EAORC BULLETIN 918 – 17 January 2021

CONTENTS

EAORC NOTICES

PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, do please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.
If there is a journal you feel I should be tracking on a regular basis, do let me know.
And if you have any other ideas for extending the "EAORC experience", please contact me.

NEW SOURCE – Yale Human Relations Area Files

https://hraf.yale.edu/

Jim Toller has brought this source to my attention – many thanks, Jim, I will be checking it for EAORC from now on. However, there is also a lot of good backgrounding material here, such as an excellent summary of hunter-gatherer cultures (https://hraf.yale.edu/ehc/summaries/hunter-gatherers) which could be useful as background reading for modules on language origins. So do check it out for yourselves.

ACADEMIA.EDU – Review of Morphological Evidence for the Evolution of Language

Journal of Language Evolution, 2018, 1–11.

LOU ALBESSARD-BALL & ANTOINE BALZEAU – Of Tongues and Men: A Review of Morphological Evidence for the Evolution of Language

Of the characteristics of the species Homo sapiens relative to other living animals, the use of articulated language is among the most striking. Because it implies—and allows for—complex social relationships and cognitive processes, the emergence of articulated language during hominin evolution is regarded as one of the most important steps in becoming human. Other living species have evolved complex vocalisations (e.g. songbirds) or can be trained to respond to spoken commands (e.g. dogs) and even to answer using special keyboards or sign language (e.g. great apes), but none have evolved articulated speech, and none can be taught how to talk. Tracking the emergence of language and determining which fossil hominin species used a full-fledged articulated language and which did not are somewhat of a challenge. For palaeoanthropologists and prehistorians, the timing and nature of the emergence of language—gradual or sudden, early or late in evolution—represent crucial (but missing) data when trying to interpret behaviours evidenced by the archaeological record or to define which hominins are 'human'. A wealth of morphological and archaeological data are examined in order to put together enough clues to answer the question of when and in which species speech first evolved. Lines of enquiry include the evolution of the neural circuitry used by H. sapiens to produce and process speech, the anatomical specialisations which allow them to discriminate and articulate sounds, and early evidence for complex, planned behaviours and symbolic thought. This indirect evidence does not bring definitive answers about the emergence of language in the hominin evolutionary bush but illustrates that we should rethink what defines H. sapiens and be more cautious—or scientifically more rigorous—about what makes us supposedly unique.

https://www.academia.edu/37062393/Of_Tongues_and_Men_A_Review_of_Morphological_Evidence_for_the_Evolution_of_Language?email_work_card=view-paper

ACADEMIA.EDU – Evolutionary ecology of spoken language

World Archaeology 34(1): 26-46, 2002.

CARINA BUCKLEY & JAMES STEELE – Evolutionary ecology of spoken language: co-evolutionary hypotheses are testable

Evolutionary ecological frameworks can give us new insights into the emergence of human adaptations such as language and cultural learning. There now exist several well-specified models of the social and ecological conditions in which the human capacity for language came under strong positive selection pressure. We critically review them, and ask how we can test them using archaeological evidence. We identify a series of critical archaeological and palaeontological parameters whose values we must know if we are to discriminate among competing hypotheses of the evolutionary ecology of language.

https://www.academia.edu/249235/Evolutionary_Ecology_of_Spoken_Language_Co_Evolutionary_Hypotheses_Are_Testable?email_work_card=view-paper

ACADEMIA.EDU – Human language: an evolutionary anomaly

In T. Heams, P. Huneman, G. Lecointre & M. Silberstein (Eds.), Handbook of Evolution Theory in the Sciences, 707-724. London, UK: Springer, 2014.

JEAN-LOUIS DESSALLES – Human language: an evolutionary anomaly

Human beings devote a considerable share of their time, maybe one third of the day (Mehl & Pennebaker 2003:866), to sharing information with conspecifics about often futile but sometimes consequential topics. This behavior is unique in nature. How can we account for the existence of honest communication in a Darwinian world where individuals are inevitably in competition with each other? The task proves much harder than what was thought in the past decades. The problem should bother all scientists, and more broadly any person wondering about human nature. Surprisingly, asking about the origin of language within an evolutionary framework is something new. Nineteenth century positivism considered issues about human origins as belonging to metaphysics; in the twentieth century, structuralism defined language as a synchronic system, for which the temporal dimension is irrelevant; and for behaviorism, language is no more than a set of acquired habits. After isolated precursors, a decisive kickoff for the investigations of language origins occurred in 1990 when Steven Pinker and Paul Bloom published an article that drew the attention of scientists in many disciplines. Then, several international conferences were organized and a community of a few hundred scientists emerged to study the evolutionary origins of language.

https://www.academia.edu/15008043/Human_language_an_evolutionary_anomaly?email_work_card=view-paper

NEWS

BREAKING SCIENCE – 2-Million-Year-Old Stone Tools Unearthed in Tanzania

An international team of archaeologists and paleoanthropologists has discovered a large collection of 2-million-year-old stone tools, fossilized bones and plant materials at the site of Ewass Oldupa in the western portion of the ancient basin of Olduvai Gorge (now Oldupai) in northern Tanzania.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/KvJUoNW7QKw/ewass-oldupa-stone-tools-09236.html?utm_source=feedburner&utm_medium=email

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BREAKING SCIENCE – Sharing Leftover Meat Enabled Dog Domestication during Harsh Ice Age Winters

New research led by the University of Helsinki suggests that dog domestication needs to be understood in terms of competition over resources in the particularly severe environment that prevailed in northern Eurasia during the latter part of the Last Ice Age (29,000 to 14,000 years ago).
http://feedproxy.google.com/~r/BreakingScienceNews/~3/l5JRranfKG4/leftover-meat-dog-domestication-harsh-ice-age-winters-09244.html?utm_source=feedburner&utm_medium=email

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BREAKING SCIENCE – 45,500-Year-Old Sulawesi Warty Pig Painting Found in Indonesian Cave

A team of archaeologists from Australia and Indonesia has discovered two figurative paintings of the Sulawesi warty pig (Sus celebensis) — a species of small (40 to 85 kg), short-legged pig with characteristic facial warts — in Leang Tedongnge and Leang Balangajia 1 caves on the Indonesian island of Sulawesi.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/paEGiwS9chk/sulawesi-warty-pig-paintings-09250.html?utm_source=feedburner&utm_medium=email

