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NOTICES

PUBLICATION ALERTS

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

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

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

EAORC NEWS – New Membership Page – please contribute

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

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

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

Martin

EAORC NEWS – Routes to Language diagram updated

I have this week updated the Routes to Language diagram. This is a work-in-progress, so if I have missed anything or placed it wrongly on the diagram, or forgotten a link, let me know.

http://martinedwardes.me.uk/eaorc/eaorc_languageroute.html

ACADEMIA.EDU – Earliest modern human-like hand bone from a new 41.84-my-old site at Olduvai

In Nature Communications 6:7987 (2015).

MANUEL DOMÍNGUEZ-RODRIGO et al with AUDAX MABULLA – Earliest modern human-like hand bone from a new 41.84-million-year-old site at Olduvai in Tanzania

Modern humans are characterized by specialized hand morphology that is associated with advanced manipulative skills. Thus, there is important debate in paleoanthropology about the possible cause–effect relationship of this modern human-like (MHL) hand anatomy, its associated grips and the invention and use of stone tools by early hominins. Here we describe and analyse Olduvai Hominin (OH) 86, a manual proximal phalanx from the recently discovered 41.84-million-year-old (Ma) Philip Tobias Korongo (PTK) site at Olduvai Gorge (Tanzania). OH 86 represents the earliest MHL hand bone in the fossil record, of a size and shape that differs not only from all australopiths, but also from the phalangeal bones of the penecontemporaneous and geographically proximate OH 7 partial hand skeleton (part of the *Homo habilis* holotype). The discovery of OH 86 suggests that a hominin with a more MHL postcranium co-existed with *Paranthropus boisei* and *Homo habilis* at Olduvai during Bed I times.

https://www.academia.edu/15013318/Earliest_modern_human_like_hand_bone_from_a_new_1_84_million_year_old_site_at_Olduvai_in_Tanzania

ACADEMIA.EDU – Early Homo and the role of the genus in paleoanthropology

In American Journal of Physical Anthropology 165, 72–89 (2018).

BRIAN VILMOARE – Early Homo and the role of the genus in paleoanthropology

The history of the discovery of early fossils attributed to the genus *Homo* has been contentious, with scholars disagreeing over the generic assignment of fossils proposed as members of our genus. In this manuscript I review the history of discovery and debate over early *Homo* and evaluate the various taxonomic hypotheses for the genus. To get a sense of how hominin taxonomy compares to taxonomic practice outside paleoanthropology, I compare the diversity of *Homo* to genera in other

vertebrate clades. Finally, I propose a taxonomic model that hews closely to current models for hominin phylogeny and is consistent with taxonomic practice across evolutionary biology.

https://www.academia.edu/35852658/Early_Homo_and_the_role_of_the_genus_in_paleoanthropology

NEWS

BREAKING SCIENCE – Domestication Changed not Just How Dogs Look, but Their Minds as Well

A new study led by a Duke University researcher supports the idea that domestication enhanced the cooperative-communicative abilities of dogs as selection for attraction to humans altered social maturation. “Dogs are born with the innate ability to understand that we’re communicating with them and we’re trying to cooperate with them,” said lead author Hannah Salomons.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/K85RDsVrDNU/domestic-dog-communication-09855.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – 25,000-Year-Old Human and Animal DNA Found in Georgian Cave

An international team of scientists has retrieved and analyzed nuclear and mitochondrial environmental DNA of humans, wolves (*Canis lupus*), and bison (*Bison bonasus*) from a 25,000-year-old sediment sample from the Upper Paleolithic site of Satsurblia Cave, western Georgia, Caucasus.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/a-YoOCp_sIM/satsurblia-cave-human-wolf-bison-dna-09858.html?utm_source=feedburner&utm_medium=email

SCIAM NEWS – The Neuroscience of Taking Turns in a Conversation

Research in birds suggests that when one partner speaks, the other partner’s brain is inhibited from talking over them

http://links.email.scientificamerican.com/els/v2/NpjKHPaK_NB4/dWpqNFJsSk8wajVIRFNLYWJOU1owNHMvUJEM3ZDVxK1g1Nk9lZFBldmRDRFRaZm4veE1nV0hUIVYQ0R1WFFsWTI2L3lhVVBEUW5rWWxPbWdjVm5kdy9ld25pcktMcXRuTWRwZ2dabHRFTlK9SO/

