/nobel-prize-physiology-or-medicine-2022>

SOCIETY FOR SCIENCE – Genetics of human evolution wins 2022 Nobel Prize in physiology or medicine

By figuring out how to extract DNA from ancient bones, Svante Pääbo was able to decipher the genomes of our hominid relatives.

<http://click.societyforscience->

email.com/?qs=9bd41a7a455778952fd2d630312de3a673b8fd0ac2cb249de0b91dab32e1b886c10b761f972e5560a3b5f2a260994a0ce93a8dce2fe1dc158501ac8b09e9b211

THE CONVERSATION – Nobel prize: Svante Pääbo's ancient DNA discoveries

The Nobel Prize in physiology or medicine for 2022 has been awarded to Svante Pääbo, whose discoveries have been pivotal to the way we understand our evolutionary history.

<https://theconversationuk.cmail20.com/t/r-l-tiffkk-khhiliah-g/>

THE CONVERSATION – Do we have free will – and do we want it? Thomas the Tank Engine offers clues

Thomas the Tank Engine's movements are restricted by the tracks, but he still thinks he's free.

{Or, alternatively, Thomas may only be showing that "free will" is a underdefined thing, and possible undefinable. Is free will freedom of action? Not semantically, because "will" is intention not action, and "free" is still restrained by all kinds of physical and logical impossibilities. First define your terms; then consider the actual world and not a toy world of talking trains. For instance, "there is no such thing as free will" doesn't work as a defence in law, you "will" still lose your "freedom". Or, to use that wise old folk philosophy, "if I were going where you are going, I wouldn't start from here".}

<https://theconversationuk.cmail19.com/t/r-l-tjelkhd-khhiliah-yd/>

PUBLICATIONS

American Journal of Biological Anthropology

PAPERS

JEREMIAH E. SCOTT – Variation in macroevolutionary dynamics among extant primates

Recent anthropoid macroevolution has been characterized by marked variation in diversification dynamics among clades. Strepsirrhines and tarsiids are more uniform, despite divergent evolutionary and biogeographic histories. Higher speciation rates in diurnal lineages may be driven by greater ecological opportunity or reliance on visual signals for mate recognition. However, the differences among anthropoids indicate that factors other than activity pattern (e.g., clade competition, historical contingency) have had a more influential role in shaping recent primate diversification.

{“Macroevolution” is used here in its original genetic and biological meaning (major evolutionary change, especially with regard to the evolution of whole taxonomic groups over long periods of time), and not in Chomsky's magical meaning (a major change occurring catastrophically in an individual, which is serendipitous enough to spread through an entire population like a contagion).}

<https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.24622>

SCOTT A. WILLIAMS et al with LEE R. BERGER – Homo naledi lumbar vertebrae and a new 3D method to quantify vertebral wedging

In humans and known fossil hominins, lumbar lordosis is produced by vertebral body wedging and other bony and soft tissue features such as the shape of the intervertebral discs. Current techniques for quantifying the wedging of vertebral bodies are limited in utility, especially when analyzing incomplete fossil material. Here, we introduce a 3D method to quantify vertebral

body wedging angles that yields the angles between two “best fit” planes in the software GeoMagic Wrap (3D Systems). The new 3D plane method introduced here is repeatable with the traditional linear measurement method and allows for the estimation of wedging angles in incomplete material. When applied to *Homo naledi* lumbar vertebrae, similarities to other fossil hominins and modern humans are found.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24621>

eLife

PAPERS

NICHOLAS M. GREBE et al – Mountain gorillas maintain strong affiliative biases for maternal siblings despite high male reproductive skew and extensive exposure to paternal kin

Evolutionary theories predict that sibling relationships will reflect a complex balance of cooperative and competitive dynamics. In most mammals, dispersal and death patterns mean that sibling relationships occur in a relatively narrow window during development and/or only with same-sex individuals. Besides humans, one notable exception is mountain gorillas, in which non-sex-biased dispersal, relatively stable group composition, and the long reproductive tenures of alpha males mean that animals routinely reside with both maternally and paternally related siblings, of the same and opposite sex, throughout their lives. Using nearly 40,000 hr of behavioral data collected over 14 years on 699 sibling and 1235 non-sibling pairs of wild mountain gorillas, we demonstrate that individuals have strong affiliative preferences for full and maternal siblings over paternal siblings or unrelated animals, consistent with an inability to discriminate paternal kin. Intriguingly, however, aggression data imply the opposite. Aggression rates were statistically indistinguishable among all types of dyads except one: in mixed-sex dyads, non-siblings engaged in substantially more aggression than siblings of any type. This pattern suggests mountain gorillas may be capable of distinguishing paternal kin but nonetheless choose not to affiliate with them over non-kin. We observe a preference for maternal kin in a species with a high reproductive skew (i.e. high relatedness certainty), even though low reproductive skew (i.e. low relatedness certainty) is believed to underlie such biases in other non-human primates. Our results call into question reasons for strong maternal kin biases when paternal kin are identifiable, familiar, and similarly likely to be long-term groupmates, and they may also suggest behavioral mismatches at play during a transitional period in mountain gorilla society.

