EAORC BULLETIN 990 – 5 June 2022

CONTENTS

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 – Who Were The Skhul/Qafzeh People?

Journal of the Israel Prehistoric Society 5, 451-468 (2005).

JOHN J. SHEA & OFER BAR-YOSEF – Who Were The Skhul/Qafzeh People? An Archaeological Perspective on Eurasia's Oldest Modern Humans

The sites of Skhul and Qafzeh are unique in all of Eurasia in preserving the remains of early modern humans together with Mousterian assemblages. Elsewhere, Mousterian assemblages are associated solely with Neandertals or other forms of anatomically archaic humans. In this respect, the Levantine Middle Paleolithic is rather more like various African Middle Stone Age (MSA) complexes associated with early modern humans in North Africa (Dar es-Soltane, Taramsa Hill), East Africa (Omo Kibish), and South Africa (Klasies River Mouth, Border Cave). The nature of the Skhul/Qafzeh humans' adaptations in the Levant, and their relationship to subsequent human populations have risen to prominence in recent debates about the behavioral modernity of early (i.e. pre-Upper Paleolithic) human populations (Klein 1998; McBrearty and Brooks 2000). Paleoanthropological hypotheses about the Skhul/Qafzeh humans' evolutionary significance have long been influenced by optimism about early humans' adaptive abilities. Although the Skhul/Qafzeh humans had clearly settled in the Levant by 80 Kyr, only Neandertals occur in subsequent Middle Paleolithic deposits between 70-47 Kyr (Bar-Yosef 2000; Shea 2003a). Thus, the question of evolutionary continuity between the Skhul/Qafzeh humans and subsequent Levantine Homo sapiens populations remains an open one (Kaufman 2002; Shea 2003b). In this paper, we suggest that the Skhul/Qafzeh fossils may reflect an early unsuccessful human dispersal from tropical Africa to temperate Eurasia. Modern Eurasians are the descendants of a "second wave" of Upper Paleolithic humans who competitively displaced the Neandertals. The failure of the Skhul/Qafzeh humans' descendants to disperse into Western Eurasia beyond the Levant most likely reflects the interplay of three factors:

• The intensity of competition for the "human niche" in the Levant biogeographic corridor;
• Behavioral innovations by Levantine Neandertal populations that may have conferred an adaptive advantage during the onset of glacial conditions after 71-47 Kyr;
• Behavioral differences between early modern humans and UP humans who lived after 50 Kyr.

https://www.academia.edu/2643889/John_J_Shea_and_Ofer_Bar_Yosef_2005_Who_Were_the_Skhul_Qafzeh_People_An_Archaeological_Perspective_on_Eurasia_s_Oldest_Modern_Humans_Journal_of_the_Israel_Prehistoric_Society_35_451_468

ACADEMIA.EDU – Imitation and Shared Intentionality in the Acheulean

Cambridge Archaeological Journal 20:2, 197-210 (2010).

CERI SHIPTON – Imitation and Shared Intentionality in the Acheulean

Imitation and shared intentionality are traits essential to the socio-cultural adaptation of Homo sapiens. Non-human apes display some capacity for imitation and shared intentionality, but are deficient in comparison to Homo sapiens. The Acheulean archaeological record provides evidence that imitation and shared intentionality were part of the behavioural repertoire of the hominins manufacturing that industry. The palaeoneurological record suggests some early Homo specimens possessed the neural architecture associated with modern human imitation. From this evidence it is suggested that a propensity for imitation and shared intentionality evolved soon after 2 million years ago.

https://www.academia.edu/599831/Imitation_and_Shared_Intentionality_in_the_Acheulean

OTHER PUBLICATIONS – Reflections on the Invisibility of Children in the Paleolithic Record

In Evolutionary Anthropology 15, 212-216 (2006).

JOHN J. SHEA – Child's Play: Reflections on the Invisibility of Children in the Paleolithic Record

Were there children in Early Paleolithic times? At first glance, this seems a stupid question. We are obviously descended from Paleolithic ancestors. Yet, in archeological models of Paleolithic stone tool variability and assemblage formation processes, children might as well be invisible. There have been some efforts to identify byproducts of children's activities in a few Late Paleolithic contexts, but their possible role in broader patterns of Paleolithic industrial variability remains largely unexplored. In this paper I argue that the reason we know so little about children's knapping behavior in prehistory is not that this behavior was genuinely absent, but rather that we have not looked hard enough or in the right way at the lithic record. This is a pity, because of all the behaviors we archeologists attempt to reconstruct in our research, child-rearing must certainly number among those with the most immediate and important evolutionary consequences.

https://onlinelibrary.wiley.com/doi/10.1002/evan.20112

OTHER PUBLICATIONS – Stone tool analysis and human origins research

In Evolutionary Anthropology 20:2, 48-53 (2011).

JOHN J. SHEA – Stone tool analysis and human origins research: Some advice from uncle Screwtape

The production of purposefully fractured stone tools with functional, sharp cutting edges is a uniquely derived hominin adaptation. In the long history of life on earth, only hominins have adopted this remarkably expedient and broadly effective technological strategy. In the paleontological record, flaked stone tools are irrefutable proof that hominins were present at a particular place and time. Flaked stone tools are found in contexts ranging from the Arctic to equatorial rainforests and on every continent except Antarctica. Paleolithic stone tools show complex patterns of variability, suggesting that they have been subject to the variable selective pressures that have shaped so many other aspects of hominin behavior and morphology. There is every reason to expect that insights gained from studying stone tools should provide vital and

important information about the course of human evolution. And yet, one senses that archeological analyses of Paleolithic stone tools are not making as much of a contribution as they could to the major issues in human origins research.
https://onlinelibrary.wiley.com/doi/10.1002/evan.20290

