

CONTENTS

NOTICES	2
PUBLICATION ALERTS.....	2
ACADEMIA.EDU – Animal Communication and Human Language: An overview	3
LEONARDO BARÓN BIRCHENALL – Animal Communication and Human Language: An overview.....	3
ACADEMIA.EDU – Cumulative Cultural Evolution and the Origins of Language.....	3
KIM STERELNY – Cumulative Cultural Evolution and the Origins of Language	3
CONFERENCE ALERT – The Evolution conference	3
LECTURE ALERT – Nominal labelling, word meaning, and the Conceptual-Intentional Interface	4
COURSE ALERT – Introduction to palaeogenomics	4
NEWS	5
BREAKING SCIENCE – Tanzanian Rock Art Depicts Trios of Bizarre Anthropomorphic Figures.....	5
BREAKING SCIENCE – Native Americans Inherited Lip Shape Gene from Denisovans.....	5
BREAKING SCIENCE – Scientists One Step Closer to Cracking Minoan Linear A Script	5
BREAKING SCIENCE – Listen to Sound of 18,000-Year-Old Seashell Horn.....	5
NATURE BRIEFING – Neanderthal-like ‘mini brains’ are bumpier.....	5
NATURE BRIEFING – Stonehenge was erected in Wales first	5
SCIAM NEWS – What Chimpanzees Can Teach Us about Human Friendships	5
SCIAM NEWS – Humans Are Pretty Lousy Lie Detectors	6
SCIENCE DAILY – Cells are collective thinkers	6
SCIENCE DAILY – Marmoset monkeys have personalities too	6
SCIENCE DAILY – Ancient seashell resonates after 18,000 years	6
SCIENCE DAILY – On the origin of our species.....	6
SCIENCE DAILY – How a single gene may have separated modern humans from predecessors	6
SCIENCE DAILY – Study contradicts belief that whales learn songs from one another.....	6
SCIENCE DAILY – Changing the connection between the hemispheres affects speech perception	6
SCIENCE NEWS – Neanderthal-inspired ‘minibrains’ hint at what makes modern humans special.....	6
SOCIETY FOR SCIENCE – Humans made a horn out of a conch shell about 18,000 years ago	6
THE CONVERSATION – Naked mole-rats: bizarre rodents speak in dialects unique to their colony	7
OTHER NEWS – GUARDIAN – Universities need to wise up – or risk being consigned to history	7
PUBLICATIONS	7
Evolutionary Anthropology	7
PAPERS	7
MARC KISSEL & AGUSTÍN FUENTES – The ripples of modernity: How we can extend paleoanthropology with the extended evolutionary synthesis	7
ELIZABETH G. VEATCH et al – Using niche construction theory to generate testable foraging hypotheses at Liang Bua	7
Evolutionary Human Sciences	7
PAPERS	7
FELIX RIEDE et al with APRIL NOWELL – Children and innovation: Play, play objects, and object play in cultural evolution.....	7
KIM STERELNY – Veiled Agency? Children, Innovation and the Archaeological Record.....	8
Mind & Language.....	8
PAPERS	8
JONATHAN PHILLIPS & AARON NORBY – Factive theory of mind	8
NIKOLA A. KOMPA – Language and embodiment—Or the cognitive benefits of abstract representations	8
MARC SLORES – A cognitive explanation of the perceived normativity of cultural conventions	8
MARTÍN ABREU ZAVALETA – Communication and indifference	8
JAKE QUILTY-DUNN – Polysemy and thought: Toward a generative theory of concepts	8
MICHAEL DEVITT – Semantic polysemy and psycholinguistics	9
ROBYN CARSTON – Polysemy: Pragmatics and sense conventions	9
Nature	9
ARTICLES	9