<https://elifesciences.org/articles/80820>

MING LIU, STUART ANDREW WEST & GEOFF WILD – The evolution of manipulative cheating

A social cheat is typically assumed to be an individual that does not perform a cooperative behaviour, or performs less of it, but can still exploit the cooperative behaviour of others. However, empirical data suggests that cheating can be more subtle, involving evolutionary arms races over the ability to both exploit and resist exploitation. These complications have not been captured by evolutionary theory, which lags behind empirical studies in this area. We bridge this gap with a mixture of game-theoretical models and individual-based simulations, examining what conditions favour more elaborate patterns of cheating. We found that as well as adjusting their own behaviour, individuals can be selected to manipulate the behaviour of others, which we term 'manipulative cheating'. Further, we found that manipulative cheating can lead to dynamic oscillations (arms races), between selfishness, manipulation, and suppression of manipulation. Our results can help explain both variation in the level of cheating, and genetic variation in the extent to which individuals can be exploited by cheats.

<https://elifesciences.org/articles/80611>

Evolutionary Anthropology

PAPERS

MANVIR SINGH – Subjective selection and the evolution of complex culture

Why is culture the way it is? Here I argue that a major force shaping culture is subjective (cultural) selection, or the selective retention of cultural variants that people subjectively perceive as satisfying their goals. I show that people evaluate behaviors and beliefs according to how useful they are, especially for achieving goals. As they adopt and pass on those variants that seem best, they iteratively craft culture into increasingly effective-seeming forms. I argue that this process drives the development of many cumulatively complex cultural products, including effective technology, magic and ritual, aesthetic traditions, and institutions. I show that it can explain cultural dependencies, such as how certain beliefs create corresponding new practices, and I outline how it interacts with other cultural evolutionary processes. Cultural practices everywhere, from spears to shamanism, develop because people subjectively evaluate them to be effective means of satisfying regular goals.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.21948>

REVIEWS

ANDREA RAVIGNANI – Language evolution: Sound meets gesture?

Review of 'From signal to symbol: The evolution of language' by R. Planer & K. Sterelny, 2021, MIT Press.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.21961>

CHARLES C. ROSEMAN – Will celebrating complexity get us where we need to go?

Review of 'Race, Monogamy, and Other Lies They Told You: Busting Myths About Human Nature (2nd Edition)' by Agustín Fuentes, 2022, University of California Press.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.21959>

Frontiers in Communication

PAPERS

TAMAMI SHIMADA – Contact-induced grammar formation: A model from a study on Hiberno-English

This article examines how certain characteristic grammatical forms in Hiberno-English (HE) are the result of a dynamic process of language formation guided by language contact. A first language contact between Irish and English gives rise to the grammar formation of HE, and a second contact between HE and other varieties of English, presumably over the past 50 years or so, has pruned HE to fit the speakers' awareness toward the standard norm. Examinations of the expressions of tense/aspect and information structure in HE lead to suggestion of grammatical oppositions being inherited from Irish and the resilience of this inheritance in present-day HE. Taking three salient characteristics of HE, the be after perfect, the do be habitual, and the 'tis.... construction as windows to its underlying properties, the article surveys earlier forms in the rise of HE and describes some facets of contemporary HE. One of the central issues in the examination is Irish language traits and their realization in HE morphosyntax. The article concludes by proposing an integrated perspective across the characteristics and a model to capture the grammar formation of HE, which can be applied to find similarities and contrasts with other language contact phenomena.