CALL FOR PAPERS – Workshop on pragmatics and the evolution of language and communication

I'm writing to share a call for papers for a workshop on pragmatics and the evolution of language and communication as part of the Joint Conference on Language and Evolution at Kanazawa, Japan, in September.
The call and other information is available here:
https://northumbriaenglish.org/pragmatics-and-language-evolution/
Billy Clark, billy.clark@northumbria.ac.uk @billylinguist

NEWS

BREAKING SCIENCE – Bottlenose Dolphins Get Their 'Names' from Neighborhood, Study Says

In a paper published in the journal Scientific Reports, researchers described the signature whistles produced by six distinct geographical units of the common bottlenose dolphin (Tursiops truncatus) in the Mediterranean Sea and identify the main determinants of their variability. Their results show that it is the local ocean environment and population demographics, and not genetics, that best explains the different lengths and pitches of the whistles.
http://www.sci-news.com/biology/bottlenose-dolphin-signature-whistles-10858.html

BREAKING SCIENCE – Spain's Cueva de Ardales Was Used by Ancient Humans for Over 50,000 years

Cueva de Ardales is a hugely important Paleolithic site in Malaga, Spain, owing to its rich inventory of rock art. According to new research, Neanderthals entered this cave in the Middle Paleolithic, over 65,000 years ago and left traces of symbolic practices on the cave walls; thereafter the cave was repeatedly visited by Homo sapiens all the way to the Late Neolithic/Chalcolithic period.
http://www.sci-news.com/archaeology/cueva-de-ardales-10864.html

FRONTIERS NEWS – How bees prove to be skilled mathematicians

What are the odds? Honeybees join humans as the only animals known to be able to tell the difference between odd and even numbers.
https://blog.frontiersin.org/2022/05/05/bees-skilled-maths-methane-clean-energy-potential/

FRONTIERS NEWS – Think fast! Clever monkeys plan their food trips to avoid stronger rivals

Researchers show that vervet monkeys take into account complex social contexts to plan their food trips. When higher-ranking competitors are nearby, they rush to secure the best food immediately. But when they have sufficient time, they choose a route that maximizes the total food intake and minimizes travel distance.
https://blog.frontiersin.org/2022/04/26/frontiers-ecology-evolution-vervets-foraging-decisions-planning-route/

NATURE BRIEFING – How to spot hijacked journals

Retraction Watch has launched a Hijacked Journal Checker, a list of journals that mimic legitimate publications by adopting their titles and metadata. Academics can consult the list to avoid being duped into publishing in scam journals. Retraction Watch developed the tracker with researcher Anna Abalkina, who has spent huge amounts of time checking suspect journals.
https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=b2afd0e2e7&e=1db4b9a19b

SCIENCE DAILY – Scientists uncover key factor in human brain development

Scientists have made a breakthrough discovery about the development of the brain. This new information contributes to our understanding of how the part of the brain that makes humans more intelligent than other mammals develops, and offers insights into what causes intellectual disabilities, including autism spectrum disorders.
https://www.sciencedaily.com/releases/2022/06/220603124929.htm

SCIENCE DAILY – Primates and non-primates differ in the architecture of their neurons

High-resolution microscopy now enabled an international research team to enlarge the knowledge about species-specific differences of the architecture of cortical neurons.
https://www.sciencedaily.com/releases/2022/06/220603100058.htm

SCIENCE NEWS – Wild parrot chicks babble like human infants

Find could strengthen the idea that parrots are the best model for human vocal learning.
https://www.science.org/content/article/wild-parrot-chicks-babble-human-infants

THE CONVERSATION – Curious Kids: how did people talk in the Stone Age?

Around 200,000 years ago, people were living who were as intelligent as us.

https://theconversationuk.cmail19.com/t/r-l-tyiittiy-khhlilahh-x/

THE CONVERSATION – How to express yourself if you want others to cooperate with you – new research

Communication helps group members to size up the intentions of the others.

https://theconversationuk.cmail19.com/t/r-l-tyiittiy-khhlilahh-s/

PUBLICATIONS

Adaptive Human Behavior and Physiology

PAPERS

JOYCE F. BENENSON – Human Females as a Dispersal-Egalitarian Species: A Hypothesis about Women and Status

A paradox exists in research on girls and women. On the one hand, they behave in a more egalitarian fashion than their male counterparts. On the other hand, status increases their own and their children's survival.

Evidence from non-human primates can help reconcile these findings. In species that do not reside with female kin for life, females are relatively egalitarian and individualistic. They typically do not cooperate or engage in direct competition and exhibit little tolerance for status differentials.

Women follow this pattern. While a husband's status and her female relatives' support enhance a woman's status and reproductive success, her own actions too influence her access to resources and allies. Evidence on girls' and women's same-sex competition and quests for status supports the hypothesis that human females inhabit dispersal-egalitarian communities in which competition is avoided, an egalitarian ethos prevails, competitive behavior is disguised, and status differentials are not tolerated.

https://link.springer.com/article/10.1007/s40750-022-00191-x

Current Anthropology

PAPERS

MARCO MOTTA – The Fragility of Voice: Hosting Spirits in Urban Zanzibar

In this paper, I am concerned with the concept of voice and human expressivity, in particular in the case of someone living a life as a host for spirits. Drawing on fieldwork in Zanzibar's disadvantaged neighborhoods, I describe a case of spirit possession in the domestic sphere in which one's body becomes the "seat" from where other voices can be heard. My interest lies in the expressive texture of the voice as that which is part of an aesthetic and the ethics of everyday life. In other words, in what way would it make sense to say that "having a spirit" amounts to "having a voice"? Spirits give human voice a physiognomy and give form to relationships. Hence, by paying closer attention to what the spirits do and the way in which they act, we may learn something about what humans do.