ARIANA REMMEL – Neanderthal-like ‘mini-brains’ created in lab with CRISPR	9
PAPERS	9
ANDERS BERGSTRÖM et al with CHRIS STRINGER & PONTUS SKOGLUND – Origins of modern human ancestry.....	9
Nature Communications	9
PAPERS	9
LOUISE GOUPIL et al – Listeners’ perceptions of the certainty and honesty of a speaker are associated with a common prosodic signature.....	9
Nature Portfolio	10
ARTICLES	10
REBECCA FURLONG – Waking the dead: sequencing archaic hominin genomes	10
Nature Reviews	10
PAPERS	10
LUDOVIC ORLANDO et al JOHANNES KRAUSE & ESKE WILLERSLEV – Ancient DNA analysis	10
Nature Scientific Reports.....	10
PAPERS	10
GONÇALO COSME et al – Pupil dilation reflects the authenticity of received nonverbal vocalizations.....	10
KATE MCGRATH et al – 3D enamel profilometry reveals faster growth but similar stress severity in Neanderthal versus Homo sapiens teeth	10
New Scientist	11
ARTICLES	11
RICHARD KEMENY – Orangutans create new ways to communicate with each other in captivity	11
Philosophical Transactions of the Royal Society B	11
PAPERS	11
GÁSPÁR JÉKELY, PETER GODFREY-SMITH & FRED KEIJZER – Reafference and the origin of the self in early nervous system evolution	11
SIMONA GINSBURG & EVA JABLONKA – Evolutionary transitions in learning and cognition.....	11
Proceedings of the Royal Society B.....	11
PAPERS	11
GLADYS BARRAGAN-JASON et al – Schoolchildren cooperate more successfully with non-kin than with siblings	11
CHRISTINE J. CHARVET – Cutting across structural and transcriptomic scales translates time across the lifespan in humans and chimpanzees.....	12
YOOSIK YOUM et al – Neural and social correlates of attitudinal brokerage: using the complete social networks of two entire villages	12
Quarterly Review of Biology	12
PAPERS	12
ALEXIS DE TIÈGE, JAN VERPOOTEN & JOHAN BRAECKMAN – From Animal Signals to Art: Manipulative Animal Signaling and the Evolutionary Foundations of Aesthetic Behavior and Art Production	12
Science.....	13
ARTICLES	13
MARIA ANTONIETTA TOSCHES – Different origins for similar brain circuits.....	13
PAPERS	13
CLEBER A. TRUJILLO et al – Reintroduction of the archaic variant of NOVA1 in cortical organoids alters neurodevelopment	13
BRADLEY M. COLQUITT et al – Cellular transcriptomics reveals evolutionary identities of songbird vocal circuits	13
Science Advances.....	13
PAPERS	13
C. FRITZ et al – First record of the sound produced by the oldest Upper Paleolithic seashell horn.....	13
Trends in Cognitive Sciences	13
PAPERS	13
CLAY B. HOLROYD & TOM VERGUTS – The Best Laid Plans: Computational Principles of Anterior Cingulate Cortex	13
Trends in Ecology and Evolution.....	14
COMMENTARIES	14
NIELS J. DINGEMANSE, BARBARA CLASS & BENEDIKT HOLTSMANN – Nonrandom Mating for Behavior in the Wild?.....	14
AMELIA A. MUNSON et al – A Broader View on Mate Choice and Assortative Mating by Behavioral Type: A Reply to Dingemanse et al.	14
SUBSCRIBE to the EAORC Bulletin	14
UNSUBSCRIBE from the EAORC Bulletin	14
PRODUCED BY AND FOR THE EAORC EMAIL GROUP.....	14

NOTICES

PUBLICATION ALERTS

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

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

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

ACADEMIA.EDU – Animal Communication and Human Language: An overview

International Journal of Comparative Psychology 29 (2016)

LEONARDO BARÓN BIRCHENALL – Animal Communication and Human Language: An overview

Comparative research has proven to be a fruitful field of study on the ontogenetic and phylogenetic evolution of language, and on the cognitive capacities unique to humans or shared with other animals. The degree of continuity between components of human language and non-human animal communication systems, as well as the existence of a core factor of language, are polemic subjects at present. In this article, we offer an overview of the research on animal communication, comparing the resulting data with the current knowledge on human language development. We try to summarize what is currently known about “language abilities” in multiple animals, and compare those facts to what is known about human language. The aim of the article is to provide an introduction to this particular topic, presenting the different sides of the arguments when possible. A special reference is made to the question of syntactic recursion as the main component of language, allegedly absent among non-human animals. We conclude that the current state of knowledge supports the existence of a certain degree of continuity between different aspects of animal communication and human language, including the syntactic domain.

https://www.academia.edu/25556390/Animal_communication_and_human_language_An_overview?email_work_card=view-paper

ACADEMIA.EDU – Cumulative Cultural Evolution and the Origins of Language

Biological Theory 11, 173-186 (2016)