<https://www.frontiersin.org/articles/10.3389/fcomm.2022.832128/full>

Frontiers in Human Neuroscience

PAPERS

VÉRONIQUE BOULENGER et al – Up right, not right up: Primacy of verticality in both language and movement

When describing motion along both the horizontal and vertical axes, languages from different families express the elements encoding verticality before those coding for horizontality (e.g., going up right instead of right up). In light of the motor grounding of language, the present study investigated whether the prevalence of verticality in Path expression also governs the trajectory of arm biological movements. Using a 3D virtual-reality setting, we tracked the kinematics of hand pointing movements in five spatial directions, two of which implied the vertical and horizontal vectors equally (i.e., up right +45° and bottom right -45°). Movement onset could be prompted by visual or auditory verbal cues, the latter being canonical in French ("en haut à droite"/up right) or not ("à droite en haut"/right up). In two experiments, analyses of the index finger kinematics revealed a significant effect of gravity, with earlier acceleration, velocity, and deceleration peaks for upward (+45°) than downward (-45°) movements, irrespective of the instructions. Remarkably, confirming the linguistic observations, we found that vertical kinematic parameters occurred earlier than horizontal ones for upward movements, both for visual and congruent verbal cues. Non-canonical verbal instructions significantly affected this temporal dynamic: for upward movements, the horizontal and vertical components temporally aligned, while they reversed for downward movements where the kinematics of the vertical axis was delayed with respect to that of the horizontal one. This temporal dynamic is so deeply anchored that non-canonical verbal instructions allowed for horizontality to precede verticality only for movements that do not fight against gravity. Altogether, our findings provide new insights into the embodiment of language by revealing that linguistic path may reflect the organization of biological movements, giving priority to the vertical axis.

<https://www.frontiersin.org/articles/10.3389/fnhum.2022.981330/full>

SARAH I. MOSSAD et al – Characterising the spatial and oscillatory unfolding of Theory of Mind in adults using fMRI and MEG

Theory of Mind (ToM) is a core social cognitive skill that refers to the ability to attribute mental states to others. ToM involves understanding that others have beliefs, thoughts and desires that may be different from one's own and from reality. ToM is crucial to predict behaviour and navigate social interactions. This study employed the complementary methodological advantages of both functional MRI (fMRI) and magnetoencephalography (MEG) to examine the neural underpinnings of ToM in adults. Twenty healthy adults were first recruited to rate and describe 28 videos (15s long), each containing three moving shapes designed to depict either social interactions or random motion (control condition). The first sample of adults produced consistent narratives for 6 of those social videos and of those, 4 social videos and 4 control videos were chosen to include in the neuroimaging study. Another sample of twenty-five adults were then recruited to complete the neuroimaging in MEG and fMRI. In fMRI, we found increased activation in frontal-parietal regions in the social compared to the control condition corroborating previous fMRI findings. In MEG, we found recruitment of ToM networks in the social condition in theta, beta and gamma bands. The right supramarginal and angular gyri (right temporal parietal junction), right inferior parietal lobe and right temporal pole were recruited in the first 5s of the videos. Frontal regions such as the superior frontal gyrus were recruited in the second time window (5–10s). Brain regions such as the bilateral amygdalae were also recruited (5–10s), indicating that various social processes were integrated in understanding the social videos. Our study is one of the first to combine multi-modal neuroimaging to examine the neural networks underlying social cognitive processes, combining the strengths of the spatial resolution of fMRI and temporal resolution of MEG. Understanding this information from both

modalities helped delineate the mechanism by which ToM processing unfolds over time in healthy adults. This allows us to determine a benchmark against which clinical populations can be compared.

<https://www.frontiersin.org/articles/10.3389/fnhum.2022.921347/full>

DAVID KEMMERER – Revisiting the relation between syntax, action, and left BA44

Among the many lines of research that have been exploring how embodiment contributes to cognition, one focuses on how the neural substrates of language may be shared, or at least closely coupled, with those of action. This paper revisits a particular proposal that has received considerable attention—namely, that the forms of hierarchical sequencing that characterize both linguistic syntax and goal-directed action are underpinned partly by common mechanisms in left Brodmann area (BA) 44, a cortical region that is not only classically regarded as part of Broca's area, but is also a core component of the human Mirror Neuron System. First, a recent multi-participant, multi-round debate about this proposal is summarized together with some other relevant findings. This review reveals that while the proposal is supported by a variety of theoretical arguments and empirical results, it still faces several challenges. Next, a narrower application of the proposal is discussed, specifically involving the basic word order of subject (S), object (O), and verb (V) in simple transitive clauses. Most languages are either SOV or SVO, and, building on prior work, it is argued that these strong syntactic tendencies derive from how left BA44 represents the sequential-hierarchical structure of goal-directed actions. Finally, with the aim of clarifying what it might mean for syntax and action to have “common” neural mechanisms in left BA44, two different versions of the main proposal are distinguished. Hypothesis 1 states that the very same neural mechanisms in left BA44 subserve some aspects of hierarchical sequencing for syntax and action, whereas Hypothesis 2 states that anatomically distinct but functionally parallel neural mechanisms in left BA44 subserve some aspects of hierarchical sequencing for syntax and action. Although these two hypotheses make different predictions, at this point neither one has significantly more explanatory power than the other, and further research is needed to elaborate and test them.

