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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.

ACADEMIA.EDU – A Strategic Perspective on the Lithic Technology of Early Hominin Dispersal

In J.G. Fleagle, J.J. Shea, F.E. Grine, A.L. Baden and R.E. Leakey (Eds.) Out of Africa 1: The First Hominin Colonization of Eurasia. New York: Springer, 47-64 (2010).

JOHN J. SHEA – Stone Age Visiting Cards Revisited: A Strategic Perspective on the Lithic Technology of Early Hominin Dispersal

This paper examines the stone tool technology of dispersing Plio-Pleistocene hominins. The traditional division of Early Paleolithic assemblages into Oldowan, Developed Oldowan, Early Acheulean, and related industries obscures a more fundamental axis of strategic variation between pebble-core and large cutting tool technology. In Eurasia, as in Africa before it, first appearances of fossils of the genus Homo occur together with “Oldowan” pebble-core technology. Acheulean assemblages featuring large symmetrical cores/cutting tools, if they appear at all, do so after a considerable period of time. The patterning of the Early Paleolithic industrial variability may reflect a strategic shift between an initial “frontier” phase and a subsequent “settling in” phase of hominin dispersal.

https://www.academia.edu/2639638/John_J_Shea_2010_Stone_Age_Visiting_Cards_Revisited_A_Strategic_Perspective_on_the_Lithic_Technology_of_Early_Hominin_Dispersal_J_G_Fleagle_J_J_Shea_F_E_Grine_A_L_Baden_and_R_E_Leakey_Eds_Out_of_Africa_1_The_First_Hominin_Colonization_of_Eurasia_New_York_Springer_Pp_47_64

ACADEMIA.EDU – The oldest handaxes in Europe: fact or artefact?

In Journal of Archaeological Science 38, 3340-3349 (2011).

JUAN MANUEL JIMÉNEZ-ARENAS et al – The oldest handaxes in Europe: fact or artefact?

Hominin presence is well documented in a number of Early Pleistocene and early Middle Pleistocene European localities. However, the evidence currently available indicates that Acheulean handaxes spread in the fluvial basins of Western Europe during MIS 11, ~400 kyr ago, associated with *Homo heidelbergensis*, although a number of early Middle Pleistocene Acheulean assemblages have been dated from MIS 16 onwards. For this reason, the magnetostratigraphic dating in Southeast Spain of two archaeological localities, the open-air site of Solana del Zamborino (SZ) and the rock-shelter site of Cueva Negra del Estrecho del Quípar (EQ), that put back the appearance of handaxes to the Early-Middle Pleistocene limit (Scott and Gibert, 2009) is of particular interest, as the new ages suggest that *H. heidelbergensis* was a contemporary of *H. antecessor* that had the ability to produce Levallois debitage and to control fire during the Early-Middle Pleistocene transition. However, we have detected a number of errors in the interpretation of the archaeological assemblage from the first site as well as striking discrepancies with the original faunal lists published for both localities, with several large mammal species that are omitted or arbitrarily changed to make the assemblages consistent with the new ages deduced from magnetostratigraphy. For this reason, we suggest that: (1) the finding of reverse polarity in the sediments sampled for paleomagnetism in SZ may simply record one of the polarity reversals that took place during the Brunhes Chron, although the use by Scott and Gibert (2009) of a composite stratigraphic column precludes correlating these levels with a specific reversal; and (2) the fauna and tools of EQ correspond to the late Middle Pleistocene sedimentary infillings of this karst site, while the samples taken for paleomagnetism belong to a previous sedimentary cycle during the Matuyama Chron. Such interpretations would be in better agreement with the age estimates provided by biostratigraphy and also with the currently accepted chronology for the appearance of Acheulean industries in Western Europe.

https://www.academia.edu/3087896/The_oldest_handaxes_in_Europe_fact_or_artefact

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

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

BRIAN VILLMOARE – 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 – At Least Two Hominin Species with Different Feet and Gaits Coexisted at Laetoli

Bipedal trackways discovered in 1978 at Laetoli site G, Tanzania, and dated to 3.66 million years ago are widely accepted as the oldest unequivocal evidence of obligate bipedalism in the human lineage. Another trackway discovered in 1976 at nearby Laetoli site A was partially excavated and attributed to a hominin, but curious affinities with bears marginalized its importance to the paleoanthropological community.

http://www.sci-news.com/othersciences/anthropology/laetoli-hominins-10329.html?utm_source=feedburner&utm_medium=email

NATURE BRIEFING – Eurasia's oldest piece of jewellery?