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SCIENCE DAILY – First human culture lasted 20,000 years longer than thought

Homo sapiens emerged in Africa around 300 thousand years ago, where their fossils are found with the earliest cultural and technological expressions of our species. This repertoire, commonly referred to as the 'Middle Stone Age', remained widely in use across much of Africa until around 60-30 thousand years ago. New research in Senegal shows this 'first human culture' persisted until 11 thousand years ago - 20 thousand years longer than previously thought.
https://www.sciencedaily.com/releases/2021/01/210111084230.htm

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SCIENCE DAILY – Why independent cultures think alike when it comes to categories: It's not in the brain

Scientists conducted an experiment in which people were asked to categorize unfamiliar shapes. Individuals and small groups created many different unique categorization systems while large groups created systems nearly identical to one another.
https://www.sciencedaily.com/releases/2021/01/210112085403.htm

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SCIENCE DAILY – Teeth pendants speak of the elk's prominent status in the Stone Age

The elk was the most important animal to the people inhabiting the northern coniferous belt, with its incisors being perhaps the most coveted part of the body. Incisors were turned into pendants, which were attached using strings made of fibre or sinew. The manufacturing techniques of the thousands of elk tooth pendants discovered in the graves of hunter-gatherers who lived approximately 8,200 years ago depict a homogeneous culture and strict rules.
https://www.sciencedaily.com/releases/2021/01/210114130146.htm

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SCIENCE DAILY – Scholars link diet, dentition, and linguistics

Anthropologists used a novel data analysis of thousands of languages, in addition to studying a unique subset of celebrities, to reveal how a soft food diet -- contrasted with the diet of hunter-gatherers -- is restructuring dentition and changing how people speak.
https://www.sciencedaily.com/releases/2021/01/210114180614.htm

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SOCIETY FOR SCIENCE – Ice Age hunters' leftovers may have fueled dog domestication

Ancient people tamed wolves by feeding them surplus game, researchers suggest.
http://click.societyforscience-email.com/?qs=d5b02bc9f563198139bd21a1206970b783609f78fff5ba5a55c2f9e87c3ab141476864f0c7ee8e1f3fa198cda348d23cf11f08eac335ee38

SOCIETY FOR SCIENCE – One of the oldest known cave paintings has been found in Indonesia

A drawing of a pig on the island of Sulawesi dates to at least 45,500 years ago.
http://click.societyforscience-email.com/?qs=d393ec3cefc3c7e189b50ab2df0052c6d03f0146bd3d7bb558a3794073b1179e4e26c65abd01bd293bd16da2616f9b3f87fb28eddae14aa8

PUBLICATIONS

American Journal of Physical Anthropology

PAPERS

STEPHANIE MUSGRAVE et al with ELIZABETH LONSDORF & CRICKETTE SANZ – The ontogeny of termite gathering among chimpanzees in the Goualougo Triangle, Republic of Congo

Acquiring tool-assisted foraging skills can potentially improve dietary quality and increase fitness for wild chimpanzees (Pan troglodytes). In contrast to chimpanzees in East and West Africa, chimpanzees in the Congo Basin use tool sets and brush-tipped fishing probes to gather termites. We investigated the ontogeny of these tool skills in chimpanzees of the Goualougo Triangle, Republic of Congo, and compared it to that for chimpanzees at Gombe, Tanzania. We assessed whether chimpanzees acquired simple tool behaviors and single tool use before more complex actions and sequential use of multiple tool types.

Using a longitudinal approach, we scored remote video footage to document the acquisition of termite-gathering critical elements for 25 immature chimpanzees at Goualougo.

All chimpanzees termite fished by 2.9 years but did not manufacture brush-tipped probes until an average of 4.3 years. Acquisition of sequential tool use extended into juvenility and adolescence. While we did not detect significant sex differences, most critical elements except tool manufacture were acquired slightly earlier by females.

These findings contrast with Gombe, where chimpanzees learn to both use and make fishing probes between ages 1.5–3.5 and acquire the complete task by age 5.5. Differences between sites could reflect tool material selectivity and design complexity, the challenge of sequential tool behaviors, and strength requirements of puncturing subterranean termite nests at Goualougo. These results illustrate how task complexity may influence the timing and sequence of skill acquisition, improving models of the ontogeny of tool behavior among early hominins who likely used complex, perishable technologies.

https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.24125?campaign=woletoc

JUDITH BEIER et al with KATERINA HARVATI – Prevalence of cranial trauma in Eurasian Upper Paleolithic humans

This study characterizes patterns of cranial trauma prevalence in a large sample of Upper Paleolithic (UP) fossil specimens (40,000–10,000 BP).

Our sample comprised 234 individual crania (specimens), representing 1,285 cranial bones (skeletal elements), from 101 Eurasian UP sites. We used generalized linear mixed models (GLMMs) to assess trauma prevalence in relation to age-at-death, sex, anatomical distribution, and between pre- and post-Last Glacial Maximum (LGM) samples, while accounting for skeletal preservation.

Models predicted a mean cranial trauma prevalence of 0.07 (95% CI 0.003–0.19) at the level of skeletal elements, and of 0.26 (95% CI 0.08–0.48) at the level of specimens, each when 76–100% complete. Trauma prevalence increased with skeletal preservation. Across specimen and skeletal element datasets, trauma prevalence tended to be higher for males, and was consistently higher in the old age group. We found no time-specific trauma prevalence patterns for the two sexes or age cohorts when comparing samples from before and after the LGM. Samples showed higher trauma prevalence in the vault than in the face, with vault remains being affected predominantly in males.

Cranial trauma prevalence in UP humans falls within the variation described for Mesolithic and Neolithic samples. According to our current dataset, UP males and females were exposed to slightly different injury risks and trauma distributions, potentially due to different activities or behaviors, yet both sexes exhibit more trauma among the old. Environmental stressors associated with climatic changes of the LGM are not reflected in cranial trauma prevalence. To analyze trauma in incomplete skeletal remains we propose GLMMs as an informative alternative to crude frequency calculations.

https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.24163?campaign=woletoc

JULIET K. BROPHY et al – Comparative morphometric analyses of the deciduous molars of Homo naledi from the Dinaledi Chamber, South Africa

Homo naledi deciduous maxillary and mandibular molars from the Dinaledi Chamber, South Africa were compared to those of Australopithecus africanus, Australopithecus afarensis, Paranthropus robustus, Paranthropus boisei, early Homo sp., Homo erectus, early Homo sapiens, Upper Paleolithic H. sapiens, recent southern African H. sapiens, and Neanderthals by means of morphometric analyses of crown outlines and relative cusp areas. The crown shapes were analyzed using elliptical Fourier analyses followed by principal component analyses (PCA). The absolute and relative cusp areas were obtained in ImageJ and compared using PCA and cluster analyses.