<https://www.frontiersin.org/articles/10.3389/fnhum.2022.923022/full>

Nature

NEWS

Geneticist who unmasked lives of ancient humans wins medicine Nobel

Svante Pääbo has made stunning discoveries about human evolution using ancient DNA — and his work helped to spawn the competitive field of palaeogenomics.

<https://www.nature.com/articles/d41586-022-03086-9>

From Neanderthal genome to Nobel prize: meet geneticist Svante Pääbo

Nature asked the pioneer of ancient-DNA research about some of his greatest discoveries.

<https://www.nature.com/articles/d41586-022-03191-9>

Nature Biotechnology

ARTICLES

JENNIFER M. MICHAUD, ALI MADANI & JAMES S. FRASER – A language model beats alphafold2 on orphans

Protein structure prediction with a language model improves accuracy for orphan and designed proteins.

<https://www.nature.com/articles/s41587-022-01466-0>

NOELIA FERRUZ & BIRTE HÖCKER – Dreaming ideal protein structures

A deep learning algorithm for protein structure prediction is used in reverse for de novo protein design.

<https://www.nature.com/articles/s41587-021-01196-9>

ELENI KOTSILITI – De novo protein design with a language model

Artificial intelligence models of natural language are becoming ever more adept at processing and ‘understanding’ language, and are widely used in applications such as automated speech recognition, translation, smart assistants and text generation. How useful they might be for modeling biological phenomena is a question of longstanding interest among computational biologists. Recently, language models have been applied to such problems as protein function prediction, protein evolution analysis and protein design. A report in Nature Communications by Ferruz et al. advances the application to protein design, providing an unsupervised, autoregressive language model for generating de novo protein sequences.

<https://www.nature.com/articles/s41587-022-01518-5>

PAPERS

RATUL CHOWDHURY et al – Single-sequence protein structure prediction using a language model and deep learning

AlphaFold2 and related computational systems predict protein structure using deep learning and co-evolutionary relationships encoded in multiple sequence alignments (MSAs). Despite high prediction accuracy achieved by these systems, challenges remain in (1) prediction of orphan and rapidly evolving proteins for which an MSA cannot be generated; (2) rapid exploration of designed structures; and (3) understanding the rules governing spontaneous polypeptide folding in solution.

Here we report development of an end-to-end differentiable recurrent geometric network (RGN) that uses a protein language model (AminoBERT) to learn latent structural information from unaligned proteins. A linked geometric module compactly represents C α backbone geometry in a translationally and rotationally invariant way. On average, RGN2 outperforms AlphaFold2 and RoseTTAFold on orphan proteins and classes of designed proteins while achieving up to a 106-fold reduction in compute time. These findings demonstrate the practical and theoretical strengths of protein language models relative to MSAs in structure prediction.

<https://www.nature.com/articles/s41587-022-01432-w>

Nature Communications

PAPERS

SAPTARSHI PAL & CHRISTIAN HILBE – Reputation effects drive the joint evolution of cooperation and social rewarding

People routinely cooperate with each other, even when cooperation is costly. To further encourage such pro-social behaviors, recipients often respond by providing additional incentives, for example by offering rewards. Although such incentives facilitate cooperation, the question remains how these incentivizing behaviors themselves evolve, and whether they would always be used responsibly. Herein, we consider a simple model to systematically study the co-evolution of cooperation and different rewarding policies. In our model, both social and antisocial behaviors can be rewarded, but individuals gain a reputation for how they reward others. By characterizing the game's equilibria and by simulating evolutionary learning processes, we find that reputation effects systematically favor cooperation and social rewarding. While our baseline model applies to pairwise interactions in well-mixed populations, we obtain similar conclusions under assortment, or when individuals interact in larger groups. According to our model, rewards are most effective when they sway others to cooperate. This view is consistent with empirical observations suggesting that people reward others to ultimately benefit themselves.