A 41,500-year-old pendant carved from a piece of a woolly mammoth tusk could be the oldest known example of decorated jewellery in Eurasia made by humans. The purpose and meaning of the designs on its surface are unclear, but they could represent a counting system, lunar observations or a way of scoring kills. The pendant was found in the Stajnia Cave, in Poland, alongside a 7-centimetre-long awl — a pointed tool used for making holes — shaped from a piece of horse bone.

<https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=82f1f3eb10&e=1db4b9a19b>

SCIENCE DAILY – Farmers spread Transeurasian languages

New research provides interdisciplinary support for the 'Farming Hypothesis' of language dispersal, tracing Transeurasian languages back to the first farmers moving across Northeast Asia beginning in the Early Neolithic -- roughly between 8-10 thousand years ago.

<https://www.sciencedaily.com/releases/2021/11/211129122713.htm>

SCIENCE DAILY – Footprints from site A at Laetoli, Tanzania, are from early humans, not bears

The oldest unequivocal evidence of upright walking in the human lineage are footprints discovered at Laetoli, Tanzania in 1978, by paleontologist Mary Leakey and her team. The bipedal trackways date to 3.7 million years ago. Another set of

mysterious footprints was partially excavated at nearby Site A in 1976 but dismissed as possibly being made by a bear. A recent re-excavation of the Site A footprints at Laetoli and a detailed comparative analysis reveal that the footprints were made by an early human -- a bipedal hominin.

<https://www.sciencedaily.com/releases/2021/12/21120111934.htm>

SCIENCE DAILY – Nonverbal social interactions – even with unfriendly avatars – boost cooperation

Scientists used animated humanoid avatars to study how nonverbal cues influence people's behavior. The research offers insight into the brain mechanisms that drive social and economic decision-making.

<https://www.sciencedaily.com/releases/2021/11/211130101438.htm>

SCIENCE DAILY – Tracking the neurons that make us social

Human beings, like most mammals, need social interactions to live and develop. The processes that drive them towards each other require decision making whose brain machinery is largely misunderstood. To decipher this phenomenon, a team has studied the neurobiological mechanisms at stake when two mice come into contact through learning a task. They observed that the motivation to invest in a social interaction is closely linked to the reward system, via the activation of dopaminergic neurons.

<https://www.sciencedaily.com/releases/2021/12/211202113430.htm>

SCIENCE NEWS – Ancient footprints suggest famed human ancestor 'Lucy' had company

Reanalysis of 3.6-million-year-old footprints suggest a second kind of hominin walked in Lucy's neighborhood

<https://www.science.org/content/article/ancient-footprints-suggest-famed-human-ancestor-lucy-had-company>

SOCIETY FOR SCIENCE – Ancient footprints suggest a mysterious hominid lived alongside Lucy's kind

A previously unknown hominid species may have left its marks in muddy ash about 3.66 million years ago in what is now East Africa.

<http://click.societyforscience->

email.com/?qs=126cd9e164a81f25bc024b567c355312c57100d5da820f06f52e8ed98b079886df69e4fcb98d804908203f11f1849324c12f04f148778f2bd1d28639bbea4

SOCIETY FOR SCIENCE – Ancient giant orangutans evolved smaller bodies surprisingly slowly

Fossil teeth from Chinese caves indicate that a single, ancient orangutan species gradually trimmed down over nearly 2 million years.

<http://click.societyforscience->

email.com/?qs=126cd9e164a81f25b0b589dc72ea4724ecb53b6c7f99d0c1db9aaf58788cb3e3a926721ed1764e46954df6e8ff4a6881c0a5d41bc8454e5e02ec1f0bbb7d437

THE CONVERSATION – A new species of early human? Caution needed about new fossil footprint findings

A new study finds more than one early human species lived on the landscape in Northern Tanzania 3.66 million years ago. But there are reasons to be cautious about the findings.

<https://theconversationuk.cmail19.com/t/r-l-trdrhduk-khhilillah-z/>

PUBLICATIONS

Animal Behaviour

PAPERS

JULIA A. KUNZ et al with CAREL P. VAN SCHAİK – The context of sexual coercion in orang-utans: when do male and female mating interests collide?