SCIENCE DAILY – You can snuggle wolf pups all you want, they still won't 'get' you quite like your dog

You know your dog gets your gist when you point and say 'go find the ball' and he scampers right to it. This knack for understanding human gestures may seem unremarkable, but it's a complex cognitive ability that is rare in the animal kingdom. New research comparing dog puppies to human-reared wolf pups offers some clues to how dogs' unusual people-reading skills came to be.

<https://www.sciencedaily.com/releases/2021/07/210712122206.htm>

SCIENCE DAILY – Rats prefer to help their own kind; humans may be similarly wired

A decade after scientists discovered that lab rats will rescue a fellow rat in distress, but not a rat they consider an outsider, new research pinpoints the brain regions that drive rats to prioritize their nearest and dearest in times of crisis. It also suggests humans may share the same neural bias.

<https://www.sciencedaily.com/releases/2021/07/210713165303.htm>

SCIENCE DAILY – Dogs may not return their owners' good deeds

Domestic dogs show many adaptations to living closely with humans, but they do not seem to reciprocate food-giving according to a new study.

<https://www.sciencedaily.com/releases/2021/07/210714170137.htm>

SCIENCE DAILY – High-ranking hyena mothers pass their social networks to their cubs

Hyenas inherit their social networks from their mothers, according to new research. The study found this network inheritance effect strongest for offspring of higher-ranking mothers. The finding has implications for how social groups are structured and evolve, the researchers say.

<https://www.sciencedaily.com/releases/2021/07/210715142359.htm>

SCIENCE DAILY – Thinking without a brain

If you didn't have a brain, could you still navigate your surroundings? Thanks to new research on slime molds, the answer may be 'yes.' Scientists discovered that the brainless *Physarum polycephalum* uses its body to sense mechanical cues in its environment, and decides where to grow based on that information. This finding provides a model for understanding different types of cognition, including our own.

<https://www.sciencedaily.com/releases/2021/07/210715090841.htm>

SCIENCE DAILY – Emotion, cooperation and locomotion crucial from an early age

What are the fundamental skills that young children need to develop at the start of school for future academic success? Researchers examined the links between emotion knowledge, cooperation, locomotor activity and numerical skills in 706 pupils aged 3 to 6. The results show that emotion knowledge, cooperative social behavior and locomotor activity are interrelated and associated with numerical skills. These results suggest that locomotor activity should be added to these fundamental skills.

<https://www.sciencedaily.com/releases/2021/07/210715124617.htm>

SCIENCE NEWS – DNA from dirt can offer new view of ancient life

For almost 2 decades, genomes isolated from fossils have galvanized the study of human evolution. Yet despite vast improvements in retrieving and analyzing that DNA, researchers have deciphered whole genomes from just 23 archaic humans, 18 of them Neanderthals. This week, however, marks the publication of the fourth study in less than 3 months describing isolation and sequencing of DNA from sediments. The studies reveal new details about which animals and humans lived in these areas over time—and when. Together, they also open the door to what will be a far more plentiful supply of ancient genetic material and a richer understanding of the life of the humans, bears, bison, and other organisms that supplied that DNA.

<https://www.sciencemag.org/news/2021/07/dna-dirt-can-offer-new-view-ancient-life>

SCIENCE NEWS – Mom’s powerful friends keep high-ranking hyenas on top

In hyenas as well as humans, it pays to be born to high-ranking parents. A new study reveals how power is passed down in these matriarchal mammals: Elite hyena cubs cultivate their mom’s friends, who help keep them fed and protected throughout their lives.

<https://www.sciencemag.org/news/2021/07/mom-s-powerful-friends-keep-high-ranking-hyenas-top>

SOCIETY FOR SCIENCE – Dogs tune into people in ways even human-raised wolves don't

Puppies outpace wolf pups at engaging with humans, even with less exposure to people, supporting the idea that domestication has wired dogs' brains.