<https://www.nature.com/articles/s41467-022-33551-y>

NOELIA FERRUZ, STEFFEN SCHMIDT & BIRTE HÖCKER – ProtGPT2 is a deep unsupervised language model for protein design

Protein design aims to build novel proteins customized for specific purposes, thereby holding the potential to tackle many environmental and biomedical problems. Recent progress in Transformer-based architectures has enabled the implementation of language models capable of generating text with human-like capabilities. Here, motivated by this success, we describe ProtGPT2, a language model trained on the protein space that generates de novo protein sequences following the principles of natural ones. The generated proteins display natural amino acid propensities, while disorder predictions indicate that 88% of ProtGPT2-generated proteins are globular, in line with natural sequences. Sensitive sequence searches in protein databases show that ProtGPT2 sequences are distantly related to natural ones, and similarity networks further demonstrate that ProtGPT2 is sampling unexplored regions of protein space. AlphaFold prediction of ProtGPT2-sequences yields well-folded non-idealized structures with embodiments and large loops and reveals topologies not captured in current structure databases. ProtGPT2 generates sequences in a matter of seconds and is freely available.

<https://www.nature.com/articles/s41467-022-32007-7>

Nature Human Behaviour

PAPERS

CHRISTOPHER COX et al – A systematic review and Bayesian meta-analysis of the acoustic features of infant-directed speech

When speaking to infants, adults often produce speech that differs systematically from that directed to other adults. To quantify the acoustic properties of this speech style across a wide variety of languages and cultures, we extracted results from empirical studies on the acoustic features of infant-directed speech. We analysed data from 88 unique studies (734 effect sizes) on the following five acoustic parameters that have been systematically examined in the literature: fundamental frequency (f₀), f₀ variability, vowel space area, articulation rate and vowel duration. Moderator analyses were conducted in hierarchical Bayesian robust regression models to examine how these features change with infant age and differ across languages, experimental tasks and recording environments. The moderator analyses indicated that f₀, articulation rate and vowel duration became more similar to adult-directed speech over time, whereas f₀ variability and vowel space area exhibited stability throughout development. These results point the way for future research to disentangle different accounts of the functions and learnability of infant-directed speech by conducting theory-driven comparisons among different languages and using computational models to formulate testable predictions.

<https://www.nature.com/articles/s41562-022-01452-1>

Nature Machine Intelligence

ARTICLES

NOELIA FERRUZ & BIRTE HÖCKER – Controllable protein design with language models

The twenty-first century is presenting humankind with unprecedented environmental and medical challenges. The ability to design novel proteins tailored for specific purposes would potentially transform our ability to respond to these issues in a

timely manner. Recent advances in the field of artificial intelligence are now setting the stage to make this goal achievable. Protein sequences are inherently similar to natural languages: amino acids arrange in a multitude of combinations to form structures that carry function, the same way as letters form words and sentences carry meaning. Accordingly, it is not surprising that, throughout the history of natural language processing (NLP), many of its techniques have been applied to protein research problems. In the past few years we have witnessed revolutionary breakthroughs in the field of NLP. The implementation of transformer pre-trained models has enabled text generation with human-like capabilities, including texts with specific properties such as style or subject. Motivated by its considerable success in NLP tasks, we expect dedicated transformers to dominate custom protein sequence generation in the near future. Fine-tuning pre-trained models on protein families will enable the extension of their repertoires with novel sequences that could be highly divergent but still potentially functional. The combination of control tags such as cellular compartment or function will further enable the controllable design of novel protein functions. Moreover, recent model interpretability methods will allow us to open the 'black box' and thus enhance our understanding of folding principles. Early initiatives show the enormous potential of generative language models to design functional sequences. We believe that using generative text models to create novel proteins is a promising and largely unexplored field, and we discuss its foreseeable impact on protein design.

<https://www.nature.com/articles/s42256-022-00499-z>

Nature Scientific Reports

PAPERS

DIEGO ESCRIBANO et al – Chimpanzees organize their social relationships like humans

Human relationships are structured in a set of layers, ordered from higher (intimate relationships) to lower (acquaintances) emotional and cognitive intensity. This structure arises from the limits of our cognitive capacity and the different amounts of resources required by different relationships. However, it is unknown whether nonhuman primate species organize their affiliative relationships following the same pattern. We here show that the time chimpanzees devote to grooming other individuals is well described by the same model used for human relationships, supporting the existence of similar social signatures for both humans and chimpanzees. Furthermore, the relationship structure depends on group size as predicted by the model, the proportion of high-intensity connections being larger for smaller groups.