Sexual coercion is widespread in the animal kingdom. Its direct forms, including harassment and forced copulation, have largely been investigated as an expression of (alternative) male reproductive strategies, rather than the result of a sexual conflict between the sexes. Likewise, the frequent occurrence of forced copulations in orang-utans (*Pongo* spp.) has been attributed to male strategies and more recently also to concealed female fecundity. So far, however, the immediate contextual variables leading to forced copulations have rarely been examined. We compared two orang-utan populations, Suaq (*Pongo abelii*, Sumatra) and Tuanan (*Pongo pygmaeus*, Borneo), both characterized by an individual-based fission–fusion lifestyle, whereas their socioecology differs. We assessed how the occurrence of female-resisted and voluntary copulations was affected by female reproductive state, male morph (unflanged or flanged), measures of male–male competition, male–female relationship and ecological factors. Besides female reproductive state and male morph, predictors of female resistance were related to male–male competition. First, female resistance was more likely towards subordinate males who were displaced from proximity to the female by another male during that association. Second, the presence of additional flanged males increased the probability of female resistance. Third, the latency to both the arrival of another male

and to the end of the association after sexual interactions was shorter if there was female resistance. We conclude that sexual coercion in orang-utans is highly dependent on the vicinity of more dominant males and can only be understood in the light of sexual conflict: While males force copulations when at risk of losing access to a female and thus follow a 'now-or-never' strategy, female resistance follows a 'not-you-now' pattern, which is ultimately consistent with an infanticide avoidance strategy.

<https://www.sciencedirect.com/science/article/pii/S0003347221003158>

Frontiers in Ecology and Evolution

PAPERS

JESS L. VICKRUCK & MIRIAM H. RICHARDS – Competition Drives Group Formation and Reduces Within Nest Relatedness in a Facultatively Social Carpenter Bee

Animals respond to competition among kin for critical breeding resources in two ways: avoidance of direct fitness costs via dispersal of siblings to breed separately, and formation of kin-based societies in which subordinates offset direct fitness costs of breeding competition via altruism and increased indirect fitness. In the facultatively social eastern carpenter bee, nests are a critical breeding resource in perpetually short supply, leading to strong competition among females. Observations of individually marked and genotyped females in conditions of high and low resource competition demonstrate that competition leads to resource sharing and group nesting. However, in contrast to almost all known animal societies, females avoid nesting with relatives, and disperse from their natal nests to join social groups of non-relatives. This is the first example of a structured insect society with cooperation nestmates, the majority of which are unrelated; thus cooperation is more likely based on selection for direct, rather than indirect fitness. By forming social groups of non-kin, females avoid the indirect fitness costs of kin competition among sisters, yet increase their chances of successful reproduction, and thus direct fitness, when forming colonies of non-relatives.

<https://www.frontiersin.org/articles/10.3389/fevo.2021.738809/full>

Frontiers in Neuroscience

PAPERS

CARLOS MONTEMAYOR – Types of Consciousness: The Diversity Problem

Consciousness research has a cognitive-diversity problem. Any view that holds that attention is either necessary for consciousness or that attention precedes conscious awareness confronts the difficulty that the theoretical categorization of attention is as diverse as the categorization of intelligent cognition, but consciousness is typically referred to as a single and unified capacity. On the one hand, we have a multiplicity of kinds of attention. On the other hand, we use a monolithic "phenomenal" notion of consciousness to define the dependency of consciousness on all these diverse kinds of attention. Since attention is defined in terms of a diverse variety of functions, a lot more needs to be said with respect to the claim that attention is either necessary for consciousness or that attentional processing precedes conscious awareness. Is this dependency based on the diverse cognitive functions of attention? If so, why conceive of consciousness as a single informationally unified cognitive capacity? What does the multiplicity of kinds of attention entail for consciousness research? This is the "diversity problem." This article argues that consciousness should be also considered as a diverse set of capacities, based on the diversity of attention. While we have the intuition that consciousness is a unified perspective, the article shows that consistency demands this diverse approach. Since research on attention distinguishes a wide range of functions and levels of cognitive processing, the dependency of consciousness on attention entails diverse conscious capacities and diverse types of awareness beyond the distinctions between being awake, dreaming, and being minimally conscious.