PCA suggests that the crown shapes and relative cusp areas of mandibular molars are more diagnostic than the maxillary molars. The H. naledi deciduous mandibular first and second molar (dm1 and dm2) do not have a strong affinity to any taxon in the comparative sample in all analyses. While the H. naledi dm2 plots as an outlier in the relative cusp analysis, the H. naledi specimen fall closest to Australopithecus due to their relatively large metaconid, a primitive trait for the genus Homo. Although useful for differentiating Neanderthals from recent southern African H. sapiens and UP H. sapiens, the PCA of the relative cusp areas suggests that the deciduous maxillary second molars (dm2) do not differentiate other groups. The three H. naledi dm2 cuspal areas are variable and fall within the ranges of other Homo, as well as Australopithecus, and Paranthropus suggesting weak diagnostic utility.

This research provides another perspective on the morphology of, and variation within, H. naledi. The H. naledi deciduous molars do not consistently align with any genus or species in the comparative sample in either the crown shape or relative cusp analyses. This line of inquiry is consistent with other cranial and postcranial studies suggesting that H. naledi is unique.
https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24190?campaign=woletoc

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Current Biology

ARTICLES

MELISSA EMERY THOMPSON – Primate Reproduction: When Timing Is Everything
In species with intense male competition, reproducing at the wrong time can have dire consequences for females. A new study of wild gelada monkeys finds that females delay or accelerate puberty to moderate the risks of inbreeding and infanticide.
https://www.cell.com/current-biology/fulltext/S0960-9822(20)31740-1?dgcid=raven_jbs_etoc_email

PAPERS

AMY LU et al – Male-Mediated Maturation in Wild Geladas
The timing of female maturation in wild mammals is often constrained by ecological variables that relate to food acquisition. However, maturational timing in female mammals can also respond to social variables. Specifically, the arrival of novel males can accelerate maturation while the presence of related males can inhibit it. Despite studies on more than two dozen mammalian taxa in captivity, evidence for male-mediated maturation has not been systematically demonstrated in any wild population. Here, we report the first evidence of male-mediated maturation in a wild primate, the gelada (Theropithecus gelada). After the arrival of a new breeding male in the group (a male takeover), young females were three times more likely to mature. We then examined these takeover-associated maturations in more detail: some were earlier than expected (a presumptive "Vandenbergh effect," or male-accelerated maturation), some were at the expected age for the average female gelada, and some were later than expected (a presumptive "inbreeding avoidance delay," or father-induced reproductive suppression). An examination of fecal estrogens, which rise just before visible signs of maturation in this species, revealed that male takeovers induced a surge in estrogens for immature females of all ages—even females that did not mature. These are the first data to demonstrate that specific males are associated with the onset of maturation in a wild primate and to provide a possible mechanism for this change. These results suggest that all male-mediated maturation (whether accelerated, on-time, or delayed) may be governed by similar neuroendocrine processes.
https://www.cell.com/current-biology/fulltext/S0960-9822(20)31507-4?dgcid=raven_jbs_etoc_email

ANDAINE SEGUIN-ORLANDO et al – Heterogeneous Hunter-Gatherer and Steppe-Related Ancestries in Late Neolithic and Bell Beaker Genomes from Present-Day France
The transition from the Late Neolithic to the Bronze Age has witnessed important population and societal changes in western Europe. These include massive genomic contributions of pastoralist herders originating from the Pontic-Caspian steppes into local populations, resulting from complex interactions between collapsing hunter-gatherers and expanding farmers of Anatolian ancestry. This transition is documented through extensive ancient genomic data from present-day Britain, Ireland, Iberia, Mediterranean islands, and Germany. It remains, however, largely overlooked in France, where most focus has been on the Middle Neolithic (n = 63), with the exception of one Late Neolithic genome sequenced at 0.05× coverage. This leaves the key transitional period covering ~3,400–2,700 cal. years (calibrated years) BCE genetically unsampled and thus the exact time frame of hunter-gatherer persistence and arrival of steppe migrations unknown. To remediate this, we sequenced 24 ancient human genomes from France spanning ~3,400–1,600 cal. years BCE. This reveals Late Neolithic populations that are genetically diverse and include individuals with dark skin, hair, and eyes. We detect heterogeneous hunter-gatherer ancestries within Late Neolithic communities, reaching up to ~63.3% in some individuals, and variable genetic contributions of steppe herders in Bell Beaker populations. We provide an estimate as late as ~3,800 years BCE for the admixture between Neolithic and Mesolithic populations and as early as ~2,650 years BCE for the arrival of steppe-related ancestry. The genomic heterogeneity characterized underlines the complex history of human interactions even at the local scale.
https://www.cell.com/current-biology/fulltext/S0960-9822(20)31835-2?dgcid=raven_jbs_aip_email

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Mind & Language

PAPERS

TORFINN THOMESEN HUVENES & ANDREAS STOKKE – Context as knowledge
It has been argued that common ground information is unsuited to the role that contexts play in the theory of indexical and demonstrative reference. This paper explores an alternative view that identifies shared information with what is common knowledge among the participants. We argue this view of shared information avoids the problems for the common ground approach concerning reference while preserving its advantages in accounting for communication.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12351?campaign=wolearlyview

Nature

PAPERS

ALAN S. COWEN et al – Sixteen facial expressions occur in similar contexts worldwide

Understanding the degree to which human facial expressions co-vary with specific social contexts across cultures is central to the theory that emotions enable adaptive responses to important challenges and opportunities. Concrete evidence linking social context to specific facial expressions is sparse and is largely based on survey-based approaches, which are often constrained by language and small sample sizes. Here, by applying machine-learning methods to real-world, dynamic behaviour, we ascertain whether naturalistic social contexts (for example, weddings or sporting competitions) are associated with specific facial expressions across different cultures. In two experiments using deep neural networks, we examined the extent to which 16 types of facial expression occurred systematically in thousands of contexts in 6 million videos from 144 countries. We found that each kind of facial expression had distinct associations with a set of contexts that were 70% preserved across 12 world regions. Consistent with these associations, regions varied in how frequently different facial expressions were produced as a function of which contexts were most salient. Our results reveal fine-grained patterns in human facial expressions that are preserved across the modern world.
https://www.nature.com/articles/s41586-020-3037-7