<https://www.nature.com/articles/s41598-022-20672-z>

SZYMON TALAGA & ANDRZEJ NOWAK – Structural measures of similarity and complementarity in complex networks

The principle of similarity, or homophily, is often used to explain patterns observed in complex networks such as transitivity and the abundance of triangles (3-cycles). However, many phenomena from division of labor to protein-protein interactions (PPI) are driven by complementarity (differences and synergy). Here we show that the principle of complementarity is linked to the abundance of quadrangles (4-cycles) and dense bipartite-like subgraphs. We link both principles to their characteristic motifs and introduce two families of coefficients of: (1) structural similarity, which generalize local clustering and closure coefficients and capture the full spectrum of similarity-driven structures; (2) structural complementarity, defined analogously but based on quadrangles instead of triangles. Using multiple social and biological networks, we demonstrate that the coefficients capture structural properties related to meaningful domain-specific phenomena. We show that they allow distinguishing between different kinds of social relations as well as measuring an increasing structural diversity of PPI networks across the tree of life. Our results indicate that some types of relations are better explained by complementarity than homophily, and may be useful for improving existing link prediction methods. We also introduce a Python package implementing efficient algorithms for calculating the proposed coefficients.

<https://www.nature.com/articles/s41598-022-20710-w>

ALAN S. R. FERMIN et al – The neuroanatomy of social trust predicts depression vulnerability

Trust attitude is a social personality trait linked with the estimation of others' trustworthiness. Trusting others, however, can have substantial negative effects on mental health, such as the development of depression. Despite significant progress in understanding the neurobiology of trust, whether the neuroanatomy of trust is linked with depression vulnerability remains unknown. To investigate a link between the neuroanatomy of trust and depression vulnerability, we assessed trust and depressive symptoms and employed neuroimaging to acquire brain structure data of healthy participants. A high depressive symptom score was used as an indicator of depression vulnerability. The neuroanatomical results observed with the healthy sample were validated in a sample of clinically diagnosed depressive patients. We found significantly higher depressive symptoms among low trusters than among high trusters. Neuroanatomically, low trusters and depressive patients showed similar volume reduction in brain regions implicated in social cognition, including the dorsolateral prefrontal cortex (DLPFC), dorsomedial PFC, posterior cingulate, precuneus, and angular gyrus. Furthermore, the reduced volume of the DLPFC and precuneus mediated the relationship between trust and depressive symptoms. These findings contribute to understanding social- and neural-markers of depression vulnerability and may inform the development of social interventions to prevent pathological depression.

<https://www.nature.com/articles/s41598-022-20443-w>

Nature Translational Psychiatry

PAPERS

MICHAEL DANNEMANN et al – Neandertal Introgression partitions the genetic landscape of neuropsychiatric disorders and associated behavioral phenotypes

Despite advances in identifying the genetic basis of psychiatric and neurological disorders, fundamental questions about their evolutionary origins remain elusive. Here, introgressed variants from archaic humans such as Neandertals can serve as an intriguing research paradigm. We compared the number of associations for Neandertal variants to the number of associations of frequency-matched non-archaic variants with regard to human CNS disorders (neurological and psychiatric), nervous system drug prescriptions (as a proxy for disease), and related, non-disease phenotypes in the UK biobank (UKBB). While no enrichment for Neandertal genetic variants were observed in the UKBB for psychiatric or neurological disease categories, we found significant associations with certain behavioral phenotypes including pain, chronotype/sleep, smoking and alcohol consumption. In some instances, the enrichment signal was driven by Neandertal variants that represented the strongest association genome-wide. SNPs within a Neandertal haplotype that was associated with smoking in the UKBB could be replicated in four independent genomics datasets.

<https://www.nature.com/articles/s41398-022-02196-2>

New Scientist

NEWS

Nobel prize awarded for study of human evolution using ancient DNA

Geneticist Svante Pääbo has been awarded a Nobel prize for his work on evolutionary genetics.

<https://www.newscientist.com/article/2340602-nobel-prize-awarded-for-study-of-human-evolution-using-ancient-dna/>

REVIEWS

CHRIS STOKEL-WALKER – Two eye-opening new books delve into the world of animal communication

Tom Mustill's *How to Speak Whale* and Karen Bakker's *The Sounds of Life* explore what we know about the way life on Earth communicates, from whales to coral reefs. They are both must-reads.