<https://www.frontiersin.org/articles/10.3389/fnsys.2021.747797/full>

Frontiers in Psychology

PAPERS

THUY TUONG UYEN TRAN et al – One Function One Tool? A Review on Mutual Exclusivity in Tool Use Learning in Human and Non-human Species

The goal of this review is twofold: first to explore whether mutual exclusivity and functional fixedness overlap and what might be their respective specificities and second, to investigate whether mutual exclusivity as an inferential principle could be applied in other domains than language and whether it can be found in non-human species. In order to do that, we first give an overview of the representative studies of each phenomenon. We then analyze papers on tool use learning in children that studied or observed one of these phenomena. We argue that, despite their common principle -one tool one function- mutual exclusivity and functional fixedness are two distinct phenomena and need to be addressed separately in order to fully understand the mechanisms underlying social learning and cognition. In addition, mutual exclusivity appears to be applicable in other domains than language learning, namely tool use learning and is also found in non-human species when learning symbols and tools.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.603960/full>

KENDRA GIMHANI KANDANA ARACHCHIGE et al – Covert Attention to Gestures Is Sufficient for Information Uptake

Numerous studies have explored the benefit of iconic gestures in speech comprehension. However, only few studies have investigated how visual attention was allocated to these gestures in the context of clear versus degraded speech and the way information is extracted for enhancing comprehension. This study aimed to explore the effect of iconic gestures on comprehension and whether fixating the gesture is required for information extraction. Four types of gestures (i.e., semantically and syntactically incongruent iconic gestures, meaningless configurations, and congruent iconic gestures) were presented in a sentence context in three different listening conditions (i.e., clear, partly degraded or fully degraded speech). Using eye tracking technology, participants' gaze was recorded, while they watched video clips after which they were invited to answer simple comprehension questions. Results first showed that different types of gestures differently attract attention and that the more speech was degraded, the less participants would pay attention to gestures. Furthermore, semantically incongruent gestures appeared to particularly impair comprehension although not being fixated while congruent gestures appeared to improve comprehension despite also not being fixated. These results suggest that covert attention is sufficient to convey information that will be processed by the listener.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.776867/full>

ANTONINO RAFFONE – Grand Challenges in Consciousness Research Across Perception, Cognition, Self, and Emotion

This article will highlight some current grand challenges in consciousness research. Several core problems in consciousness research historically implicate a tension between opposite views. These include the antithetic views about whether consciousness of given contents, such as perceptual objects and episodic memories, is graded (along a continuum from a fully unconscious grade to full conscious access) or rather all-or-none or dichotomous (i.e., either "black," unconscious, or "white," conscious). Another core opposition of perspectives is about whether consciousness (and in particular perceptual awareness) is temporally continuous in its flow, or rather discontinuous with a series of discrete conscious moments. A further one is about a view "from without" to conscious experiences (e.g., based on matching stimuli and responses) and a view "from within," based on a first-person reflective access to conscious experiences across waking and dreaming. This article will consider how such apparently contrasting views can be reconciled in synthetic perspectives, also in light of recent experimental findings and developed theoretical perspectives.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.770360/full>

SHIGERU MIYAGAWA – Revisiting Fitch and Hauser's Observation That Tamarin Monkeys Can Learn Combinations Based on Finite-State Grammar

In a groundbreaking work, Fitch and Hauser (2004) compared artificial grammar learning between human and cotton-top tamarins (*Saguinus oedipus*) using finite-state grammar (FSG) and phrase-structure grammar (PSG) types. They found that while humans are able to learn both grammar types, the tamarin monkeys could only learn combinations based on FSG. FSGs process linearly ordered strings whose structure resorts to strictly adjacent steps. Examples of FSGs are An and $(AB)^n$, where n indicates the number of times A and AB are repeated, and $AnBm$, where $n \neq m$. On the other hand, PSGs are not limited to adjacency. This allows PSGs to match the number of units repeated in each series generated, as in the sequence $AnBn$, where the number of A 's matches the number of B 's (Balari et al., 2011; Longa, 2013). The non-adjacent relations in PSGs are made possible by hierarchical structures that relate items at a distance. Since PSGs require hierarchical structure, F&H conclude that while humans can generate them, tamarins cannot, thus limiting their system to sequences based strictly on adjacent dependency, that is, FSG. There is no doubt that human language requires a grammar more powerful than FSG (Chomsky, 1956, 1959). In this article, I will take up F&H's assumption that their experiment showed that the tamarin monkeys are capable of learning sequences based on FSG. While their stimuli appear to approximate an FSG, in reality they do not, except trivially. Hence, their conclusion that tamarins are capable of FSG is at best weak. This casts doubt on using the Chomsky hierarchy for describing the learning behavior of nonhuman primates. Furthermore, unlike humans, who are exposed continuously to natural speech that requires a grammar more powerful than FSG, monkeys in nature are never exposed to verbal behavior that reflects FSG in any meaningful sense. It would therefore be surprising if they exhibit mastery of FSG combinations, which are entirely outside their natural experience.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.772291/full>