KIM STERELNY – Cumulative Cultural Evolution and the Origins of Language

In this article, I present a substantive proposal about the timing and nature of the final stage of the evolution of full human language, the transition from so-called “protolanguage” to language, and on the origins of a simple protolanguage with structure and displaced reference; a proposal that depends on the idea that the initial expansion of communicative powers in our lineage involved a much expanded role for gesture and mime. But though it defends a substantive proposal, the article also (perhaps more importantly) defends and illustrates a methodological proposal too. I argue that language is a special case of a more general phenomenon—cumulative cultural evolution—and while we rarely have direct information about communication, we have more direct information about the cumulative cultural evolution of technical skill, ecological strategies, and social complexity. These same factors also enable us to make a reasonable estimate of the intergenerational social learning capacities of these communities (on which rich communication depends) and of the communicative demands these communities face. For example, we can, at least tentatively, identify forms of cooperation that are stable only if third party information is transmitted widely, cheaply, and accurately. So we can use these more direct markers of information accumulation to locate, in broad terms, the period in our evolutionary history during which we became lingual.

https://www.academia.edu/27351791/Cumulative_Cultural_Evolution_and_the_Origins_of_Language_Introduction_Aims_and_Assumptions?email_work_card=view-paper

CONFERENCE ALERT – The Evolution conference

The Evolution conference is the joint annual meeting of the American Society of Naturalists <<http://www.amnat.org/>>, the Society for the Study of Evolution <<http://www.evolutionarysociety.org/>>, and the Society of Systematic Biologists <<https://www.systbio.org/>>. The meeting is the premier opportunity for sharing research on evolutionary biology each year. For 2021, our conference will be virtual with live-streamed plenaries, scheduled faux-live concurrent sessions, on-demand talks, and topical networking events. For more information: <https://www.evolutionmeetings.org/>

- The conference will be held over five days, June 21 - 25. The conference will run up to eight hours each day starting at 2:00 PM GMT (10:00 AM Eastern Daylight Time) for convenient participation of attendees from a wide range of time zones.
- Registration and talk submission will open in March.
- Registration rates: Society members \$10.00 /\$50.00/ \$125.00; Non-members /\$50.00 /\$100.00/\$175.00 (for: students [grad + undergrad] / postdocs / professionals, respectively). Registration for society members from countries classified as low-income, lower-middle-income or upper-middle-income economies are free (details TBA).
- Each day will be highlighted by a live-streamed plenary talk. On Friday, the 25th, we will live stream award symposia and talks.
- All talk submissions will be accepted (each attendee is limited to one presentation, but they can be a co-author on more than one). Due to scheduling limitations, only the first 1,000 submissions will be included in the 'faux-live' (recorded talks are played in sequence at a specific time) concurrent sessions (and available on-demand after the session). The remainder of submissions will be made available on-demand (available to view anytime) throughout the conference. All contributed talks will be recorded.

- Talks scheduled in faux-live concurrent sessions will be limited to 10 minutes. On-demand talks will be offered instead of posters and will be limited to 6 minutes. Talk recordings can be made through an online app on our web interface, or they can be uploaded.
- We will have numerous opportunities for networking/discussion. After each concurrent session the speakers and attendees will participate in discussion/networking Zoom sessions focused on the same topic. Networking lounges will be available in the conference lobby. An open Zoom room will be available in the lobby to mingle and meet with other attendees throughout the conference. Breakout rooms will be available for group conversations. A dedicated Slack workspace will be available for attendees to create topical channels, find other attendees with similar interests, arrange group meetings, and advertise conference-related activities. You will be able to sign up to participate in faculty-student networking groups for coffee, lunch, or happy hour meetings.

For more information: <https://www.evolutionmeetings.org/>

LECTURE ALERT – Nominal labelling, word meaning, and the Conceptual-Intentional Interface

Speaker: Associate Professor Paolo Acquaviva (University College Dublin)

Title: *Nominal labelling, word meaning, and the Conceptual-Intentional Interface*

Date and time: Wednesday 24 February 2021, 4:00pm

Location: Online via Zoom (joining details below)

Abstract:

The idea that words carve up thought is certainly very plausible, but it remains an analogy. Beside not saying anything about 'words' and 'thought', it implicitly identifies the semantic content of words with conceptual content. Taking words as structured products of grammatical knowledge certainly helps define what is specifically linguistic about word-encapsulated conceptual content, but it risks reducing it to purely formal schemata like 'mass-like entity' or 'dynamic event leading to a state'. This contribution aims at posing the problem and at bringing it into focus with particular reference to nouns: what does the language-internal property of being nominal (a label in an abstract symbolic representation) "mean" in language-independent conceptual terms? What phenomena can be brought to bear on the question? A beginning of an answer, I propose that nouns are most fundamentally names for sorts, or categories of entities. A conceptualization as 'entity' is pre-linguistic, but nominality, as the linguistic expression of it, shapes the way we can conceptualize things linguistically, for instance allowing maximally underspecified entity terms ('thing'), and disallowing terms for tropes like 'the redness of this carpet', which are thinkable but not expressible as single nouns. In sum, this is an attempt to specify the nature and boundaries of thinking-through-language.