Nature Communications

PAPERS

ZACHARY FULKER et al with CHRISTOPH RIEDL – Spite is contagious in dynamic networks

Spite, costly behavior that harms others, presents an evolutionary puzzle: given that both the actor and recipient do worse, how could it emerge? We show that dynamically evolving interaction networks provide a novel explanation for the evolution of costly harm. Previous work has shown that anti-correlated interaction (e.g., negative assortment or negative relatedness) among behavioral strategies in populations can lead to the evolution of costly harm. We show that these approaches are blind to important features of interaction brought about by a co-evolution of network and behavior and that these features enable the emergence of spite. We analyze a new model in which agents can inflict harm on others at a cost to themselves, and simultaneously learn how to behave and with whom to interact. We find spite emerges reliably under a wide range of conditions. Our model reveals that when interactions occur in dynamic networks the population can exhibit correlated and anti-correlated behavioral interactions simultaneously, something not possible in standard models. In dynamic networks spite evolves due to transient and partial anti-correlated interaction, even when other behaviors are positively correlated and average degree of correlated interaction in the population is low.
https://www.nature.com/articles/s41467-020-20436-1

HANNAH KIESOW et al – Deep learning identifies partially overlapping subnetworks in the human social brain

Complex social interplay is a defining property of the human species. In social neuroscience, many experiments have sought to first define and then locate 'perspective taking', 'empathy', and other psychological concepts to specific brain circuits. Seldom, bottom-up studies were conducted to first identify explanatory patterns of brain variation, which are then related to psychological concepts; perhaps due to a lack of large population datasets. In this spirit, we performed a systematic de-construction of social brain morphology into its elementary building blocks, involving ~10,000 UK Biobank participants. We explored coherent representations of structural co-variation at population scale within a recent social brain atlas, by translating autoencoder neural networks from deep learning. The learned subnetworks revealed essential patterns of structural relationships between social brain regions, with the nucleus accumbens, medial prefrontal cortex, and temporoparietal junction embedded at the core. Some of the uncovered subnetworks contributed to predicting examined social traits in general, while other subnetworks helped predict specific facets of social functioning, such as the experience of social isolation. As a consequence of our population-level evidence, spatially overlapping subsystems of the social brain probably relate to interindividual differences in everyday social life.
https://www.nature.com/articles/s42003-020-01559-z

Nature Humanities & Social Sciences Communications

PAPERS

NGUYEN THI KIM NGAN, NGUYEN THI THU HANG & LE VAN TRUNG – Identity of the Vietnamese narrative culture: archetypal journeys from folk narratives to fantasy short stories

The journey to another world is an archetype that exists in the forms of marvelous motifs and is also a typical narrative formula with the purpose of creating diverse versions of Vietnamese folk narratives. The archetypal journey was later reborn and expanded in medieval literature as Vietnamese culture, which has become more complex over time. With the aim of discovering the cultural identity of Vietnamese narratives using sociohistorical approaches and discussing the archetype grounded in specific contexts, this research focuses on journey motifs to the upper and lower world in folk narratives in early collections written in Han characters and in related historical and cultural bibliographies. At the same time, by analyzing the fantasy short stories in Excursive Notes on Weird Stories (Truyen ky man luc) by Nguyen Du, this study aims to discover the process of acculturation and creation of materials and motifs from folk narratives, and it discusses how these motifs have been adapted. This research reveals specific messages about the history, culture, era, voice and true identity of the medieval

Vietnamese Confucian. Importantly, this study emphasizes the unification of spiritual power between folklore and Taoism and the powerful and influential competition between Taoism and Confucianism in medieval Vietnamese literature. The analysis shows that by recreating the motifs of the folk narratives, writers have built other world journeys to describe the hidden political discourses and religious conflicts in the thoughts of the human mind in the most ideal form.
https://www.nature.com/articles/s41599-020-00697-3

Nature Reviews

PAPERS

RENS VAN DE SCHOOT et al – Bayesian statistics and modelling

Bayesian statistics is an approach to data analysis based on Bayes' theorem, where available knowledge about parameters in a statistical model is updated with the information in observed data. The background knowledge is expressed as a prior distribution and combined with observational data in the form of a likelihood function to determine the posterior distribution. The posterior can also be used for making predictions about future events. This Primer describes the stages involved in Bayesian analysis, from specifying the prior and data models to deriving inference, model checking and refinement. We discuss the importance of prior and posterior predictive checking, selecting a proper technique for sampling from a posterior distribution, variational inference and variable selection. Examples of successful applications of Bayesian analysis across various research fields are provided, including in social sciences, ecology, genetics, medicine and more. We propose strategies for reproducibility and reporting standards, outlining an updated WAMBS (when to Worry and how to Avoid the Misuse of Bayesian Statistics) checklist. Finally, we outline the impact of Bayesian analysis on artificial intelligence, a major goal in the next decade.
https://www.nature.com/articles/s43586-020-00001-2

Nature Scientific Reports

PAPERS

CALEB EVERETT & SIHAN CHEN – Speech adapts to differences in dentition within and across populations

We test the hypothesis that a specific anatomical feature, the dental malocclusion associated with reduced dental wear, causes languages to adapt by relying more heavily on labiodental consonants. In contrast to previous work on this topic, we adopt a usage-based approach that directly examines the relative frequency of such labiodental sounds within phonetically transcribed word lists and texts from thousands of languages. Labiodentals are shown to be very infrequent in the languages of hunter gatherers, who tend to have edge-to-edge bites as opposed to the overbite and overjet observed in populations that consume softer diets and rely heavily on eating utensils. This strong tendency is evident after controlling for Galton's problem via multiple methods including frequentist and Bayesian linear mixed modeling. Additionally, we discuss data from Amazonian hunter gatherers with edge-to-edge bites. The languages of these populations are shown not to use labiodentals frequently, or to have only recently begun doing so. Finally, we analyze the speech of English speakers with varying bite types, demonstrating how the sounds used by individuals reflect the same phenomenon. The diverse findings converge on the same conclusion: speech adapts to anatomical differences within and across populations.
https://www.nature.com/articles/s41598-020-80190-8