VALENTIN FORCH & FRED H. HAMKER – Building and Understanding the Minimal Self

Within the methodologically diverse interdisciplinary research on the minimal self, we identify two movements with seemingly disparate research agendas – cognitive science and cognitive (developmental) robotics. Cognitive science, on the one hand, devises rather abstract models which can predict and explain human experimental data related to the minimal self. Incorporating the established models of cognitive science and ideas from artificial intelligence, cognitive robotics, on the other hand, aims to build embodied learning machines capable of developing a self "from scratch" similar to human infants. The epistemic promise of the latter approach is that, at some point, robotic models can serve as a testbed for directly investigating the mechanisms that lead to the emergence of the minimal self. While both approaches can be productive for creating causal mechanistic models of the minimal self, we argue that building a minimal self is different from understanding the human minimal self. Thus, one should be cautious when drawing conclusions about the human minimal self based on robotic model implementations and vice versa. We further point out that incorporating constraints arising from different levels of analysis will be crucial for creating models that can predict, generate, and causally explain behavior in the real world.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.716982/full>

WILLOUGHBY B. BRITTON et al – From Self-Esteem to Selflessness: An Evidence (Gap) Map of Self-Related Processes as Mechanisms of Mindfulness-Based Interventions

Self-related processes (SRPs) have been theorized as key mechanisms of mindfulness-based interventions (MBIs), but the evidence supporting these theories is currently unclear. This evidence map introduces a comprehensive framework for different types of SRPs, and how they are theorized to function as mechanisms of MBIs (target identification). The evidence map then assesses SRP target engagement by mindfulness training and the relationship between target engagement and outcomes (target validation). Discussion of the measurement of SRPs is also included. The most common SRPs measured and engaged by standard MBIs represented valenced evaluations of self-concept, including rumination, self-compassion, self-efficacy, and self-esteem. Rumination showed the strongest evidence as a mechanism for depression, with other physical and mental health outcomes also supported. Self-compassion showed consistent target engagement but was inconsistently related to improved outcomes. Decentering and interoception are emerging potential mechanisms, but their construct validity and different subcomponents are still in development. While some embodied self-specifying processes are being measured in cross-sectional and meditation induction studies, very few have been assessed in MBIs. The SRPs with the strongest mechanistic support represent positive and negative evaluations of self-concept. In sum, few SRPs have been measured in MBIs, and additional research using well-validated measures is needed to clarify their role as mechanisms.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.730972/full>

Journal of Language Evolution

PAPERS

NICK ZANGWILL – The philosophical interpretation of language game theory

I give an informal presentation of the evolutionary game theoretic approach to the conventions that constitute linguistic meaning. The aim is to give a philosophical interpretation of the project, which accounts for the role of game theoretic mathematics in explaining linguistic phenomena. I articulate the main virtue of this sort of account, which is its psychological economy, and I point to the causal mechanisms that are the ground of the application of evolutionary game theory to linguistic phenomena. Lastly, I consider the objection that the account cannot explain predication, logic, and compositionality.

<https://academic.oup.com/jole/article-abstract/6/2/136/6420386>

Mind & Language

PAPERS

CECILIA HEYES – Imitation and culture: What gives?

What is the relationship between imitation and culture? This article charts how definitions of imitation have changed in the last century, distinguishes three senses of “culture” used by contemporary evolutionists (Culture1–Culture3), and summarises current disagreement about the relationship between imitation and culture. The disagreement arises from ambiguities in the distinction between imitation and emulation, and confusion between two explanatory projects—the anthropocentric project and the cultural selection project. I argue that imitation gives cultural evolution an inheritance mechanism for communicative and gestural skills (but not technological skills), and cultural selection yields the cognitive mechanisms that make imitation possible.

<https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12388>

MARIANNA BERGAMASCHI GANAPINI – The signaling function of sharing fake stories

Why do people share or publicly engage with fake stories? Two possible answers come to mind: (a) people are deeply irrational and believe these stories to be true; or (b) they intend to deceive their audience. Both answers presuppose the idea that people put the stories forward as true. But I argue that in some cases, these outlandish (yet also very popular) stories function as signals of one's group membership. This signaling function can make better sense of why, despite their unusual nature or lack of a factual basis, some of these stories are so widespread.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12373>

LARS DÄNZER – The explanatory project of Gricean pragmatics

The Gricean paradigm in pragmatics has recently been attacked for its alleged lack of explanatory import, based on the claim that it does not seek accounts of how utterance interpretation actually works, but merely of how it might work. This article rebuts this line of attack by offering a clear and detailed account of the explanatory project of Gricean pragmatics according to which the latter aims for rationalizing explanations of utterance interpretation. It is shown that, on this view, Gricean pragmatics seeks psychological explanations of utterance interpretation that are “cognitively real” in a perfectly clear and robust sense.