https://www.journals.uchicago.edu/doi/abs/10.1086/720281

eLife

PAPERS

VLADISLAV AYZENBERG & STELLA LOURENCO – Perception of an object's global shape is best described by a model of skeletal structure in human infants

Categorization of everyday objects requires that humans form representations of shape that are tolerant to variations among exemplars. Yet, how such invariant shape representations develop remains poorly understood. By comparing human infants (6–12 months; N=82) to computational models of vision using comparable procedures, we shed light on the origins and mechanisms underlying object perception. Following habituation to a never-before-seen object, infants classified other novel objects across variations in their component parts. Comparisons to several computational models of vision, including models of high-level and low-level vision, revealed that infants' performance was best described by a model of shape based on the skeletal structure. Interestingly, infants outperformed a range of artificial neural network models, selected for their massive object experience and biological plausibility, under the same conditions. Altogether, these findings suggest that robust representations of shape can be formed with little language or object experience by relying on the perceptually invariant skeletal structure.

https://elifesciences.org/articles/74943

Frontiers in Ecology and Evolution

PAPERS

SOFYA DOLOTOVSKAYA & ECKHARD W. HEYMANN – Coordinated Singing in Coppery Titi Monkeys (Plecturocebus cupreus): Resource or Mate Defense?

Coordinated singing, performed as duets by mated pairs and often joined by offspring to form choruses, is a distinctive behavioral attribute of the social system of pair-living and pair-bonded Neotropical titi monkeys. Duets and choruses are

presumed to be associated with mate or territorial defense, but no consensus has yet been reached regarding their function. Here, we examined temporal and spatial patterns of coordinated singing in eight wild groups of coppery titi monkeys, Plecturocebus cupreus, in Peruvian Amazonia to test predictions of the joint resource and mate defense. We investigated singing rates in relation to female reproductive state, fruit consumption and demographic context using a dataset based on 227 observation days and analyzed temporal and spatial distribution of songs using a dataset based on 150 songs, collected between June 2017 and September 2021. Titi monkeys sang least frequently when females were likely to be sexually receptive and most frequently when females were likely to be pregnant. Groups also sang slightly more often when fruits were consumed more intensively, although this association did not reach statistical significance. The duration of songs was not associated with female reproductive state or fruit consumption, but songs were longer during inter-group encounters compared to non-encounter contexts. Songs were not concentrated in the core areas of home ranges; rather, they were distributed throughout the home ranges in concordance with its use. Finally, songs were concentrated around dawn. Our results provide support for a function in joint resource defense and inter-group communication of coordinated songs in coppery titi monkeys. The function of coordinated songs for mate defense in the form of paternity guarding, on the other hand, was not supported by our findings.
https://www.frontiersin.org/articles/10.3389/fevo.2022.898509/full

PAMELA AKUKU et al with JULIO MERCADER – Faunal Assemblages From Lower Bed I (Oldupai Gorge, Tanzania)
Palaeobiological and archeological excavations at the site of Ewass Oldupa, found in the western Plio-Pleistocene rift basin of Oldupai Gorge (also Olduvai Gorge), Tanzania, revealed rich fossiliferous levels and the earliest remains of human activity at Oldupai Gorge, dated to 2 million years ago. This paper provides zooarchaeological taxonomic, taphonomic, and behavioral analyses, applying several methods to explore the setting in which the assemblage was formed. We identified agency behind bone surface modifications, such as cut, tooth and percussion marks, and determined the frequency of carnivore tooth marks as well as their distribution on both discrete specimens and across species. In addition, our work revealed co-occurrence of modifications to include butchering marks and carnivore tooth marks. Ravaging levels were estimated as percentage. The faunal accumulation from Ewass Oldupa contains two cut marked specimens, together with low degrees of percussion and carnivore tooth marks, moderate ravaging, and diagenetic changes suggestive of water flow. Thus, multiple lines of evidence indicate a palimpsest accumulation. Taxonomic diversity is high, with up to 22 taxa representing diverse habitats, ranging from open grassland to wooded bushlands, as well as moist mosaics during Bed I. Overall, this archaeo-faunal assemblage speaks to increased behavioral versatility among Oldowan hominins and interactions with the carnivore guild.
https://www.frontiersin.org/articles/10.3389/fevo.2022.895305/full

Frontiers in Human Neuroscience
PAPERS
QIN JIANG et al – The Neural Basis of Moral Judgement for Self and for Others: Evidence From Event-Related Potentials
Developmental and neuroscience works have demonstrated that the moral judgment is influenced by theory of mind (ToM), which refers to the ability to represent the mental states of different agents. However, the neural and cognitive time course of interactions between moral judgment and ToM remains unclear. The present event-related potential (ERP) study investigated the underlying neural substrate of the interaction between moral judgment and ToM by contrasting the ERPs elicited by moral judgments for self and for others in moral dilemmas. In classic moral dilemmas, the agents must choose between the utilitarian choice (taking the action to kill or harm an innocent person but saving more people) and the non-utilitarian choice (taking no action to kill or harm the innocent person but letting some people die). The ERPs were recorded from participants who made moral judgments for self and for others when the agent made utilitarian or non-utilitarian choices during the dilemma. The results revealed that the moral judgment for others elicited a larger frontal late positive component (LPC, 500–900 ms) than that for self when the agents made utilitarian choices, while no difference was observed on early components of N1, P2, and N2. Moreover, individual differences in mentalizing ability were negatively correlated with the LPC amplitudes. These findings suggested that ToM modulated the late controlled process but not the early automatic process during moral judgments.
https://www.frontiersin.org/articles/10.3389/fnhum.2022.919499/full