This seminar will take place online via Zoom, to join the seminar please use this link:

<https://ucl.zoom.us/j/91838690477?pwd=VjBZUWpJUnkrV0lCWkxjQVNJb3hYUT09>

Meeting ID: 918 3869 0477

Passcode: 840611

COURSE ALERT – Introduction to palaeogenomics

Transmitting Science is running the LIVE ONLINE course:

Introduction to palaeogenomics – concepts, methods and applications of ancient human and non-human DNA data.

Instructors:

Dr. Marcela Sandoval Velsaco (University of Copenhagen, Denmark)

Dr. Jazmín Ramos-Madrigal (University of Copenhagen, Denmark)

Dates & Times:

May 17th-21st, 2021, 16:00-21:00 (GMT+2, Madrid time)

Preliminary programme:

- Introduction to ancient DNA and palaeogenomics – History and development of the field. Contamination and degradation of DNA. Best practices and sampling strategies. Ethical implications of aDNA research
- Laboratory methods – DNA extraction. Library preparation methods (ds, ss, BEST, BEMT, SC). Sequencing strategies. Best practices.
- Data preprocessing, particularities of ancient DNA data and basic data quality statistics.
- Standard and alternative mapping strategies. Overview of palaeogenomics analysis pipelines (e.g. paleomix and eager). Selection of reference genome. Reference bias and strategies to overcome it.
- aDNA authentication. Damage, error rates and contamination analysis.
- Analysis of low coverage data using Angsd (potential strategies using genotype likelihoods and pseudo-haploid data)
- Broad ancestry estimation using NGS tools. Clustering strategies (PCA, Admixture). Phylogenomics (Treemix)

- Introduction to F-statistics (D-statistics, F3) and Admixture graphs.

For more information and registration:

<https://www.transmittingscience.com/courses/genetics-and-genomics/introduction-to-palaeogenomics-concepts-methods-and-applications-of-ancient-dna-data/>

Contact: courses@transmittingscience.com

haris.saslis@transmittingscience.com

NEWS

BREAKING SCIENCE – Tanzanian Rock Art Depicts Trios of Bizarre Anthropomorphic Figures

Motifs featuring trios of anthropomorphic figures with stylized buffalo heads have been discovered at a newly-discovered rock art site in the Swaga Swaga Game Reserve, Tanzania. The ancient rock art was found at the Amak'hee 4 rockshelter site in the Dodoma area of central Tanzania in June 2018.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/w1cYl8ozJZo/tanzanian-rock-art-09332.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – Native Americans Inherited Lip Shape Gene from Denisovans

In a genome-wide association study of 6,169 Latin American individuals, an international team of scientists identified 32 gene regions (loci) that influenced facial features such as nose, lip, jaw, and brow shape, nine of which were entirely new discoveries while the others validated genes with prior limited evidence; one of these genes appears to have been inherited from Denisovans, an extinct sister group of Neanderthals.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/0Epyq7M2a7I/native-americans-lip-shape-gene-denisovans-09330.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – Scientists One Step Closer to Cracking Minoan Linear A Script

Linear A is a logo-syllabic script used for administrative purposes on Bronze Age Crete. Together with Cretan Hieroglyphic, it is one of two writing systems created by the Minoan civilization. Upon its template, the Mycenaeans later created the Linear B script to register their dialect of ancient Greek.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/rFBx1_0fKk8/minoan-linear-a-script-09329.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – Listen to Sound of 18,000-Year-Old Seashell Horn

About 18,000 years ago, the Magdalenian occupants of Marsoulas Cave in what is now France transformed a shell of the predatory sea snail *Charonia lampas* into a wind instrument. A team of researchers in France has now released a recording of what the instrument would have sounded like.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/CKJ5bmytw4I/marsoulas-seashell-horn-09349.html?utm_source=feedburner&utm_medium=email

NATURE BRIEFING – Neanderthal-like 'mini brains' are bumpier

Brain-like organoids engineered to contain a NOVA1 gene variant found in extinct Neanderthals and Denisovans are smaller and more roughly textured than those with the human version of the gene. NOVA1 influences brain development, and the new study suggests the human variant was important in our evolution. This is the first time researchers have used genome editing to revert a gene to its archaic form in human cells used to grow brain tissue.