<https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12295>

NATALIA WAIGHTS HICKMAN – (Implicit) Knowledge, reasons, and semantic understanding

This paper exploits recent work on the normative and constitutive roles of knowledge in practical rationality, to put pressure on the idea that speakers could communicate without exploiting linguistic knowledge. I defend cognitivism about meaning, the view that speakers have rationally accessible (i.e., implicit rather than tacit) knowledge of semantic facts and principles, and that this knowledge is constitutive of their linguistic competence.

<https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12286>

ALEXANDER DINGES & JULIA ZAKKOU – Much at stake in knowledge

Orthodoxy in the contemporary debate on knowledge ascriptions holds that the truth-value of knowledge ascriptions is purely a matter of truth-relevant factors. One familiar challenge to orthodoxy comes from intuitive practical factor effects. But practical factor effects turn out to be hard to confirm in experimental studies, and where they have been confirmed, they may seem easy to explain away. We suggest a novel experimental paradigm to show that practical factor effects exist. It trades on the idea that people retract knowledge attributions when practical factors shift. We also explain why the resulting data raise a serious challenge to orthodoxy.

<https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12300>

RONALD J. PLANER & PETER GODFREY-SMITH – Communication and representation understood as sender–receiver coordination

Modeling work by Brian Skyrms and others in recent years has transformed the theoretical role of David Lewis's 1969 model of signaling. The latter can now be understood as a minimal model of communication in all its forms. In this article, we explain how the Lewis model has been generalized, and consider how it and its variants contribute to ongoing debates in several areas. Specifically, we consider connections between the models and four topics: The role of common interest in communication, signaling within the organism, meaning, and the evolution of human communication and language.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12293>

Nature

ARTICLES

STEPHANIE M. MELILLO – Hominin footprints at Laetoli reveal a walk on the wild side

Bipedalism is a defining feature of the human lineage, but not all hominin species walked in the same way. New data from a famous palaeoanthropology site reveal that at least two differently bipedal hominins roamed eastern Africa.

<https://www.nature.com/articles/d41586-021-03469-4>

TOSIN THOMPSON – Is this mammoth-ivory pendant Eurasia's oldest surviving jewellery?

Radiocarbon dating suggests 41,500-year-old carved tusk fragment could be the region's earliest known example of jewellery decorated by humans.

<https://www.nature.com/articles/d41586-021-03534-y>

PAPERS

ELLISON J. MCNUTT et al – Footprint evidence of early hominin locomotor diversity at Laetoli, Tanzania

Bipedal trackways discovered in 1978 at Laetoli site G, Tanzania and dated to 3.66 million years ago are widely accepted as the oldest unequivocal evidence of obligate bipedalism in the human lineage. Another trackway discovered two years earlier at nearby site A was partially excavated and attributed to a hominin, but curious affinities with bears (ursids) marginalized its importance to the paleoanthropological community, and the location of these footprints fell into obscurity. In 2019, we located, excavated and cleaned the site A trackway, producing a digital archive using 3D photogrammetry and laser scanning. Here we compare the footprints at this site with those of American black bears, chimpanzees and humans, and we show that they resemble those of hominins more than ursids. In fact, the narrow step width corroborates the original interpretation of a small, cross-stepping bipedal hominin. However, the inferred foot proportions, gait parameters and 3D morphologies of footprints at site A are readily distinguished from those at site G, indicating that a minimum of two hominin taxa with different feet and gaits coexisted at Laetoli.

<https://www.nature.com/articles/s41586-021-04187-7>

Nature Humanities & Social Sciences Communications

PAPERS

MATTHEW J. BAKER – Foundations of the Age-Area Hypothesis

A useful tool in understanding the roots of the world geography of culture is the Age-Area-Hypothesis. The Age-Area Hypothesis (AAH) asserts that the point of geographical origin of a group of related cultures is most likely where the culture speaking the most divergent language is located. In spite of its widespread, multidisciplinary application, the hypothesis remains imprecisely stated, and has no theoretical underpinnings. This paper describes a model of the AAH based on an economic theory of mass migrations. The theory leads to a family of measures of cultural divergence, which can be referred to as Dyen divergence measures. One measure is used to develop an Age-Area Theorem, which links linguistic divergence and

likelihood of geographical origin. The theory allows for computation of the likelihood different locations are origin points for a group of related cultures, and can be applied recursively to yield probabilities of different historical migratory paths. The theory yields an Occam's-razor-like result: migratory paths that are the simplest are also the most likely; a key principle of the AAH. The paper concludes with an application to the geographical origins of the peoples speaking Semitic languages.