Frontiers in Neuroscience
PAPERS
ROBERT PEPPERELL – Does Machine Understanding Require Consciousness?
This article addresses the question of whether machine understanding requires consciousness. Some researchers in the field of machine understanding have argued that it is not necessary for computers to be conscious as long as they can match or exceed human performance in certain tasks. But despite the remarkable recent success of machine learning systems in areas such as natural language processing and image classification, important questions remain about their limited performance and about whether their cognitive abilities entail genuine understanding or are the product of spurious correlations. Here I draw a distinction between natural, artificial, and machine understanding. I analyse some concrete examples of natural understanding and show that although it shares properties with the artificial understanding implemented in current machine learning systems it also has some essential differences, the main one being that natural understanding in humans entails

consciousness. Moreover, evidence from psychology and neurobiology suggests that it is this capacity for consciousness that, in part at least, explains for the superior performance of humans in some cognitive tasks and may also account for the authenticity of semantic processing that seems to be the hallmark of natural understanding. I propose a hypothesis that might help to explain why consciousness is important to understanding. In closing, I suggest that progress toward implementing human-like understanding in machines—machine understanding—may benefit from a naturalistic approach in which natural processes are modelled as closely as possible in mechanical substrates.
https://www.frontiersin.org/articles/10.3389/fnsys.2022.788486/full

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Frontiers in Psychology

PAPERS

ULRICH ANSORGE, DIANE BAIER & SOONJA CHOI – Linguistic Skill and Stimulus-Driven Attention: A Case for Linguistic Relativity

How does the language we speak affect our perception? Here, we argue for linguistic relativity and present an explanation through "language-induced automatized stimulus-driven attention" (LASA): Our respective mother tongue automatically influences our attention and, hence, perception, and in this sense determines what we see. As LASA is highly practiced throughout life, it is difficult to suppress, and even shows in language-independent non-linguistic tasks. We argue that attention is involved in language-dependent processing and point out that automatic or stimulus-driven forms of attention, albeit initially learned as serving a linguistic skill, account for linguistic relativity as they are automatized and generalize to non-linguistic tasks. In support of this possibility, we review evidence for such automatized stimulus-driven attention in language-independent non-linguistic tasks. We conclude that linguistic relativity is possible and in fact a reality, although it might not be as powerful as assumed by some of its strongest proponents.
https://www.frontiersin.org/articles/10.3389/fpsyg.2022.875744/full

JUNCHEN SHANG & ZHIHUI LIU – Vocal Attractiveness Matters: Social Preferences in Cooperative Behavior

Research has shown the phenomenon that "what sounds beautiful is good" is a stereotype. It is not clear whether vocal attractiveness affects social decision-making in economic games. Using a modified trust game task, we investigated the neural mechanism of the influence of vocal attractiveness on cooperative decision-making. Participants first heard the voice (attractive or unattractive) of the partner. They had enough time to decide whether to cooperate with the partner for a chance to earn monetary rewards. The behavioral results showed that participants made more invest choices in the attractive partner condition, and they were more likely to cooperate with the female partners in the unattractive voice condition. The event-related potential (ERP) analysis for voice stimuli showed that attractive voices induced larger N1 amplitude than unattractive voices only in the male voice condition. And female voices elicited smaller N1 and larger P2 amplitudes than male voices in both the attractive and unattractive voices condition. A larger P3 amplitude was evoked by female voices and attractive voices. In addition, a more positive late positive complex (LPC) was induced by male voices and attractive voices. This study suggested that attractive voices facilitated cooperative behavior, providing evidence for the "beauty premium" effect of the attractive voices. Moreover, participants were more likely to cooperate with female partners. In the early stage, gender information and male vocal attractiveness were processed automatically, suggesting that male vocal attractiveness was processed preferentially than the female voice. In the late stage, participants allocated attention to both male and female vocal attractiveness.
https://www.frontiersin.org/articles/10.3389/fpsyg.2022.877530/full

PATRIZIO PAOLETTI et al – Tackling the Electro-Topography of the Selves Through the Sphere Model of Consciousness

In the current hypothesis paper, we propose a novel examination of consciousness and self-awareness through the neuro-phenomenological theoretical model known as the Sphere Model of Consciousness (SMC). Our aim is to create a practical instrument to address several methodological issues in consciousness research. We present a preliminary attempt to validate the SMC via a simplified electrophysiological topographic map of the Self. This map depicts the gradual shift from faster to slower frequency bands that appears to mirror the dynamic between the various SMC states of Self. In order to explore our hypothesis that the SMC's different states of Self correspond to specific frequency bands, we present a mini-review of studies examining the electrophysiological activity that occurs within the different states of Self and in the context of specific meditation types. The theoretical argument presented here is that the SMC's hierarchical organization of three states of the Self mirrors the hierarchical organization of Focused Attention, Open Monitoring, and Non-Dual meditation types. This is followed by testable predictions and potential applications of the SMC and the hypotheses derived from it. To our knowledge, this is the first integrated electrophysiological account that combines types of Self and meditation practices. We suggest this electro-topographic framework of the Selves enables easier, clearer conceptualization of the connections between meditation types as well as increased understanding of wakefulness states and altered states of consciousness.
https://www.frontiersin.org/articles/10.3389/fpsyg.2022.836290/full

ERPING XIAO et al – The Relationship Between Children and Their Maternal Uncles: A Unique Parenting Mode in Mosuo Culture