AKSHAY R. MAGGU et al – Combination of absolute pitch and tone language experience enhances lexical tone perception

Absolute pitch (AP), a unique ability to name or produce pitch without any reference, is known to be influenced by genetic and cultural factors. AP and tone language experience are both known to promote lexical tone perception. However, the effects of the combination of AP and tone language experience on lexical tone perception are currently not known. In the current study, using behavioral (Categorical Perception) and electrophysiological (Frequency Following Response) measures, we investigated the effect of the combination of AP and tone language experience on lexical tone perception. We found that the Cantonese speakers with AP outperformed the Cantonese speakers without AP on Categorical Perception and Frequency Following Responses of lexical tones, suggesting an additive effect due to the combination of AP and tone language experience. These findings suggest a role of basic sensory pre-attentive auditory processes towards pitch encoding in AP. Further, these findings imply a common mechanism underlying pitch encoding in AP and tone language perception.
https://www.nature.com/articles/s41598-020-80260-x

ELEANOR M. L. SCERRI et al with HUW S. GROUCUTT – Continuity of the Middle Stone Age into the Holocene

The African Middle Stone Age (MSA, typically considered to span ca. 300–30 thousand years ago [ka]), represents our species' first and longest lasting cultural phase. Although the MSA to Later Stone Age (LSA) transition is known to have had a degree of spatial and temporal variability, recent studies have implied that in some regions, the MSA persisted well beyond 30 ka. Here we report two new sites in Senegal that date the end of the MSA to around 11 ka, the youngest yet documented MSA in Africa. This shows that this cultural phase persisted into the Holocene. These results highlight significant spatial and temporal cultural variability in the African Late Pleistocene, consistent with genomic and palaeoanthropological hypotheses that significant, long-standing inter-group cultural differences shaped the later stages of human evolution in Africa.
https://www.nature.com/articles/s41598-020-79418-4

SARAH PEDERZANI et al with JEAN-JACQUES HUBLIN – Reconstructing Late Pleistocene paleoclimate at the scale of human behavior: an example from the Neandertal occupation of La Ferrassie (France)
Exploring the role of changing climates in human evolution is currently impeded by a scarcity of climatic information at the same temporal scale as the human behaviors documented in archaeological sites. This is mainly caused by high uncertainties in the chronometric dates used to correlate long-term climatic records with archaeological deposits. One solution is to generate climatic data directly from archaeological materials representing human behavior. Here we use oxygen isotope measurements of Bos/Bison tooth enamel to reconstruct summer and winter temperatures in the Late Pleistocene when Neandertals were using the site of La Ferrassie. Our results indicate that, despite the generally cold conditions of the broader period and despite direct evidence for cold features in certain sediments at the site, Neandertals used the site predominantly when climatic conditions were mild, similar to conditions in modern day France. We suggest that due to millennial scale climate variability, the periods of human activity and their climatic characteristics may not be representative of average conditions inferred from chronological correlations with long-term climatic records. These results highlight the importance of using direct routes, such as the high-resolution archives in tooth enamel from anthropogenically accumulated faunal assemblages, to establish climatic conditions at a human scale.
https://www.nature.com/articles/s41598-020-80777-1

KATE MCGRATH et al – 3D enamel profilometry reveals faster growth but similar stress severity in Neanderthal versus Homo sapiens teeth
Early life stress disrupts growth and creates horizontal grooves on the tooth surface in humans and other mammals, yet there is no consensus for their quantitative analysis. Linear defects are considered to be nonspecific stress indicators, but evidence suggests that intermittent, severe stressors create deeper defects than chronic, low-level stressors. However, species-specific growth patterns also influence defect morphology, with faster-growing teeth having shallower defects at the population level. Here we describe a method to measure the depth of linear enamel defects and normal growth increments (i.e., perikymata) from high-resolution 3D topographies using confocal profilometry and apply it to a diverse sample of Homo neanderthalensis and H. sapiens anterior teeth. Debate surrounds whether Neanderthals exhibited modern human-like growth patterns in their teeth and other systems, with some researchers suggesting that they experienced more severe childhood stress. Our results suggest that Neanderthals have shallower features than H. sapiens from the Upper Paleolithic, Neolithic, and medieval eras, mirroring the faster growth rates in Neanderthal anterior teeth. However, when defect depth is scaled by perikymata depth to assess their severity, Neolithic humans have less severe defects, while Neanderthals and the other H. sapiens groups show evidence of more severe early life growth disruptions.
https://www.nature.com/articles/s41598-020-80148-w

FRANCISCO EDVALDO DE OLIVEIRA TERCEIRO et al with CAREL P. VAN SCHAIK – Higher social tolerance in wild versus captive common marmosets: the role of interdependence
Social tolerance in a group reflects the balance between within-group competition and interdependence: whereas increased competition leads to a reduction in social tolerance, increased interdependence increases it. Captivity reduces both feeding competition and interdependence and can therefore affect social tolerance. In independently breeding primates, social tolerance has been shown to be higher in captivity, indicating a strong effect of food abundance. It is not known, however, how social tolerance in cooperative breeders, with their much higher interdependence, responds to captivity. Here, we therefore compared social tolerance between free-ranging and captive groups in the cooperatively breeding common marmoset and found higher social tolerance (measured as proximity near food, co-feeding, and food sharing) in the wild. Most likely, social tolerance in the wild is higher because interdependence is particularly high in the wild, especially because infant care is more costly there than in captivity. These results indicate that the high social tolerance of these cooperative breeders in captivity is not an artefact, and that captive data may even have underestimated it. They may also imply that the cooperative breeding and foraging of our hominin ancestors, which relied on strong interdependence at multiple levels, was associated with high social tolerance.
https://www.nature.com/articles/s41598-020-80632-3