<https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=be0cf20bd1&e=1db4b9a19b>

NATURE BRIEFING – Stonehenge was erected in Wales first

Stonehenge might have been built from an earlier stone circle: Waun Mawn in west Wales. Stonehenge's majestic bluestone pillars had already been traced to their source. The stones were excavated from quarries in Wales as early as 3400 BC, about 500 years before Stonehenge was built. Now, researchers have used carbon dating and other techniques to suggest that similar stones that once stood in Waun Mawn were removed at just about the time the first construction at Stonehenge began. The findings further develop a picture of an interconnected society centered on the Irish Sea that flourished in the fourth century BC.

<https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=74eddf9ac&e=1db4b9a19b>

SCIAM NEWS – What Chimpanzees Can Teach Us about Human Friendships

Changes in social relationships over the apes' lifetimes provide clues about both animal and human cognition.

<http://links.email.scientificamerican.com/els/v2/p03zCkmg~4t3/TGtUeVBSzkIRMit2cnRSeCtFSE9FQzhhdzdXTjITRnA0NWliWJlYbCtubDB1YlcwdVY4Y21PN0VKWXRZRZkVwRjR5YjNHN1VMVnV0T3lxendHSHYyQXFJckg1OG9yWjBSYXp6NII6UUQxa0U9S0/>

SCIAM NEWS – Humans Are Pretty Lousy Lie Detectors

Whenever we hear someone speak, we form an opinion about their believability. But our eyes and ears can lead us astray <http://links.email.scientificamerican.com/els/v2/3m2wCa7d0GH~/TGtUeVBSzkIRMit2cnRSeCtFSE9FQzhhdzdXTjITRnA0NWliWJlYbCtubDB1YlcwdVY4Y21PN0VKWXRZRZkVwRjR5YjNHN1VMVnV0T3lxendHSHYyQXFJckg1OG9yWjBSYXp6NII6UUQxa0U9S0/>

SCIENCE DAILY – Cells are collective thinkers

Cells, like humans, cast votes to make decisions as a group. But how do they know what to vote for? Researchers have uncovered how cells actively seek information in order to make faster and better collective decisions to coordinate the growth of new blood vessels. This provides a new basis for understanding intelligence in cells. <https://www.sciencedaily.com/releases/2021/02/210208114240.htm>

SCIENCE DAILY – Marmoset monkeys have personalities too

In humans, differences in personalities have been evident since the ancient times. Personality in animals has long been ignored, but recently this question has received increasing research interest as it has been realized that personality has evolutionary and ecological significance. Behavioral biologists have now designed and used a set of tasks to assess personality of common marmosets. <https://www.sciencedaily.com/releases/2021/02/210208104615.htm>

SCIENCE DAILY – Ancient seashell resonates after 18,000 years

Almost 80 years after its discovery, a large shell from the ornate Marsoulas Cave in the Pyrenees has been studied by a multidisciplinary team: it is believed to be the oldest wind instrument of its type. <https://www.sciencedaily.com/releases/2021/02/210210170148.htm>

SCIENCE DAILY – On the origin of our species

New research suggests that genetic and fossil records will not reveal a single point where modern humans originated. <https://www.sciencedaily.com/releases/2021/02/210210133410.htm>

SCIENCE DAILY – How a single gene may have separated modern humans from predecessors

Researchers discovered a single gene alteration that may help explain cognitive differences between modern humans and our predecessor, and used that information to develop Neanderthal-like brain organoids in the lab. <https://www.sciencedaily.com/releases/2021/02/210211144418.htm>

SCIENCE DAILY – Study contradicts belief that whales learn songs from one another

A new study is directly contradicting the widely accepted cultural transmission hypothesis suggesting that whales learn their songs from other whales. 'Our findings indicate that neither cultural transmission nor social learning contributes significantly to how humpback whales change their songs over time.', says one of the researchers. <https://www.sciencedaily.com/releases/2021/02/210212123521.htm>

SCIENCE DAILY – Changing the connection between the hemispheres affects speech perception

When we listen to speech sounds, our brain needs to combine information from both hemispheres. How does the brain integrate acoustic information from remote areas? In a neuroimaging study, a team of researchers applied electrical stimulation to participants' brains during a listening task. The stimulation affected the connection between the two hemispheres, which in turn changed participants' listening behavior. <https://www.sciencedaily.com/releases/2021/02/210212094123.htm>