<http://click.societyforscience-email.com/?qs=c20059c95508382766e0a0fcf5e4d768fc9772dd1656cc56530c525731b2b46bed116ea52a23ceec9ee9f09c03cdc7e6d5dfa1b804fe563>

PUBLICATIONS

American Journal of Physical Anthropology

PAPERS

SCOTT A. WILLIAMS & DAVID PILBEAM – Homeotic change in segment identity derives the human vertebral formula from a chimpanzee-like one

One of the most contentious issues in paleoanthropology is the nature of the last common ancestor of humans and our closest living relatives, chimpanzees and bonobos (panins). The numerical composition of the vertebral column has featured prominently, with multiple models predicting distinct patterns of evolution and contexts from which bipedalism evolved. Here, we study total numbers of vertebrae from a large sample of hominoids to quantify variation in and patterns of regional and total numbers of vertebrae in hominoids.

We compile and study a large sample (N = 893) of hominoid vertebral formulae (numbers of cervical, thoracic, lumbar, sacral, caudal segments in each specimen) and analyze full vertebral formulae, total numbers of vertebrae, and super-regional numbers of vertebrae: presacral (cervical, thoracic, lumbar) vertebrae and sacrococcygeal vertebrae. We quantify within- and between-taxon variation using heterogeneity and similarity measures derived from population genetics.

We find that humans are most similar to African apes in total and super-regional numbers of vertebrae. Additionally, our analyses demonstrate that selection for bipedalism reduced variation in numbers of vertebrae relative to other hominoids. The only proposed ancestral vertebral configuration for the last common ancestor of hominins and panins that is consistent with our results is the modal formula demonstrated by chimpanzees and bonobos (7 cervical-13 thoracic-4 lumbar-6 sacral-3 coccygeal). Hox gene expression boundaries suggest that a rostral shift in Hox10/Hox11-mediated complexes could produce the human modal formula from the proposal ancestral and panin modal formula.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24356>

SHEELA ATHREYA & ALLISON HOPKINS – Conceptual issues in hominin taxonomy: Homo heidelbergensis and an ethnobiological reframing of species

Efforts to name and classify Middle Pleistocene Homo, often referred to as “Homo heidelbergensis” are hampered by confusing patterns of morphology but also by conflicting paleoanthropological ideologies that are embedded in approaches to hominin taxonomy, nomenclature, and the species concept. We deconstruct these issues to show how the field's search for a “real” species relies on strict adherence to pre-Darwinian essentialist naming rules in a post-typological world. We then

examine Middle Pleistocene Homo through the framework of ethnobiology, which examines on how Indigenous societies perceive, classify, and name biological organisms. This research reminds us that across human societies, taxonomies function to (1) identify and classify organisms based on consensus pattern recognition and (2) construct a stable nomenclature for effective storage, retrieval and communication of information. Naming Middle Pleistocene Homo as a “real” species cannot be verified with the current data; and separating regional groups into distinct evolutionary lineages creates taxa that are not defined by readily perceptible or universally salient differences. Based on ethnobiological studies of this kind of patterning, referring to these hominins above the level of the species according to their generic category with modifiers (e.g., “European Middle Pleistocene Homo”) is consistent with observed human capabilities for cognitive differentiation, is both necessary and sufficient given the current data, and will allow for the most clear communication across ideologies going forward.

<https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.24330>

MIKI BEN-DOR, RAPHAEL SIRTOLI & RAN BARKAI – The evolution of the human trophic level during the Pleistocene