DAN C. MANN et al with W. TECUMSEH FITCH – Universal principles underlying segmental structures in parrot song and human speech
Despite the diversity of human languages, certain linguistic patterns are remarkably consistent across human populations. While syntactic universals receive more attention, there is stronger evidence for universal patterns in the inventory and organization of segments: units that are separated by rapid acoustic transitions which are used to build syllables, words, and phrases. Crucially, if an alien researcher investigated spoken human language how we analyze non-human communication systems, many of the phonological regularities would be overlooked, as the majority of analyses in non-humans treat breath groups, or “syllables” (units divided by silent inhalations), as the smallest unit. Here, we introduce a novel segment-based analysis that reveals patterns in the acoustic output of budgerigars, a vocal learning parrot species, that match universal phonological patterns well-documented in humans. We show that song in four independent budgerigar populations is comprised of consonant- and vowel-like segments. Furthermore, the organization of segments within syllables is not random. As in spoken human language, segments at the start of a vocalization are more likely to be consonant-like and segments at

the end are more likely to be longer, quieter, and lower in fundamental frequency. These results provide a new foundation for empirical investigation of language-like abilities in other species.
https://www.nature.com/articles/s41598-020-80340-y

Philosophical Transactions of the Royal Society B

PAPERS

SENG BUM MICHAEL YOO, BENJAMIN YOST HAYDEN & JOHN M. PEARSON – Continuous decisions

Humans and other animals evolved to make decisions that extend over time with continuous and ever-changing options. Nonetheless, the academic study of decision-making is mostly limited to the simple case of choice between two options. Here, we advocate that the study of choice should expand to include continuous decisions. Continuous decisions, by our definition, involve a continuum of possible responses and take place over an extended period of time during which the response is continuously subject to modification. In most continuous decisions, the range of options can fluctuate and is affected by recent responses, making consideration of reciprocal feedback between choices and the environment essential. The study of continuous decisions raises new questions, such as how abstract processes of valuation and comparison are co-implemented with action planning and execution, how we simulate the large number of possible futures our choices lead to, and how our brains employ hierarchical structure to make choices more efficiently. While microeconomic theory has proven invaluable for discrete decisions, we propose that engineering control theory may serve as a better foundation for continuous ones. And while the concept of value has proven foundational for discrete decisions, goal states and policies may prove more useful for continuous ones.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0664

JÉRÔME SALLET et al – Impact of internal and external factors on prosocial choices in rhesus macaques

While traditional economic models assume that agents are self-interested, humans and most non-human primates are social species. Therefore, many of decisions they make require the integration of information about other social agents. This study asks to what extent information about social status and the social context in which decisions are taken impact on reward-guided decisions in rhesus macaques. We tested 12 monkeys of varying dominance status in several experimental versions of a two-choice task in which reward could be delivered to self only, only another monkey, both the self and another monkey, or neither. Results showed dominant animals were more prone to make prosocial choices than subordinates, but only when the decision was between a reward for self only and a reward for both self and other. If the choice was between a reward for self only and a reward for other only, no animal expressed altruistic behaviour. Finally, prosocial choices were true social decisions as they were strikingly reduced when the social partner was replaced by a non-social object. These results showed that as in humans, rhesus macaques' social decisions are adaptive and modulated by social status and the cost associated with being prosocial.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0678

SARAH F. BROSNAN – What behaviour in economic games tells us about the evolution of non-human species' economic decision-making behaviour

In the past decade, there has been a surge of interest in using games derived from experimental economics to test decision-making behaviour across species. In most cases, researchers are using the games as a tool, for instance, to understand what factors influence decision-making, how decision-making differs across species or contexts, or to ask broader questions about species' propensities to cooperate or compete. These games have been quite successful in this regard. To what degree, however, do these games tap into species' economic decision-making? For the purpose of understanding the evolution of economic systems in humans, this is the key question. To study this, we can break economic decision-making down into smaller components, each of which is a potential step in the evolution of human economic behaviour. We can then use data from economic games, which are simplified, highly structured models of decision-making and therefore ideal for the comparative approach, to directly compare these components across species and contexts, as well as in relation to more naturalistic behaviours, to better understand the evolution of economic behaviour and the social and ecological contexts that influenced it. The comparative approach has successfully informed us about the evolution of other complex traits, such as language and morality, and should help us more deeply understand why and how human economic systems evolved.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0670

GEOFFREY K. ADAMS et al – Neurons in primate prefrontal cortex signal valuable social information during natural viewing

Information about social partners is innately valuable to primates. Decisions about which sources of information to consume are highly naturalistic but also complex and place unusually strong demands on the brain's decision network. In particular, both the orbitofrontal cortex (OFC) and lateral prefrontal cortex (LPFC) play key roles in decision making and social behaviour, suggesting a likely role in social information-seeking as well. To test this idea, we developed a 'channel surfing' task in which monkeys were shown a series of 5 s video clips of conspecifics engaged in natural behaviours at a field site. Videos were annotated frame-by-frame using an ethogram of species-typical behaviours, an important source of social information. Between each clip, monkeys were presented with a choice between targets that determined which clip would be seen next. Monkeys' gaze during playback indicated differential engagement depending on what behaviours were

presented. Neurons in both OFC and LPFC responded to choice targets and to video, and discriminated a subset of the behaviours in the ethogram during video viewing. These findings suggest that both OFC and LPFC are engaged in processing social information that is used to guide dynamic information-seeking decisions.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0666

A. ROMAIN et al with J. CALL – Non-human primates use combined rules when deciding under ambiguity
Decision outcomes in unpredictable environments may not have exact known probabilities. Yet the predictability level of outcomes matters in decisions, and animals, including humans, generally avoid ambiguous options. Managing ambiguity may be more challenging and requires stronger cognitive skills than decision-making under risk, where decisions involve known probabilities. Here we compare decision-making in capuchins, macaques, orangutans, gorillas, chimpanzees and bonobos in risky and ambiguous contexts. Subjects were shown lotteries (a tray of potential rewards, some large, some small) and could gamble a medium-sized food item to obtain one of the displayed rewards. The odds of winning and losing varied and were accessible in the risky context (all rewards were visible) or partially available in the ambiguous context (some rewards were covered). In the latter case, the level of information varied from fully ambiguous (individuals could not guess what was under the covers) to predictable (individuals could guess). None of the species avoided gambling in ambiguous lotteries and gambling rates were high if at least two large rewards were visible. Capuchins and bonobos ignored the covered items and gorillas and macaques took the presence of potential rewards into account, but only chimpanzees and orangutans could consistently build correct expectations about the size of the covered rewards. Chimpanzees and orangutans combined decision rules according to the number of large visible rewards and the level of predictability, a process resembling conditional probabilities assessment in humans. Despite a low sample size, this is the first evidence in non-human primates that a combination of several rules can underlie choices made in an unpredictable environment. Our finding that non-human primates can deal with the uncertainty of an outcome when exchanging one food item for another is a key element to the understanding of the evolutionary origins of economic behaviour.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0672