The relationship between children and their maternal uncles in contemporary Mosuo culture reveals a unique parenting mode in a matrilineal society. This study compared the responses of Mosuo and Han participants from questionnaires on the

parent–child and maternal uncle–child relationship. More specifically, Study 1 used Inventory of Parent and Peer Attachment (IPPA) to assess the reactions of the two groups to the relationship between children and their mothers, fathers, and maternal uncles. The results show that while Han people display a higher level of attachment toward their fathers than their maternal uncles, Mosuo people do not exhibit a significant difference in this aspect. Study 2 used a scenario-based method to compare how adults and teenagers perceive the rights and responsibilities of fathers/maternal uncles toward their children/nephews or nieces. The results show that Han adults attribute more rights and responsibilities to their own children than nephews/nieces, while their Mosuo counterparts have the reverse pattern and assign stronger responsibilities to their nephews/nieces than their own children. Both groups perceive the fathers to be the bearer of rights and responsibilities, although this perception was weaker among Mosuo. This paper concludes that in the Mosuo society, fathers have a relatively weak social role as a result of their unique matrilineal social structure.
https://www.frontiersin.org/articles/10.3389/fpsyg.2022.873137/full

JULIA ELISABETH HOFWEBER et al – Breaking Into Language in a New Modality: The Role of Input and Individual Differences in Recognising Signs

A key challenge when learning language in naturalistic circumstances is to extract linguistic information from a continuous stream of speech. This study investigates the predictors of such implicit learning among adults exposed to a new language in a new modality (a sign language). Sign-naïve participants (N = 93; British English speakers) were shown a 4-min weather forecast in Swedish Sign Language. Subsequently, we tested their ability to recognise 22 target sign forms that had been viewed in the forecast, amongst 44 distractor signs that had not been viewed. The target items differed in their occurrence frequency in the forecast and in their degree of iconicity. The results revealed that both frequency and iconicity facilitated recognition of target signs cumulatively. The adult mechanism for language learning thus operates similarly on sign and spoken languages as regards frequency, but also exploits modality-salient properties, for example iconicity for sign languages. Individual differences in cognitive skills and language learning background did not predict recognition. The properties of the input thus influenced adults' language learning abilities at first exposure more than individual differences.
https://www.frontiersin.org/articles/10.3389/fpsyg.2022.895880/full

Mind & Language
PAPERS

ROSS PAIN – Stone tools, predictive processing and the evolution of language

Recent work by Stout and colleagues indicates that the neural correlates of language and Early Stone Age toolmaking overlap significantly. The aim of this paper is to add computational detail to their findings. I use an error minimisation model to outline where the information processing overlap between toolmaking and language lies. I argue that the Early Stone Age signals the emergence of complex structured representations. I then highlight a feature of my account: It allows us to understand the early evolution of syntax in terms of an increase in the number and complexity of models in a cognitive system, rather than the development of new types of processing.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12419

MASON WESTFALL – Perceiving agency

When we look around us, some things look "alive," others do not. What is it to "look alive"—to perceive animacy? Empirical work supports the view that animacy is genuinely perceptual. We should construe perception of animacy as perception of agents and behavior. This proposal explains how static and dynamic animacy cues relate, and explains how animacy perception relates to social cognition more broadly. Animacy perception draws attention to objects that are apt to be well-understood folk psychologically, enabling us to marshal our folk psychological resources efficiently.
https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12399

Nature
ARTICLES

YURII MOROZ – Here in Ukraine, science continues under air raids

Three months after the Russian invasion, our Kyiv office is open again.
{I try to keep politics out of the EAORC Bulletin, but sometimes ignoring the rest of the World becomes a ludicrous option. If I have offended, let me know.}
https://www.nature.com/articles/d41586-022-01431-6

PAPERS

MARK K. HO et al – People construct simplified mental representations to plan

One of the most striking features of human cognition is the ability to plan. Two aspects of human planning stand out—its efficiency and flexibility. Efficiency is especially impressive because plans must often be made in complex environments, and yet people successfully plan solutions to many everyday problems despite having limited cognitive resources. Standard accounts in psychology, economics and artificial intelligence have suggested that human planning succeeds because people have a complete representation of a task and then use heuristics to plan future actions in that representation. However, this

approach generally assumes that task representations are fixed. Here we propose that task representations can be controlled and that such control provides opportunities to quickly simplify problems and more easily reason about them. We propose a computational account of this simplification process and, in a series of preregistered behavioural experiments, show that it is subject to online cognitive control and that people optimally balance the complexity of a task representation and its utility for planning and acting. These results demonstrate how strategically perceiving and conceiving problems facilitates the effective use of limited cognitive resources.
https://www.nature.com/articles/s41586-022-04743-9

Nature Human Behaviour

PAPERS

YAN JING WU et al – Rapid learning of a phonemic discrimination in the first hours of life
Human neonates can discriminate phonemes, but the neural mechanism underlying this ability is poorly understood. Here we show that the neonatal brain can learn to discriminate natural vowels from backward vowels, a contrast unlikely to have been learnt in the womb. Using functional near-infrared spectroscopy, we examined the neuroplastic changes caused by 5 h of postnatal exposure to random sequences of natural and reversed (backward) vowels (T1), and again 2 h later (T2). Neonates in the experimental group were trained with the same stimuli as those used at T1 and T2. Compared with controls, infants in the experimental group showed shorter haemodynamic response latencies for forward vs backward vowels at T1, maximally over the inferior frontal region. At T2, neural activity differentially increased, maximally over superior temporal regions and the left inferior parietal region. Neonates thus exhibit ultra-fast tuning to natural phonemes in the first hours after birth.
https://www.nature.com/articles/s41562-022-01355-1