<https://www.nature.com/articles/s41599-021-00991-8>

Nature Scientific Reports

PAPERS

JONATHAN S. REEVES, TOMOS PROFFITT & LYDIA V. LUNCZ – Modeling a primate technological niche

The ability to modify the environment through the transport of tools has been instrumental in shaping the evolutionary success of humans. Understanding the cause-and-effect relationships between hominin behavior and the environment ultimately requires understanding of how the archaeological record forms. Observations of living primates can shed light on these interactions by investigating how tool-use behaviors produce a material record within specific environmental contexts. However, this requires reconciling data derived from primate behavioral observations with the time-averaged nature of the Plio-Pleistocene archaeological record. Here, we use an agent-based model to investigate how repeated short-distance transport events, characteristic for primate tool use, can result in significant landscape-scale patterning of material culture over time. Our results illustrate the conditions under which accumulated short-distance transport bouts can displace stone tools over long distances. We show that this widespread redistribution of tools can also increase access to tool require resources over time. As such, these results elucidate the niche construction processes associated with this pattern of tool transport. Finally, the structure of the subsequent material record largely depends on the interaction between tool transport and environmental conditions over time. Though these results have implications for inferring hominin tool transports from hominin archaeological assemblages. Furthermore, they highlight the difficulties with connecting specific behavioral processes with the patterning in the archaeological record.

<https://www.nature.com/articles/s41598-021-01849-4>

ADELIN LE CABEC et al with JEAN-JACQUES HUBLIN – Insights into the palaeobiology of an early Homo infant: multidisciplinary investigation of the GAR IVE hemi-mandible, Melka Kunture, Ethiopia

Childhood is an ontogenetic stage unique to the modern human life history pattern. It enables the still dependent infants to achieve an extended rapid brain growth, slow somatic maturation, while benefitting from provisioning, transitional feeding, and protection from other group members. This tipping point in the evolution of human ontogeny likely emerged from early Homo. The GAR IVE hemi-mandible (1.8 Ma, Melka Kunture, Ethiopia) represents one of the rarely preserved early Homo infants (~ 3 years at death), recovered in a richly documented Oldowan archaeological context. Yet, based on the sole external inspection of its teeth, GAR IVE was diagnosed with a rare genetic disease—amelogenesis imperfecta (AI)—altering enamel. Since it may have impacted the child's survival, this diagnosis deserves deeper examination. Here, we reassess and refute this diagnosis and all associated interpretations, using an unprecedented multidisciplinary approach combining an in-depth analysis of GAR IVE (synchrotron imaging) and associated fauna. Some of the traits previously considered as diagnostic of AI can be better explained by normal growth or taphonomy, which calls for caution when diagnosing pathologies on fossils. We compare GAR IVE's dental development to other fossil hominins, and discuss the implications for the emergence of childhood in early Homo.

<https://www.nature.com/articles/s41598-021-02462-1>

MIKIKO WATANABE et al – Bone density and genomic analysis unfold cold adaptation mechanisms of ancient inhabitants of Tierra del Fuego

The Fuegians, ancient inhabitants of Tierra del Fuego, are an exemplary case of a cold-adapted population, since they were capable of living in extreme climatic conditions without any adequate clothing. However, the mechanisms of their extraordinary resistance to cold remain enigmatic. Brown adipose tissue (BAT) plays a crucial role in this kind of adaptation, besides having a protective role on the detrimental effect of low temperatures on bone structure. Skeletal remains of 12 adult Fuegians, collected in the second half of XIX century, were analyzed for bone mineral density and structure. We show that, despite the unfavorable climate, bone mineral density of Fuegians was close to that seen in modern humans living in temperate zones. Furthermore, we report significant differences between Fuegians and other cold-adapted populations in the frequency of the Homeobox protein Hox-C4 (HOXC4) rs190771160 variant, a gene involved in BAT differentiation, whose identified variant is predicted to upregulate HOXC4 expression. Greater BAT accumulation might therefore explain the Fuegians extreme cold-resistance and the protection against major cold-related damage. These results increase our understanding of how ecological challenges have been important drivers of human–environment interactions during Humankind history.