SCIENCE NEWS – Neanderthal-inspired 'minibrains' hint at what makes modern humans special

What is it about DNA that makes the human brain "human?" Seeking to understand how our complex brains evolved, researchers have now switched a single human gene out for its Neanderthal counterpart in brain tissue grown in a lab dish. Changes to the resulting organoid reveal the role this gene may have played in ancient—and modern—brain development. https://www.sciencemag.org/news/2021/02/neanderthal-inspired-minibrains-hint-what-makes-modern-humans-special?utm_campaign=news_daily_2021-02-11

SOCIETY FOR SCIENCE – Humans made a horn out of a conch shell about 18,000 years ago

Ancient find may have sounded off during rituals in a cave adorned with wall art.

<http://click.societyforscience-email.com/?qs=0d808e9d471417a66115c5533cc45bfd18e8a810eadcd57a89e06efb5a3e02e001da15527099febe4e3fde5784aaf08983ec70b23c7870fea72618c6a2901f54>

THE CONVERSATION – Naked mole-rats: bizarre rodents speak in dialects unique to their colony

A new study found naked mole-rats communicate with chirps unique to their colony.

<https://theconversationuk.cmail20.com/t/r-l-juukojd-khhlllahh-n/>

OTHER NEWS – GUARDIAN – Universities need to wise up – or risk being consigned to history

John Naughton

The pandemic has shown that other ways of teaching and learning are possible.

<https://www.theguardian.com/commentisfree/2021/feb/13/universities-need-to-wise-up-or-risk-being-consigned-to-history>

PUBLICATIONS

Evolutionary Anthropology

PAPERS

MARC KISSEL & AGUSTÍN FUENTES – The ripples of modernity: How we can extend paleoanthropology with the extended evolutionary synthesis

Contemporary understandings of paleoanthropological data illustrate that the search for a line defining, or a specific point designating, “modern human” is problematic. Here we lend support to the argument for the need to look for patterns in the paleoanthropological record that indicate how multiple evolutionary processes intersected to form the human niche, a concept critical to assessing the development and processes involved in the emergence of a contemporary human phenotype. We suggest that incorporating key elements of the Extended Evolutionary Synthesis (EES) into our endeavors offers a better and more integrative toolkit for modeling and assessing the evolution of the genus *Homo*. To illustrate our points, we highlight how aspects of the genetic exchanges, morphology, and material culture of the later Pleistocene complicate the concept of “modern” human behavior and suggest that multiple evolutionary patterns, processes, and pathways intersected to form the human niche.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.21883?campaign=wolearlyview>

ELIZABETH G. VEATCH et al – Using niche construction theory to generate testable foraging hypotheses at Liang Bua

Niche construction theory (NCT) has emerged as a promising theoretical tool for interpreting zooarchaeological material. However, its juxtaposition against more established frameworks like optimal foraging theory (OFT) has raised important criticism around the testability of NCT for interpreting hominin foraging behavior. Here, we present an optimization foraging model with NCT features designed to consider the destructive realities of the archaeological record after providing a brief review of OFT and NCT. Our model was designed to consider a forager's decision to exploit an environment given predation risk, mortality, and payoff ratios between different ecologies, like more-open or more-forested environments. We then discuss how the model can be used with zooarchaeological data for inferring environmental exploitation by a primitive hominin, *Homo floresiensis*, from the island of Flores in Southeast Asia. Our example demonstrates that NCT can be used in combination with OFT principles to generate testable foraging hypotheses suitable for zooarchaeological research.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.21884?campaign=wolearlyview>

Evolutionary Human Sciences

PAPERS

FELIX RIEDE et al with APRIL NOWELL – Children and innovation: Play, play objects, and object play in cultural evolution

Abstract Cultural evolutionary theory conceptualises culture as an information-transmission system whose dynamics take on evolutionary properties. Within this framework, however, innovation has been likened to random mutations, reducing its occurrence to chance or fortuitous transmission error. In introducing the special collection on children and innovation, we here place object play and play objects – especially functional miniatures – from carefully chosen archaeological contexts in a niche construction perspective. Given that play, including object play, is ubiquitous in human societies, we suggest that plaything construction, provisioning, and use have, over evolutionary timescales, paid substantial selective dividends via ontogenetic niche modification. Combining findings from cognitive science, ethology, and ethnography with insights into hominin early developmental life-history, we show how play objects and object play likely had decisive roles in the emergence of innovative capabilities. Importantly, we argue that closer attention to play objects can go some way towards addressing changes in innovation rates that occurred throughout human biocultural evolution and why innovations are observable within certain technological domains but not others.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/children-and-innovation-play-play-objects-and-object-play-in-cultural-evolution/9DBF086C84C3DB984DA028FB85EDD020>

KIM STERELNY – Veiled Agency? Children, Innovation and the Archaeological Record.