Nature Scientific Reports

PAPERS

JENNY A. ALLEN et al – Song complexity is maintained during inter-population cultural transmission of humpback whale songs
Among animal species, the songs of male humpback whales (Megaptera novaeangliae) are a rare example of social learning between entire populations. Understanding fine-scale similarity in song patterns and structural features will better clarify how accurately songs are learned during inter-population transmission. Here, six distinct song types (2009–2015) transmitted from the east Australian to New Caledonian populations were quantitatively analysed using fine-scale song features. Results found that New Caledonian whales learned each song type with high accuracy regardless of the pattern's complexity. However, there were rare instances of themes (stereotyped patterns of sound units) only sung by a single population. These occurred more often in progressively changing 'evolutionary' songs compared to rapidly changing 'revolutionary' songs. Our results suggest that populations do not need to reduce complexity to accurately learn song patterns. Populations may also incorporate changes and embellishments into songs in the form of themes which are suggested to be learnt as distinct segments. Maintaining complex song patterns with such accuracy suggests significant acoustic contact, supporting the hypothesis that song learning may occur on shared feeding grounds or migration routes. This study improves the understanding of inter-population mechanisms for large-scale cultural transmission in animals.
https://www.nature.com/articles/s41598-022-12784-3

ERIN ROBY & ROSE M. SCOTT – Financial concern reduces child directed speech in a socioeconomically diverse sample
Socioeconomic status predicts the quantity and nature of child-directed speech that parents produce. However, the mechanisms underlying this relationship remain unclear. This study investigated whether the cognitive load imposed by resource scarcity suppresses parent talk by examining time-dependent variation in child-directed speech in a socioeconomically diverse sample. We predicted that child-directed speech would be lowest at the end of the month when Americans report the greatest financial strain. 166 parents and their 2.5 to 3-year-old children (80 female) participated in a picture-book activity; the number of utterances, word tokens, and word types used by parents were calculated. All three parent language measures were negatively correlated with the date of the month the activity took place, and this relationship did not vary with parental education. These findings suggest that above and beyond individual properties of parents, contextual factors such as financial concerns exert influence on how parents interact with their children.
https://www.nature.com/articles/s41598-022-13177-2

JOSÉ BALSA-BARREIRO, MÓNICA MENENDEZ & ALFREDO J. MORALES – Scale, context, and heterogeneity: the complexity of the social space
The social space refers to physical or virtual places where people interact with one another. It decisively influences the emergence of human behaviors. However, little is known about the nature and complexity of the social space, nor its relationship to context and spatial scale. Recently, the science of complex systems has bridged between fields of knowledge to provide quantitative responses to fundamental sociological questions. In this paper, we analyze the shifting behavior of social space in terms of human interactions and wealth distribution across multiple scales using fine-grained data collected from both official (US Census Bureau) and unofficial data sources (social media). We use these data to unveil how patterns

strongly depend upon the observation scale. Therefore, it is crucial for any analysis to be framed within the appropriate context to avoid biased results and/or misleading conclusions. Biased data analysis may lead to the adoption of fragile and poor decisions. Including context and a proper understanding of the spatial scale are essential nowadays, especially with the pervasive role of data-driven tools in decision-making processes.
https://www.nature.com/articles/s41598-022-12871-5

WILL WHITHAM et al – Chimpanzee (Pan troglodytes) gaze is conspicuous at ecologically-relevant distances

Chimpanzee (Pan troglodytes) sclera appear much darker than the white sclera of human eyes, to such a degree that the direction of chimpanzee gaze may be concealed from conspecifics. Recent debate surrounding this topic has produced mixed results, with some evidence suggesting that (1) primate gaze is indeed concealed from their conspecifics, and (2) gaze colouration is among the suite of traits that distinguish uniquely social and cooperative humans from other primates (the cooperative eye hypothesis). Using a visual modelling approach that properly accounts for specific-specific vision, we reexamined this topic to estimate the extent to which chimpanzee eye coloration is discriminable. We photographed the faces of captive chimpanzees and quantified the discriminability of their pupil, iris, sclera, and surrounding skin. We considered biases of cameras, lighting conditions, and commercial photography software along with primate visual acuity, colour sensitivity, and discrimination ability. Our visual modeling of chimpanzee eye coloration suggests that chimpanzee gaze is visible to conspecifics at a range of distances (within approximately 10 m) appropriate for many species-typical behaviours. We also found that chimpanzee gaze is discriminable to the visual system of primates that chimpanzees prey upon, Colobus monkeys. Chimpanzee sclera colour does not effectively conceal gaze, and we discuss this result with regard to the cooperative eye hypothesis, the evolution of primate eye colouration, and methodological best practices for future primate visual ecology research.
https://www.nature.com/articles/s41598-022-13273-3

PLoS Biology
ARTICLES
SHINSUKE SUZUKI – Inferences regarding oneself and others in the human brain
The human brain can infer one's own and other individuals' mental states through metacognition and mentalizing, respectively. A new study in PLOS Biology has implicated distinct brain regions of the medial prefrontal cortex (PFC) in metacognition and mentalizing.
{See EAORC Bulletin 989}
https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3001662

PLoS One
PAPERS
JOSÉ RAMOS-MUÑOZ et al – The nature and chronology of human occupation at the Galerías Bajas, from Cueva de Ardales, Malaga, Spain
The Cueva de Ardales is a hugely important Palaeolithic site in the south of the Iberian Peninsula owing to its rich inventory of rock art. From 2011–2018, excavations were carried out in the cave for the first time ever by a Spanish-German research team. The excavation focused on the entrance area of the cave, where the largest assemblage of non-figurative red paintings in the cave is found. A series of 50 AMS dates from the excavations prove a long, albeit discontinuous, occupation history spanning from the Middle Palaeolithic to the Neolithic. The dating of the Middle Palaeolithic layers agrees with the U/Th dating of some red non-figurative paintings in the entrance area. In addition, a large assemblage of ochre lumps was discovered in the Middle Palaeolithic layers. Human visits of the cave in the Gravettian and Solutrean can be recognized, but evidence from the Aurignacian and Magdalenian cannot be confirmed with certainty. The quantity and nature of materials found during the excavations indicate that Cueva de Ardales was not a campsite, but was mainly visited to carry out non-domestic tasks, such as the production of rock art or the burial of the dead.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0266788