The human trophic level (HTL) during the Pleistocene and its degree of variability serve, explicitly or tacitly, as the basis of many explanations for human evolution, behavior, and culture. Previous attempts to reconstruct the HTL have relied heavily on an analogy with recent hunter-gatherer groups' diets. In addition to technological differences, recent findings of substantial ecological differences between the Pleistocene and the Anthropocene cast doubt regarding that analogy's validity. Surprisingly little systematic evolution-guided evidence served to reconstruct HTL. Here, we reconstruct the HTL during the Pleistocene by reviewing evidence for the impact of the HTL on the biological, ecological, and behavioral systems derived from various existing studies. We adapt a paleobiological and paleoecological approach, including evidence from human physiology and genetics, archaeology, paleontology, and zoology, and identified 25 sources of evidence in total. The evidence shows that the trophic level of the Homo lineage that most probably led to modern humans evolved from a low base to a high, carnivorous position during the Pleistocene, beginning with Homo habilis and peaking in Homo erectus. A reversal of that trend appears in the Upper Paleolithic, strengthening in the Mesolithic/Epipaleolithic and Neolithic, and culminating with the advent of agriculture. We conclude that it is possible to reach a credible reconstruction of the HTL without relying on a simple analogy with recent hunter-gatherers' diets. The memory of an adaptation to a trophic level that is embedded in modern humans' biology in the form of genetics, metabolism, and morphology is a fruitful line of investigation of past HTLs, whose potential we have only started to explore.

<https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.24247>

REVIEWS

YONATAN SAHLE – The quest for the oldest skeleton and the origins of humankind

Review of ‘Fossil men: The quest for the oldest skeleton and the origins of humankind’ by Kermit Pattison. William Morrow (2020).

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24359>

CHARLES C. ROSEMAN – What Darwin's ‘Descent of Man’ got right and wrong about human evolution

Review of ‘A most interesting problem: What Darwin's descent of man got right and wrong about human evolution’ by Jeremy DeSilva. Princeton University Press. (2021).

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24361>

JULIE A. TEICHROEB – The promise of contemporary primatology

Review of ‘The promise of contemporary primatology’ by Erin P. Riley. Routledge (2020).

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24360>

Current Biology

PAPERS

VEITH WEILNHAMMER et al – An active role of inferior frontal cortex in conscious experience

In the search for the neural correlates of consciousness, it has remained controversial whether prefrontal cortex determines what is consciously experienced or, alternatively, serves only complementary functions, such as introspection or action. Here, we provide converging evidence from computational modeling and two functional magnetic resonance imaging experiments that indicated a key role of inferior frontal cortex in detecting perceptual conflicts caused by ambiguous sensory information. Crucially, the detection of perceptual conflicts by prefrontal cortex turned out to be critical in the process of transforming ambiguous sensory information into unambiguous conscious experiences: in a third experiment, disruption of neural activity in inferior frontal cortex through transcranial magnetic stimulation slowed down the updating of conscious experience that occurs in response to perceptual conflicts. These findings show that inferior frontal cortex actively contributes to the resolution of perceptual ambiguities. Prefrontal cortex is thus causally involved in determining the contents of conscious experience.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(21\)00578-9](https://www.cell.com/current-biology/fulltext/S0960-9822(21)00578-9)

HANNAH SALOMONS et al with BRIAN HARE – Cooperative Communication with Humans Evolved to Emerge Early in Domestic Dogs

Although we know that dogs evolved from wolves, it remains unclear how domestication affected dog cognition. One hypothesis suggests dog domestication altered social maturation by a process of selecting for an attraction to humans.^{1, 2, 3} Under this account, dogs became more flexible in using inherited skills to cooperatively communicate with a new social partner that was previously feared and expressed these unusual social skills early in development.^{4, 5, 6} Here, we compared dog ($n = 44$) and wolf ($n = 37$) puppies, 5–18 weeks old, on a battery of temperament and cognition tasks. We find that dog puppies are more attracted to humans, read human gestures more skillfully, and make more eye contact with humans than wolf puppies. The two species are similarly attracted to familiar objects and perform similarly on non-social measures of memory and inhibitory control. These results are consistent with the idea that domestication enhanced the cooperative-communicative abilities of dogs as selection for attraction to humans altered social maturation.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(21\)00880-0](https://www.cell.com/current-biology/fulltext/S0960-9822(21)00880-0)