Children and subadults were obviously part of ancient human communities, and almost certainly, in important ways their activities were distinctive; they did not routinely act like scaled down adults. But their presence was quite cryptic, but not entirely hidden. Their lives and acts did leave traces, though these tend to be fragile, ambiguous, and fast-fading. In addition to pursuing the methodological issues posed by the detection of subadult lives, this special issue raises important questions about the role of children, and their willingness to experiment and play, on innovation. It is true that ethnographically known forager children are almost certainly more autonomous, experimental, and adventurous than WEIRD children, and this was probably true of the young foragers of the early Holocene and late Pleistocene, too. Their greater willingness to experiment probably fueled a supply of variation, and perhaps occasionally adaptation as well, especially finding new uses for existing materials. Much more certainly, innovations tend to be noted, taken up, and spread by adolescents. They were vectors of change, even if perhaps only rarely initiators of change.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/veiled-agency-children-innovation-and-the-archaeological-record/57ADE075335D0B05984D270E8997BE6C>

Mind & Language

PAPERS

JONATHAN PHILLIPS & AARON NORBY – Factive theory of mind

Research on theory of mind has primarily focused on demonstrating and understanding the ability to represent others' non-factive mental states, for example, others' beliefs in the false-belief task. This requirement confuses the ability to represent a particular kind of non-factive content (e.g., a false belief) with the more general capacity to represent others' understanding of the world even when it differs from one's own. We provide a way of correcting this. We first offer a simple and theoretically motivated account on which tracking another agent's understanding of the world and keeping that representation separate from one's own are the essential features of a capacity for theory of mind. We then show how these criteria can be operationalized in a new experimental paradigm: the "diverse-knowledge task."

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12267?campaign=woletoc>

NIKOLA A. KOMPA – Language and embodiment—Or the cognitive benefits of abstract representations

Cognition, it is often heard nowadays, is embodied. My concern is with embodied accounts of language comprehension. First, the basic idea will be outlined and some of the evidence that has been put forward in their favor will be examined. Second, their empiricist heritage and their conception of abstract ideas will be discussed. Third, an objection will be raised according to which embodied accounts underestimate the cognitive functions language fulfills. The remainder of the paper will be devoted to arguing for the cognitive indispensability of non-embodied, abstract representations by highlighting some of the cognitive benefits they bestow upon us.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12266?campaign=woletoc>

MARC SLORS – A cognitive explanation of the perceived normativity of cultural conventions

I argue that cultural conventions such as social etiquette facilitate a specific (non-Lewisian) kind of action coordination—role–interaction coordination—that is required for division of labour. Playing one's roles and coordinating them with those of others is a form of multitasking. Such multitasking is made possible on a large scale because we can offload cognition aimed at coordination onto a stable infrastructure of cultural conventions. Our natural tendency to prefer multitasking in instances where one task requires low cognitive control can thus explain our preference for and expectation of familiar cultural conventions—that is, their perceived normativity.

<https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12265?campaign=woletoc>

MARTÍN ABREU ZAVALA – Communication and indifference

The propositional view of communication states that every literal assertoric utterance of an indicative sentence expresses a proposition, and the audience understands those utterances only if she entertains the proposition(s) the speaker expressed. According to an important objection due to Ray Buchanan, the propositional view is ill-equipped to handle meaning underdeterminacy. Using resources from situation semantics and MacFarlane's nonindexical contextualism, this article develops a view of literal communication close to the propositional view which overcomes Buchanan's underdeterminacy considerations while accounting for the kind of indifference that typically characterizes speakers' intentions.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12259?campaign=woletoc>

JAKE QUILTY-DUNN – Polysemy and thought: Toward a generative theory of concepts

Most theories of concepts take concepts to be structured bodies of information used in categorization and inference. This paper argues for a version of atomism, on which concepts are unstructured symbols. However, traditional Fodorian atomism is falsified by polysemy and fails to provide an account of how concepts figure in cognition. This paper argues that concepts are generative pointers, that is, unstructured symbols that point to memory locations where cognitively useful bodies of information are stored and can be deployed to resolve polysemy. The notion of generative pointers allows for unresolved ambiguity in thought and provides a basis for conceptual engineering.