ELLERY FRAHM et al – Every contact leaves a trace: Documenting contamination in lithic residue studies at the Middle Palaeolithic sites of Lusakert Cave 1 (Armenia) and Crvena Stijena (Montenegro)
Investigations of organic lithic micro-residues have, over the last decade, shifted from entirely morphological observations using visible-light microscopy to compositional ones using scanning electron microscopy and Fourier-transform infrared microspectroscopy, providing a seemingly objective chemical basis for residue identifications. Contamination, though, remains a problem that can affect these results. Modern contaminants, accumulated during the post-excavation lives of artifacts, are pervasive, subtle, and even "invisible" (unlisted ingredients in common lab products). Ancient contamination is a second issue. The aim of residue analysis is to recognize residues related to use, but other types of residues can also accumulate on artifacts. Caves are subject to various taphonomic forces and organic inputs, and use-related residues can degrade into secondary compounds. This organic "background noise" must be taken into consideration. Here we show that residue contamination is more pervasive than is often appreciated, as revealed by our studies of Middle Palaeolithic artifacts from two sites: Lusakert Cave 1 in Armenia and Crvena Stijena in Montenegro. First, we explain how artifacts from Lusakert

Cave 1, despite being handled following specialized protocols, were tainted by a modern-day contaminant from an unanticipated source: a release agent used inside the zip-top bags that are ubiquitous in the field and lab. Second, we document that, when non-artifact "controls" are studied alongside artifacts from Crvena Stijena, comparisons reveal that organic residues are adhered to both, indicating that they are prevalent throughout the sediments and not necessarily related to use. We provide suggestions for reducing contamination and increasing the reliability of residue studies. Ultimately, we propose that archaeologists working in the field of residue studies must start with the null hypothesis that miniscule organic residues reflect contamination, either ancient or modern, and systematically proceed to rule out all possible contaminants before interpreting them as evidence of an artifact's use in the distant past.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0266362

JOHN K. MURRAY, SIMEN OESTMO & ANDREW M. ZIPKIN – Portable, non-destructive colorimetry and visible reflectance spectroscopy paired with machine learning can classify experimentally heat-treated silcrete from three South African sources

The objective of this study was to determine if visible reflectance spectroscopy and quantitative colorimetry represent viable approaches to classifying the heat treatment state of silcrete. Silcrete is a soil duricrust that has been used as toolstone since at least the Middle Stone Age. The ancient practice of heat treating silcrete prior to knapping is of considerable interest to paleolithic archaeologists because of its implications for early modern human complex cognition generally and the ability to manipulate the material properties of stone specifically. Here, we demonstrate that our quantitative, non-invasive, and portable approach to measuring color, used in conjunction with k-Nearest Neighbors "lazy" machine learning, is a highly promising method for heat treatment detection. Traditional, expert human analyst approaches typically rely upon subjective assessments of color and luster and comparison to experimental reference collections. This strongly visual method can prove quite accurate, but difficult to reproduce between different analysts. In this work, we measured percent reflectance for the visible spectrum (1018 variables) and standardized color values (CIEL*a*b*) in unheated and experimentally heat-treated silcrete specimens from three sources in South Africa. k-NN classification proved highly effective with both the spectroscopy and colorimetry data sets. An important innovation was using the heat treatment state predicted by the k-NN model for the majority of replicate observations of a single specimen to predict the heat treatment state for the specimen overall. When this majority voting approach was applied to the 746 individual observations in this study, associated with 94 discrete silcrete flakes, both spectroscopy and colorimetry k-NN models yielded 0% test set misclassification rates at the specimen level.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0266389

TIKVAH STEINER et al – Abundance or stress? Faunal exploitation patterns and subsistence strategies: The case study of Brush Hut 1 at Ohalo II, a submerged 23,000-year-old camp in the Sea of Galilee, Israel

The submerged site of Ohalo II was occupied during the Last Glacial Maximum (LGM), between 23,500–22,500 cal BP, bridging the Upper Paleolithic/Epipaleolithic transition in the southern Levant. The site is known for the excellent preservation of its brush huts and botanical remains. This study examines the behavior of its past inhabitants through analysis of the entire faunal assemblage found on the three successive floors of Brush Hut 1. Furthermore, it provides an opportunity to test differing models of prey choice and assess whether the observed resource diversification is the result of resource depression (explained by Optimal Foraging Theory) or resource abundance (explained by Niche Construction Theory). We focused on a quantitative, qualitative and spatial investigation of the more than 20,000 faunal remains, combining traditional zooarchaeological methods with microwear analysis of teeth and Fourier Transform Infrared Spectroscopy (FTIR) of burnt bones. Identification of faunal remains to the most detailed level possible, combined with analysis of skeletal element frequencies allowed reconstruction of a profile of the desired prey, highlighting the importance of small, expedient prey compared to larger game (ungulates). FTIR was used to identify degrees of burning and to develop a key to identifying burnt bones from water-logged environments. Availability of multiple food sources within a rich habitat may have driven exploitation of those varied local resources, rather than targeting energetically-rich large prey. The choice of a littoral habitat that could be intensively exploited is an example of niche selection. Comparison with contemporaneous and later sites contributes to the ongoing discussion about Early Epipaleolithic prey choice, and the impact, if any, of the LGM in the Jordan Valley. Ohalo II is an example of diverse prey choice motivated by abundance rather than stress, at a 23,000-year-old fisher-hunter-gatherers camp.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0262434