Review of 'How To Speak Whale: A Voyage into the Future of Animal Communication' by Tom Mustill (2022), William Collins.

Review of 'The Sounds of Life: How Digital Technology Is Bringing Us Closer to the Worlds of Animals and Plants' by Karen Bakker (2022), Princeton University Press.

<https://www.newscientist.com/article/mg25634070-400-two-eye-opening-new-books-delve-into-the-world-of-animal-communication/>

PLoS One

PAPERS

LEIDY CUBILLOS-PINILLA & FRANZISKA EMMERLING – Taking the chance!–Interindividual differences in rule-breaking

While some individuals tend to follow norms, others, in the face of tempting but forbidden options, tend to commit rule-breaking when this action is beneficial for themselves. Previous studies have neglected such interindividual differences in rule-breaking. The present study fills this gap by investigating cognitive characteristics of individuals who commit spontaneous deliberative rule-breaking (rule-breakers) versus rule-followers. We developed a computerised task, in which 133 participants were incentivised to sometimes violate set rules which would—if followed—lead to a loss. While 52% of participants tended to break rules to obtain a benefit, 48% tended to follow rules even if this behaviour led to loss. Although rule-breakers experienced significantly more cognitive conflict (measured via response times and mouse movement trajectories) than rule-followers, they also obtained higher payoffs. In rule-breakers, cognitive conflict was more pronounced when violating the rules than when following them, and mainly during action planning. This conflict increased with frequent, recurrent, and early rule-breaking. Our results were in line with the Decision-Implementation-Mandatory switch-Inhibition model and thus extend the application of this model to the interindividual differences in rule-breaking. Furthermore, personality traits such as extroversion, disagreeableness, risk propensity, high impulsiveness seem to play a role in the appreciation of behaviours and cognitive characteristics of rule-followers and rule-breakers. This study opens the path towards the understanding of the cognitive characteristics of the interindividual differences in responses towards rules, and especially in spontaneous deliberative rule-breaking.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0274837>

MATTHEW CHENNELLS et al – Coordinated decision-making boosts altruistic motivation—But not trust

In the current study, we separately tested whether coordinated decision-making increases altruism and whether it increases trust. To this end, we implemented a paradigm in which participants repeatedly perform a coordinated decision-making task either with the same partner on every trial, or with a different partner on each trial. When both players coordinate on the same option, both are rewarded. In Experiment 1 (N = 52), participants were sometimes presented with tempting opportunities to defect. In Experiment 2 (N = 97), participants sometimes had to decide whether or not to trust that their partners had resisted such tempting opportunities. The results show that repeatedly coordinating with the same partner increased participants' resistance to temptation (Experiment 1) but did not increase trust (Experiment 2). These findings

support the hypothesis that coordinating with a partner increases altruistic motivation towards that partner; they do not support the hypothesis that coordinating boosts trust.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0272453>

DIANA PILI-MOSS – Long-term memory predictors of adult language learning at the interface between syntactic form and meaning

Recent neurocognitive models of second language learning have posited specific roles for declarative and procedural memory in the processing of novel linguistic stimuli. Pursuing this line of investigation, the present exploratory study examined the role of declarative and procedural memory abilities in the early stages of adult comprehension of sentences in a miniature language with natural language characteristics (BrocantoJ). Thirty-six native Italian young adults were aurally exposed to BrocantoJ in the context of a computer game over three sessions on consecutive days. Following vocabulary training and passive exposure, participants were asked to perform game moves described by aural sentences in the language. Game trials differed with respect to the information the visual context offered. In part of the trials processing of relationships between grammatical properties of the language (word order and morphological case marking) and noun semantics (thematic role) was necessary in order to reach an accurate outcome, whereas in others nongrammatical contextual cues were sufficient. Declarative and procedural learning abilities were respectively indexed by visual and verbal declarative memory measures and by a measure of visual implicit sequence learning. Overall, the results indicated a substantial role of declarative learning ability in the early stages of sentence comprehension, thus confirming theoretical predictions and the findings of previous similar studies in miniature artificial language paradigms. However, for trials that specifically probed the learning of relationships between morphosyntax and semantics, a positive interaction between declarative and procedural learning ability also emerged, indicating the cooperative engagement of both types of learning abilities in the processing of relationships between rule-based grammar and interpretation in the early stages of exposure to a new language in adults.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0275061>