FRANCESCA DE PETRILLO & ALEXANDRA G. ROSATI – Variation in primate decision-making under uncertainty and the roots of human economic behaviour
Uncertainty is a ubiquitous component of human economic behaviour, yet people can vary in their preferences for risk across populations, individuals and different points in time. As uncertainty also characterizes many aspects of animal decision-making, comparative research can help evaluate different potential mechanisms that generate this variation, including the role of biological differences or maturational change versus cultural learning, as well as identify human-unique components of economic decision-making. Here, we examine decision-making under risk across non-human primates, our closest relatives. We first review theoretical approaches and current methods for understanding decision-making in animals. We then assess the current evidence for variation in animal preferences between species and populations, between individuals based on personality, sex and age, and finally, between different contexts and individual states. We then use these primate data to evaluate the processes that can shape human decision-making strategies and identify the primate foundations of human economic behaviour.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0671

ELSA ADDESSI et al – Are capuchin monkeys (Sapajus spp.) sensitive to lost opportunities? The role of opportunity costs in intertemporal choice
Principles of economics predict that the costs associated with obtaining rewards can influence choice. When individuals face choices between a smaller, immediate option and a larger, later option, they often experience opportunity costs associated with waiting for delayed rewards because they must forego the opportunity to make other choices. We evaluated how reducing opportunity costs affects delay tolerance in capuchin monkeys. After choosing the larger option, in the High cost condition, subjects had to wait for the delay to expire, whereas in the Low cost different and Low cost same conditions, they could perform a new choice during the delay. To control for the effect of intake rate on choices, the Low cost same condition had the same intake rate ratio as the High cost condition. We found that capuchins attended both to intake rates and to opportunity costs. They chose the larger option more often in the Low cost different and Low cost same conditions than in the High cost condition, and more often in the Low cost different condition than in the Low cost same condition. Understanding how non-human primates represent and use costs in making decisions not only helps to develop theoretical frameworks to explain their choices but also addresses similarities with and differences from human decision-making. These outcomes provide insights into the origins of human economic behaviour.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0674

HUI-KUAN CHUNG, CARLOS ALÓS-FERRER & PHILIPPE N. TOBLER – Conditional valuation for combinations of goods in primates
Valuing goods and selecting the one with the highest value forms the basis of adaptive behaviour across species. While it is obvious that the valuation of a given type of goods depends on ownership and availability of that type of goods, the effects of other goods on valuation of the original good are sometimes underappreciated. Yet, goods interact with each other, indicating that the valuation of a given good is conditional on the other goods it is combined with, both in the wild and the

laboratory. Here, we introduce conditional valuation in the context of valuing multiple goods and briefly review how human and animal experimentalists can leverage economic tools for the study of interactions among goods. We then review evidence for conditional valuation for combined foods in both human and non-human primates. In the laboratory, non-human primates show increased valuation of certain combinations of foods but decreased valuation of other types of combinations. Thus, similarly to humans, monkeys appear to value combinations of goods in a conditional fashion. Additionally, both humans and monkeys appear to employ similar neural substrates for the valuation of single goods, such as the orbitofrontal cortex. Together, investigations of our evolutionary precursors may provide insights on how we value interacting goods.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0669

E. QUINTIERO et al – Quantity–quality trade-off in the acquisition of token preference by capuchin monkeys (Sapajus spp.)

Money represents a cornerstone of human modern economies and how money emerged as a medium of exchange is a crucial question for social sciences. Although non-human primates have not developed monetary systems, they can estimate, combine and exchange tokens. Here, we evaluated quantity–quality trade-offs in token choices in tufted capuchin monkeys as a first step in the investigation of the generalizability of tokens as reinforcers, which is a potentially relevant factor underlying the emergence of money in humans. We measured capuchins' exchange preferences when they were repeatedly provided with 10 units of three token types yielding food combinations varying in quantity and quality. Overall, capuchins maximized their quantitative payoff, preferring tokens associated with a higher food amount, rather than showing violations of rationality. However, some individuals did not maximize their qualitative payoff, possibly because of conditional valuation effects or owing to the choice overload phenomenon, according to which too many options reduce the accuracy of choice. Our study supports the importance of comparative research to finely analyse the multiple components shaping the economic behaviours of other species, possibly to achieve a more comprehensive, evolutionary- and ecologically based understanding of human economic behaviour.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0662

MICHAEL J. BERAN & AUDREY E. PARRISH – Non-human primate token use shows possibilities but also limitations for establishing a form of currency

Non-human primates evaluate choices based on quantitative information and subjective valuation of options. Non-human primates can learn to value tokens as placeholders for primary rewards (such as food). With those tokens established as a potential form of 'currency', it is then possible to examine how they respond to opportunities to earn and use tokens in ways such as accumulating tokens or exchanging tokens with each other or with human experimenters to gain primary rewards. Sometimes, individuals make efficient and beneficial choices to obtain tokens and then exchange them at the right moments to gain optimal reward. Sometimes, they even accumulate such rewards through extended delay of gratification, or through other exchange-based interactions. Thus, non-human primates are capable of associating value to arbitrary tokens that may function as currency-like stimuli, but there also are strong limitations on how non-human primates can integrate such tokens into choice situations or use such tokens to fully 'symbolize' economic decision-making. These limitations are important to acknowledge when considering the evolutionary emergence of currency use in our species.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0675

JEAN-BAPTISTE LECA et al – Acquisition of object-robbing and object/food-bartering behaviours: a culturally maintained token economy in free-ranging long-tailed macaques