Evolutionary Human Sciences

PAPERS

NICHOLA J. RAIHANI & REDOUAN BSHARY – Punishment: one tool, many uses

Humans are outstanding in their ability to cooperate with unrelated individuals, and punishment – paying a cost to harm others – is thought to be a key supporting mechanism. According to this view, cooperators punish defectors, who respond by behaving more cooperatively in future interactions. However, a synthesis of the evidence from laboratory and real-world settings casts serious doubts on the assumption that the sole function of punishment is to convert cheating individuals into cooperators. Instead, punishment often prompts retaliation and punishment decisions frequently stem from competitive, rather than deterrent motives. Punishment decisions often reflect the desire to equalise or elevate payoffs relative to targets, rather than the desire to enact revenge for harm received or to deter cheats from reoffending in future. We therefore suggest that punishment also serves a competitive function, where what looks like spiteful behaviour actually allows punishers to equalise or elevate their own payoffs and/or status relative to targets independently of any change in the target's behaviour. Institutions that reduce or remove the possibility that punishers are motivated by relative payoff or status concerns might offer a way to harness these competitive motives and render punishment more effective at restoring cooperation.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/punishment-one-tool-many-uses/FD1940BB4D5A39D017A09D4C162B4D28>

CAROLINE SCHUPPLI & CAREL P. VAN SCHAİK – Animal cultures: how we've only seen the tip of the iceberg

For humans we implicitly assume that the way we do things is the product of social learning and thus cultural. For animals, this conclusion requires proof. Here, we first review the most commonly used procedure for documenting animal culture: the method of exclusion, which charts geographic behavioral variation between populations as evidence for culture. Using published data, we show that, whereas it is an adequate proof of principle, the method of exclusion has major deficiencies when capturing cultural diversity and complexity. Therefore, we propose a new method, namely the direct counting of socially learned skills, which we apply to previously collected data on wild orangutans. This method reveals a far greater cultural repertoire among orangutans, and a different distribution of cultural elements among behavioral domains than found by the method of exclusion, as well as clear ecological correlates for most cultural elements. The widespread occurrence of social learning ability throughout the animal kingdom suggests that these conclusions also apply to many other species. Culture is most likely more widespread and pervasive than commonly thought and an important avenue to local adaptation. The complex and normative dimensions of culture seem unique to our species, but were most likely built upon a very broad, pre-existing cultural capacity that we inherited from our ancestors.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/animal-cultures-how-weve-only-seen-the-tip-of-the-iceberg/2D9C2B4156E087ABC94A8AE99A6F0FAD>

DANIEL SMITH – Cultural group selection and human cooperation: a conceptual and empirical review

Cultural group selection has been proposed as an explanation for humans' highly cooperative nature. This theory argues that social learning mechanisms, combined with rewards and punishment, can stabilise any group behaviour, cooperative or not. Equilibrium selection can then operate, resulting in cooperative groups outcompeting less-cooperative groups. This process may explain the widespread cooperation between non-kin observed in humans, which is sometimes claimed to be altruistic. This review explores the assumptions of cultural group selection to assess whether it provides a convincing explanation for human cooperation. Although competition between cultural groups certainly occurs, it is unclear whether this process depends on specific social learning mechanisms (e.g. conformism) or a norm psychology (to indiscriminately punish norm-violators) to stabilise groups at different equilibria as proposed by existing cultural group selection models. Rather than unquestioningly adopt group norms and institutions, individuals and groups appear to evaluate, design and shape them for self-interested reasons (where possible). As individual fitness is frequently tied to group fitness, this often coincides with constructing group-beneficial norms and institutions, especially when groups are in conflict. While culture is a vital component underlying our species' success, the extent to which current conceptions of cultural group selection reflect human cooperative evolution remains unclear.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/cultural-group-selection-and-human-cooperation-a-conceptual-and-empirical-review/3BEEC0756C9D4DFA7D97A320D9D54AB3>