EUGÉNIE GAUVRIT ROUX – Socio-economic dynamics of Magdalenian hunter-gatherers: Functional perspective

The beginning of the Middle Magdalenian is marked by an increase in the density and geographic extension of evidences of human occupation across western Europe. The Early Middle Magdalenian (19,5–17,5 ka cal. BP) thereby extends from Poland to Spain, and the sharing of the flint-knapping concepts and the circulation of raw materials show the existence of networks active over this wide area. In parallel, part of the production of art, ornaments, microliths, bone industry, and the proportions of hunted ungulates vary regionally and allow to identify distinct technical traditions. Departing from a palethnographic approach at a regional scale, this paper aims at participating in renewing our understanding of the mechanisms of regionalisation during the period, and among past societies of hunter-gatherers. The reflection is based on the techno-functional analysis of stone tools from two cave sites of west-central France that are at the heart of the definition of two technical traditions: La Marche (Magdalenian with Lussac-Angles points) and the Blanchard cave (Magdalenian with navettes). Inter-site comparisons of the functioning and management of stone tools, and of subsistence strategies show the sharing of techno-economical norms, expressing the adhesion to a wider community of practice. The long-term occupation of at least part of the caves and the high density of sites in the Vienne, the Creuse, the Gartempe, and the Charente Valleys, indicate the strong regional implantation of human societies. This strong territoriality (effective and symbolic) is likely a major factor to understand the specificity of the EMM expressions in the area, as well as the sharing, in the same economic territory, of technical norms and of part of the system of symbolic representation.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0274819>

LISETTE IBANEZ & HAYET SAADAoui – An experimental investigation on the dark side of emotions and its aftereffects

The economic literature is so far overwhelmingly dedicated to the effect of incidental emotions on virtuous behavior. However, it is not so explicit for destructive behavior and the way it evolves with emotional states. To fill this gap, we explore how incidental emotions impact antisocial behavior in a laboratory experiment. As our vehicle of research, we used the open treatment of the joy-of-destruction mini-game. In addition to that, we elicited players' first and second-order beliefs via an incentivized questionnaire. We find that destructive behavior is driven by two motives: spite (Machiavellian traits) and preemptive retaliation (Expected destruction by partners). Emotional states do not impact destructive behavior directly. However, positive emotions brighten the expectations of other player beliefs on his partner's destruction, and indirectly reduces the willingness to destroy partner's money.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0274284>

Science

NEWS

Ancient DNA pioneer Svante Pääbo wins Nobel Prize in Physiology or Medicine

By sequencing genomes of extinct hominins, Pääbo explored “what makes us uniquely human”.

<https://www.science.org/content/article/nobel-prize-physiology-or-medicine-2022>

Trends in Cognitive Sciences

PAPERS

OLAF SPORNS – The complex brain: connectivity, dynamics, information

Most would agree, the brain is complex. But, beyond metaphor, does the brain's complexity demand a paradigm shift in how we study its structure and function? I argue that complexity manifests in three domains – connectivity, dynamics, and information – and that unlocking their interactions will greatly advance our understanding of brain and cognition.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(22\)00183-8](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00183-8)

NICK CHATER – The computational society

How do individual human minds create languages, legal systems, scientific theories, and technologies? From a cognitive science viewpoint, such collective phenomena may be considered a type of distributed computation in which human minds together solve computational problems beyond any individual. This viewpoint may also shift our perspective on individual minds.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(22\)00161-9](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00161-9)

Trends in Ecology and Evolution

PAPERS

ARYEH H. MILLER, JAMES T. STROUD & JONATHAN B. LOSOS – The ecology and evolution of key innovations

The idea of 'key innovations' has long been influential in theoretical and empirical approaches to understanding adaptive diversification. Despite originally revolving around traits inducing major ecological shifts, the key innovation concept itself has evolved, conflating lineage diversification with trait-dependent ecological shifts. In this opinion article we synthesize the history of the term, clarify the relationship between key innovations and adaptive radiation, and propose a return to the original concept of key innovations: the evolution of organismal features which permit a species to occupy a previously inaccessible ecological state. Ultimately, we suggest an integrative approach to studying key innovations, necessitating experimental approaches of form and function, natural history studies of resource use, and phylogenetic comparative perspectives.

[https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347\(22\)00225-7](https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(22)00225-7)

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.