The token exchange paradigm shows that monkeys and great apes are able to use objects as symbolic tools to request specific food rewards. Such studies provide insights into the cognitive underpinnings of economic behaviour in non-human primates. However, the ecological validity of these laboratory-based experimental situations tends to be limited. Our field research aims to address the need for a more ecologically valid primate model of trading systems in humans. Around the Uluwatu Temple in Bali, Indonesia, a large free-ranging population of long-tailed macaques spontaneously and routinely engage in token-mediated bartering interactions with humans. These interactions occur in two phases: after stealing inedible and more or less valuable objects from humans, the macaques appear to use them as tokens, by returning them to humans in exchange for food. Our field observational and experimental data showed (i) age differences in robbing/bartering success, indicative of experiential learning, and (ii) clear behavioural associations between value-based token possession and quantity or quality of food rewards rejected and accepted by subadult and adult monkeys, suggestive of robbing/bartering payoff maximization and economic decision-making. This population-specific, prevalent, cross-generational, learned and socially influenced practice may be the first example of a culturally maintained token economy in free-ranging animals.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0677

SACHA BOURGEOIS-GIRONDE, ELSA ADDESSI & THOMAS BORAUD – Economic behaviours among non-human primates

Do we have any valid reasons to affirm that non-human primates display economic behaviour in a sufficiently rich and precise sense of the phrase? To address this question, we have to develop a set of criteria to assess the vast array of experimental studies and field observations on individual cognitive and behavioural competences as well as the collective

organization of non-human primates. We review a sample of these studies and assess how they answer to the following four main challenges. (i) Do we see any economic organization or institutions emerge among groups of non-human primates? (ii) Are the cognitive abilities, and often biases, that have been evidenced as underlying typical economic decision-making among humans, also present among non-human primates? (iii) Can we draw positive lessons from performance comparisons among primate species, humans and non-humans but also across non-human primate species, as elicited by canonical game-theoretical experimental paradigms, especially as far as economic cooperation and coordination are concerned? And (iv) in which way should we improve models and paradigms to obtain more ecological data and conclusions? Articles discussed in this paper most often bring about positive answers and promising perspectives to support the existence and prevalence of economic behaviours among non-human primates.
https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0676

Proceedings of the Royal Society B

PAPERS

RACHNA B. REDDY et al with JOHN C. MITANI – The development of affiliative and coercive reproductive tactics in male chimpanzees

Like many animals, adult male chimpanzees often compete for a limited number of mates. They fight other males as they strive for status that confers reproductive benefits and use aggression to coerce females to mate with them. Nevertheless, small-bodied, socially immature adolescent male chimpanzees, who cannot compete with older males for status nor intimidate females, father offspring. We investigated how they do so through a study of adolescent and young adult males at Ngogo in Kibale National Park, Uganda. Adolescent males mated with nulliparous females and reproduced primarily with these first-time mothers, who are not preferred as mating partners by older males. Two other factors, affiliation and aggression, also influenced mating success. Specifically, the strength of affiliative bonds that males formed with females and the amount of aggression males directed toward females predicted male mating success. The effect of male aggression toward females on mating success increased as males aged, especially when they directed it toward females with whom they shared affiliative bonds. These results mirror sexual coercion in humans, which occurs most often between males and females involved in close, affiliative relationships.
https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.2679

Science Advances

PAPERS

ADAM BRUMM et al – Oldest cave art found in Sulawesi

Indonesia harbors some of the oldest known surviving cave art. Previously, the earliest dated rock art from this region was a figurative painting of a Sulawesi warty pig (Sus celebensis). This image from Leang Bulu' Sipong 4 in the limestone karsts of Maros-Pangkep, South Sulawesi, was created at least 43,900 years ago (43.9 ka) based on uranium-series dating. Here, we report the uranium-series dating of two figurative cave paintings of Sulawesi warty pigs recently discovered in the same karst area. The oldest, with a minimum age of 45.5 ka, is from Leang Tedongnge. The second image, from Leang Balangajia 1, dates to at least 32 ka. To our knowledge, the animal painting from Leang Tedongnge is the earliest known representational work of art in the World. There is no reason to suppose, however, that this early rock art is a unique example in Island Southeast Asia or the wider region.
https://advances.sciencemag.org/content/7/3/eabd4648?utm_campaign=toc_advances_2021-01-15&et_rid=17774313&et_cid=3631895

Trends in Cognitive Sciences

PAPERS

DAVID PITCHER & LESLIE G. UNGERLEIDER – Evidence for a Third Visual Pathway Specialized for Social Perception

Existing models propose that primate visual cortex is divided into two functionally distinct pathways. The ventral pathway computes the identity of an object; the dorsal pathway computes the location of an object, and the actions related to that object. Despite remaining influential, the two visual pathways model requires revision. Both human and non-human primate studies reveal the existence of a third visual pathway on the lateral brain surface. This third pathway projects from early visual cortex, via motion-selective areas, into the superior temporal sulcus (STS). Studies demonstrating that the STS computes the actions of moving faces and bodies (e.g., expressions, eye-gaze, audio-visual integration, intention, and mood) show that the third visual pathway is specialized for the dynamic aspects of social perception.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(20)30278-3?dgcid=raven_jbs_etoc_email

ALAN S. COWEN & DACHER KELTNER – Semantic Space Theory: A Computational Approach to Emotion

Within affective science, the central line of inquiry, animated by basic emotion theory and constructivist accounts, has been the search for one-to-one mappings between six emotions and their subjective experiences, prototypical expressions, and underlying brain states. We offer an alternative perspective: semantic space theory. This computational approach uses wide-ranging naturalistic stimuli and open-ended statistical techniques to capture systematic variation in emotion-related behaviors. Upwards of 25 distinct varieties of emotional experience have distinct profiles of associated antecedents and

expressions. These emotions are high-dimensional, categorical, and often blended. This approach also reveals that specific emotions, more than valence, organize emotional experience, expression, and neural processing. Overall, moving beyond traditional models to study broader semantic spaces of emotion can enrich our understanding of human experience.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(20)30276-X?dgcid=raven_jbs_etoc_email

ASIFA MAJID – Human Olfaction at the Intersection of Language, Culture, and Biology
The human sense of smell can accomplish astonishing feats, yet there remains a prevailing belief that olfactory language is deficient. Numerous studies with English speakers support this view: there are few terms for odors, odor talk is infrequent, and naming odors is difficult. However, this is not true across the world. Many languages have sizeable smell lexicons — smell is even grammaticalized. In addition, for some cultures smell talk is more frequent and odor naming easier. This linguistic variation is as yet unexplained but could be the result of ecological, cultural, or genetic factors or a combination thereof. Different ways of talking about smells may shape aspects of olfactory cognition too. Critically, this variation sheds new light on this important sensory modality.
https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(20)30277-1?dgcid=raven_jbs_etoc_email

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