HANNAH J. HAYNIE et al – Pathways to social inequality

Social inequality is ubiquitous in contemporary human societies, and has deleterious social and ecological impacts. However, the factors that shape the emergence and maintenance of inequality remain widely debated. Here we conduct a global analysis of pathways to inequality by comparing 408 non-industrial societies in the anthropological record (described largely between 1860 and 1960) that vary in degree of inequality. We apply structural equation modelling to open-access environmental and ethnographic data and explore two alternative models varying in the links among factors proposed by prior literature, including environmental conditions, resource intensification, wealth transmission, population size and a well-documented form of inequality: social class hierarchies. We found support for a model in which the probability of social class hierarchies is associated directly with increases in population size, the propensity to use intensive agriculture and domesticated large mammals, unigeniture inheritance of real property and hereditary political succession. We suggest that influence of environmental variables on inequality is mediated by measures of resource intensification, which, in turn, may influence inequality directly or indirectly via effects on wealth transmission variables. Overall, we conclude that in our analysis a complex network of effects are associated with social class hierarchies.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/pathways-to-social-inequality/6639409D6A1E2B2CFA19EB55C7BAFECB>

Nature

PAPERS

ELENA I. ZAVALA et al with JANET KELSO & SVANTE PÄÄBO – Pleistocene sediment DNA reveals hominin and faunal turnovers at Denisova Cave

Denisova Cave in southern Siberia is the type locality of the Denisovans, an archaic hominin group who were related to Neanderthals. The dozen hominin remains recovered from the deposits also include Neanderthals and the child of a Neanderthal and a Denisovan, which suggests that Denisova Cave was a contact zone between these archaic hominins. However, uncertainties persist about the order in which these groups appeared at the site, the timing and environmental context of hominin occupation, and the association of particular hominin groups with archaeological assemblages. Here we report the analysis of DNA from 728 sediment samples that were collected in a grid-like manner from layers dating to the Pleistocene epoch. We retrieved ancient faunal and hominin mitochondrial (mt)DNA from 685 and 175 samples, respectively. The earliest evidence for hominin mtDNA is of Denisovans, and is associated with early Middle Palaeolithic stone tools that were deposited approximately 250,000 to 170,000 years ago; Neanderthal mtDNA first appears towards the end of this period. We detect a turnover in the mtDNA of Denisovans that coincides with changes in the composition of faunal mtDNA, and evidence that Denisovans and Neanderthals occupied the site repeatedly—possibly until, or after, the onset of the Initial Upper Palaeolithic at least 45,000 years ago, when modern human mtDNA is first recorded in the sediments.

<https://www.nature.com/articles/s41586-021-03675-0>

New Scientist

NEWS

Stone Age Europeans may have worn make-up more than 6000 years ago

Some late Stone Age Europeans may have carried make-up inside miniature bottles that they wore around their necks or waists more than 6000 years ago. Researchers have discovered traces of ingredients known to be used in cosmetic formulations by later civilisations inside small bottles unearthed in Slovenia, dating to between 4350 and 4100 BC. The finding suggests that lead-based cosmetics were possibly used in Europe more than 2000 years earlier than previously thought, and more than 1000 years before the earliest evidence of their use from ancient Egyptian and Mesopotamian cultures.

<https://www.newscientist.com/article/2283740-stone-age-europeans-may-have-worn-make-up-more-than-6000-years-ago/#ixzz70m73zNCY>

Female vampire bats groom each other and share their food

Vampire bats live in female-dominated groups, and they appear to groom and share food with each other equally without regard for social status. Unlike the “strict, obvious female dominance hierarchy” seen in many other social animals, the “egalitarian” social life of vampire bats suggests that individuals do well when their groupmates are doing well, says Gerald Carter at The Ohio State University.

<https://www.newscientist.com/article/2283305-female-vampire-bats-groom-each-other-and-share-their-food/#ixzz70m7YiJis>

PLoS Biology

PAPERS

PEDRO L. FERREIRA, FRANCISCO C. SANTOS & SÉRGIO PEQUITO – Risk sensitivity and theory of mind in human coordination

This is an uncorrected proof.

What humans do when exposed to uncertainty, incomplete information, and a dynamic environment influenced by other agents remains an open scientific challenge with important implications in both science and engineering applications. In these contexts, humans handle social situations by employing elaborate cognitive mechanisms such as theory of mind and risk sensitivity. Here we resort to a novel theoretical model, showing that both mechanisms leverage coordinated behaviors among self-regarding individuals. Particularly, we resort to cumulative prospect theory and level-k recursions to show how biases towards optimism and the capacity of planning ahead significantly increase coordinated, cooperative action. These results suggest that the reason why humans are good at coordination may stem from the fact that we are cognitively biased to do so.