KAISA HERNE et al – The influence of role awareness, empathy induction and trait empathy on dictator game giving

We ask how state empathy, trait empathy, and role awareness influence dictator game giving in a monetarily incentivized experiment. We manipulated two factors: role awareness (role certainty vs. role uncertainty) and state empathy induction (no empathy induction vs. empathy induction). Under role uncertainty, participants did not know their role as a dictator or a recipient when making their choices. State empathy was induced by asking the dictators to consider what the recipient would feel when learning about the decision. Each participant was randomly assigned into one of the four conditions, and in each condition, participants were randomly assigned into dictator and receiver roles. The role assignment took place before or after decisions were made, depending on the condition. We also studied the direct influence of trait empathy on dictator game giving as well as its interaction with the experimental manipulations. Trait empathy was measured by the Interpersonal Reactivity Index (IRI) and the Questionnaire of Cognitive and Affective Empathy (QCAE) before the experiment. Of our

experimental manipulations, role awareness had an effect on dictator game giving; participants donated more under role uncertainty than under role certainty. Instead, we did not observe an effect of state empathy induction. Of trait empathy subscales, only affective empathy was positively associated with dictator game giving. Finally, role awareness did not influence all participants similarly but had a larger impact on those with low scores on trait empathic concern or trait affective empathy. Our results indicate that specific measures to induce altruistic sharing can be effective but their effect may vary depending on certain personal characteristics.
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0262196

PNAS
ARTICLES
CAROLYN BEANS – How stories and narrative move the heart—literally
In June 2019, at the University of Birmingham in England, psychologist Damian Cruse invited 27 young adults to come to the lab, on separate occasions, and listen to the same clips from an audiobook of Jules Verne's 20,000 Leagues Under the Sea. Sitting alone, each donned headphones and electrocardiogram (EKG) equipment while a voice with a British accent recounted tales of a mysterious monster taking down ships. When researchers later compared volunteers' heart rates, a curious phenomenon emerged: The heart rates of nearly two-thirds of the participants rose and fell together as the story progressed.
https://www.pnas.org/doi/full/10.1073/pnas.2206199119

Research on Language and Social Interaction
PAPERS
JEFFREY D. ROBINSON, CHRISTOPH RÜHLEMANN & DANIEL TAYLOR RODRIGUEZ – The Bias Toward Single-Unit Turns in Conversation
Sacks, Schegloff, and Jefferson argued that the rules for turn taking for conversation involve a confluence of pressures that bias turn size toward single turn constructional units (TCUs), which leads to an empirical prediction that turns are more likely to be composed of single (vs. multiple) TCUs. We directly test and confirm this "single-TCU bias" by using conversation analysis, corpus linguistics, and Bayesian statistics to assess the conversational subcorpus of the British National Corpus (BNC-C), which contains 475,509 turns of talk. Our results confirm this bias, showing that 67% of turns are composed of single TCUs; we discuss why this estimate is conservative. The mean word length for single-TCU turns was 4.5 (SD = 3.4), compared to 19.9 (SD = 22.6) for multi-TCU turns. Our findings reinforce the ideas that the natural habitat for an accountable social action is the single TCU (vs. the turn), and that interaction is fundamentally organized (i.e., both produced and understood) on an action-by-action basis, which is a TCU-by-TCU basis. Data are in British English.
https://www.tandfonline.com/doi/abs/10.1080/08351813.2022.2067436

Trends in Cognitive Sciences
PAPERS
STEFANO PALMINTERI & MAËL LEBRETON – The computational roots of positivity and confirmation biases in reinforcement learning
Humans do not integrate new information objectively: outcomes carrying a positive affective value and evidence confirming one's own prior belief are overweighed. Until recently, theoretical and empirical accounts of the positivity and confirmation biases assumed them to be specific to 'high-level' belief updates. We present evidence against this account. Learning rates in reinforcement learning (RL) tasks, estimated across different contexts and species, generally present the same characteristic asymmetry, suggesting that belief and value updating processes share key computational principles and distortions. This bias generates over-optimistic expectations about the probability of making the right choices and, consequently, generates over-optimistic reward expectations. We discuss the normative and neurobiological roots of these RL biases and their position within the greater picture of behavioral decision-making theories.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00089-4

PEDRO A.M. MEDIANO et al – The strength of weak integrated information theory
The integrated information theory of consciousness (IIT) is divisive: while some believe it provides an unprecedentedly powerful approach to address the 'hard problem', others dismiss it on grounds that it is untestable. We argue that the appeal and applicability of IIT can be greatly widened if we distinguish two flavours of the theory: strong IIT, which identifies consciousness with specific properties associated with maxima of integrated information; and weak IIT, which tests pragmatic hypotheses relating aspects of consciousness to broader measures of information dynamics. We review challenges for strong IIT, explain how existing empirical findings are well explained by weak IIT without needing to commit to the entirety of strong IIT, and discuss the outlook for both flavours of IIT.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00092-4

Trends in Ecology and Evolution
JAVIER FERNÁNDEZ-LÓPEZ DE PABLO et al – Understanding hunter–gatherer cultural evolution needs network thinking
Hunter–gatherers past and present live in complex societies, and the structure of these can be assessed using social networks. We outline how the integration of new evidence from cultural evolution experiments, computer simulations, ethnography, and archaeology open new research horizons to understand the role of social networks in cultural evolution.
https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(22)00090-8