<https://www.nature.com/articles/s41598-021-02783-1>

New Scientist

NEWS

Neanderthals may have grown their baby teeth faster than we do

A tooth from a Neanderthal child who lived 120,000 years ago suggests that our cousin species began cutting their baby teeth at 4 months – earlier than for the average modern human,

<https://www.newscientist.com/article/2298665-neanderthals-may-have-grown-their-baby-teeth-faster-than-we-do/#ixzz7DwHHLV6S>

Mammoth ivory pendant is oldest decorated jewellery found in Eurasia

A pendant carved with mysterious dots and unearthed in a Polish cave is thought to be over 40,000 years old

<https://www.newscientist.com/article/2299071-mammoth-ivory-pendant-is-oldest-decorated-jewellery-found-in-eurasia/#ixzz7DwHkVbO5>

Science Advances

PAPERS

ZILONG GAO et al – The neural basis of delayed gratification

Balancing instant gratification versus delayed but better gratification is important for optimizing survival and reproductive success. Although delayed gratification has been studied through human psychological and brain activity monitoring and animal research, little is known about its neural basis. We successfully trained mice to perform a waiting-for-water-reward delayed gratification task and used these animals in physiological recording and optical manipulation of neuronal activity during the task to explore its neural basis. Our results showed that the activity of dopaminergic (DAergic) neurons in the ventral tegmental area increases steadily during the waiting period. Optical activation or silencing of these neurons, respectively, extends or reduces the duration of waiting. To interpret these data, we developed a reinforcement learning model that reproduces our experimental observations. Steady increases in DAergic activity signal the value of waiting and support the hypothesis that delayed gratification involves real-time deliberation.

<https://www.science.org/doi/full/10.1126/sciadv.abg6611>

LEA-MARIA SCHMITT et al – Predicting speech from a cortical hierarchy of event-based time scales

How do predictions in the brain incorporate the temporal unfolding of context in our natural environment? We here provide evidence for a neural coding scheme that sparsely updates contextual representations at the boundary of events. This yields a hierarchical, multilayered organization of predictive language comprehension. Training artificial neural networks to predict the next word in a story at five stacked time scales and then using model-based functional magnetic resonance imaging, we observe an event-based “surprisal hierarchy” evolving along a temporoparietal pathway. Along this hierarchy, surprisal at any given time scale gated bottom-up and top-down connectivity to neighboring time scales. In contrast, surprisal derived from continuously updated context influenced temporoparietal activity only at short time scales. Representing context in the form of increasingly coarse events constitutes a network architecture for making predictions that is both computationally efficient and contextually diverse.

<https://www.science.org/doi/full/10.1126/sciadv.abi6070>

Trends in Cognitive Sciences

PAPERS

DANIEL D. DILKS, FREDERIK S. KAMPS & ANDREW S. PERSICHETTI – Three cortical scene systems and their development

Since the discovery of three scene-selective regions in the human brain, a central assumption has been that all three regions directly support navigation. We propose instead that cortical scene processing regions support three distinct computational goals (and one not for navigation at all): (i) The parahippocampal place area supports scene categorization, which involves recognizing the kind of place we are in; (ii) the occipital place area supports visually guided navigation, which involves finding our way through the immediately visible environment, avoiding boundaries and obstacles; and (iii) the retrosplenial complex supports map-based navigation, which involves finding our way from a specific place to some distant, out-of-sight place. We further hypothesize that these systems develop along different timelines, with both navigation systems developing slower than the scene categorization system.

{The area between the parahippocampal place area and the retrosplenial complex is Wernicke’s area (Brodmann 39,40); the occipital place area is the Anterior prefrontal cortex (Brodmann 10).}

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(21\)00287-4](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(21)00287-4)

Trends in Ecology and Evolution

PAPERS

PEIQI ZHANG et al – Denisovans and Homo sapiens on the Tibetan Plateau: dispersals and adaptations

Recent archaeological discoveries suggest that both archaic Denisovans and Homo sapiens occupied the Tibetan Plateau earlier than expected. Genetic studies show that a pulse of Denisovan introgression was involved in the adaptation of Tibetan populations to high-altitude hypoxia. These findings challenge the traditional view that the plateau was one of the last places on earth colonized by H. sapiens and warrant a reappraisal of the population history of this highland. Here, we integrate archaeological and genomic evidence relevant to human dispersal, settlement, and adaptation in the region. We propose two testable models to address the peopling of the plateau in the broader context of H. sapiens dispersal and their encounters with Denisovans in Asia.

[https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347\(21\)00307-4](https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(21)00307-4)

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