<https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1009167>

PLoS One

PAPERS

ANNA LORENZONI et al – Dimensions of social categorization: Inside the role of language

The present pre-registration aims to investigate the role of language as a dimension of social categorization. Our critical aim is to investigate whether language can be used as a dimension of social categorization even when the languages coexist within the same sociolinguistic group, as is the case in bilingual communities where two languages are used in daily social interactions. We will use the memory confusion paradigm (also known as the Who said what? task). In the first part of the task, i.e. encoding, participants will be presented with a face (i.e. speaker) and will listen to an auditory sentence. Two languages will be used, with half of the faces always associated with one language and the other half with the other language. In the second phase, i.e. recognition, all the faces will be presented on the screen and participants will decide which face uttered which sentence in the encoding phase. Based on previous literature, we expect that participants will be more likely to confuse faces from within the same language category than from the other language category. Participants will be bilingual individuals of two bilingual communities, the Basque Country (Spain) and Veneto (Italy). The two languages of these communities will be used, Spanish and Basque (Study 1), and Italian and Venetian dialect (Study 2). Furthermore, we will explore whether the amount of daily exposure to the two languages modulates the effect of language as a social categorization cue. This research will allow us to test whether bilingual people use language to categorize individuals belonging to the same sociolinguistic community based on the language these individuals are speaking. Our findings may have relevant political and social implications for linguistic policies in bilingual communities.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0254513>

FERNANDO DIEZ-MARTÍN et al with AUDAX MABULLA – Tracing the spatial imprint of Oldowan technological behaviors: A view from DS (Bed I, Olduvai Gorge, Tanzania)

DS (David's site) is one of the new archaeological sites documented in the same paleolandscape in which FLK 22 was deposited at about 1.85 Ma in Olduvai Gorge. Fieldwork in DS has unearthed the largest vertically-discrete archaeological horizon in the African Pleistocene, where a multi-cluster anthropogenic accumulation of fossil bones and stone tools has been identified. In this work we present the results of the techno-economic study of the lithic assemblage recovered from DS. We also explore the spatial magnitude of the technological behaviors documented at this spot using powerful spatial statistical tools to unravel correlations between the spatial distributional patterns of lithic categories. At DS, lavas and quartzite were involved in different technological processes. Volcanic materials, probably transported to this spot from a close source, were introduced in large numbers, including unmodified materials, and used in percussion activities and in a wide variety of reduction strategies. A number of volcanic products were subject to outward fluxes to other parts of the paleolandscape. In contrast, quartzite rocks were introduced in smaller numbers and might have been subject to a significantly more intense exploitation. The intra-site spatial analysis has shown that specialized areas cannot be identified, unmodified materials are not randomly distributed, percussion and knapping categories do not spatially overlap, while bipolar specimens show some sort of spatial correlation with percussion activities.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0254603>

Science Advances

PAPERS

NATHAN K. SCHAEFER, BETH SHAPIRO & RICHARD E. GREEN – An ancestral recombination graph of Human, Neanderthal, and Denisovan genomes

Many humans carry genes from Neanderthals, a legacy of past admixture. Existing methods detect this archaic hominin ancestry within human genomes using patterns of linkage disequilibrium or direct comparison to Neanderthal genomes. Each of these methods is limited in sensitivity and scalability. We describe a new ancestral recombination graph inference algorithm that scales to large genome-wide datasets and demonstrate its accuracy on real and simulated data. We then

generate a genome-wide ancestral recombination graph including human and archaic hominin genomes. From this, we generate a map within human genomes of archaic ancestry and of genomic regions not shared with archaic hominins either by admixture or incomplete lineage sorting. We find that only 1.5 to 7% of the modern human genome is uniquely human. We also find evidence of multiple bursts of adaptive changes specific to modern humans within the past 600,000 years involving genes related to brain development and function.

<https://advances.sciencemag.org/content/7/29/eabc0776>

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