<https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12328?campaign=woletoc>

MICHAEL DEVITT – Semantic polysemy and psycholinguistics

The paper urges that polysemous phenomena are typically semantic not pragmatic. The part of a message sent by a polysemous expression is typically one of its meanings encoded in the speaker's language and not the result of pragmatic modification. The hearer receives that part of the message by a process of disambiguation, by detecting which item in the lexicon the speaker has selected. This is the best explanation of observed regularities. The paper argues that the experimental evidence from psycholinguistics, particularly that produced in discussions of “underspecification” and “overspecification,” does not undermine this view nor support the pragmatic alternative.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12327?campaign=woletoc>

ROBYN CARSTON – Polysemy: Pragmatics and sense conventions

Polysemy, understood as instances of a single linguistic expression having multiple related senses, is not a homogenous phenomenon. There are regular (apparently, rule-based) cases and irregular (resemblance-based) cases, which have different processing profiles. Although a primary source of polysemy is pragmatic inference, at least some cases become conventionalised and linguistically encoded. Three main issues are discussed: (a) the key differences between regular and irregular cases and the role, if any, of a “core meaning”; (b) the distinction between pragmatic polysemy and semantic polysemy; and (c) the role of syntactic meaning in both generating and constraining polysemy.

<https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12329?campaign=woletoc>

Nature

ARTICLES

ARIANA REMMEL – Neanderthal-like ‘mini-brains’ created in lab with CRISPR

Researchers have created tiny, brain-like ‘organoids’ that contain a gene variant harboured by two extinct human relatives, Neanderthals and Denisovans. The tissues, made by engineering human stem cells, are far from being true representations of these species’ brains — but they show distinct differences from human organoids, including size, shape and texture. The findings, published¹ in *Science* on 11 February, could help scientists to understand the genetic pathways that allowed human brains to evolve.

<https://www.nature.com/articles/d41586-021-00388-2>

PAPERS

ANDERS BERGSTRÖM et al with CHRIS STRINGER & PONTUS SKOGLUND – Origins of modern human ancestry

New finds in the palaeoanthropological and genomic records have changed our view of the origins of modern human ancestry. Here we review our current understanding of how the ancestry of modern humans around the globe can be traced into the deep past, and which ancestors it passes through during our journey back in time. We identify three key phases that are surrounded by major questions, and which will be at the frontiers of future research. The most recent phase comprises the worldwide expansion of modern humans between 40 and 60 thousand years ago (ka) and their last known contacts with archaic groups such as Neanderthals and Denisovans. The second phase is associated with a broadly construed African origin of modern human diversity between 60 and 300 ka. The oldest phase comprises the complex separation of modern human ancestors from archaic human groups from 0.3 to 1 million years ago. We argue that no specific point in time can currently be identified at which modern human ancestry was confined to a limited birthplace, and that patterns of the first appearance of anatomical or behavioural traits that are used to define *Homo sapiens* are consistent with a range of evolutionary histories.

<https://www.nature.com/articles/s41586-021-03244-5>

Nature Communications

PAPERS

LOUISE GOUPIL et al – Listeners’ perceptions of the certainty and honesty of a speaker are associated with a common prosodic signature

conspicuous. Yet, how such epistemic vigilance is achieved from naturalistic sensory inputs remains unclear. Here we show that listeners’ perceptions of the certainty and honesty of other speakers from their speech are based on a common prosodic signature. Using a data-driven method, we separately decode the prosodic features driving listeners’ perceptions of a speaker’s certainty and honesty across pitch, duration and loudness. We find that these two kinds of judgments rely on a common prosodic signature that is perceived independently from individuals’ conceptual knowledge and native language. Finally, we show that listeners extract this prosodic signature automatically, and that this impacts the way they memorize spoken words. These findings shed light on a unique auditory adaptation that enables human listeners to quickly detect and react to unreliability during linguistic interactions.

<https://www.nature.com/articles/s41467-020-20649-4>

Nature Portfolio

ARTICLES

REBECCA FURLONG – Waking the dead: sequencing archaic hominin genomes

The advent of PCR in the 1980s made ancient DNA (aDNA) sequencing a reality, but early attempts to sequence human aDNA were frustrated by sample contamination and degradation. In 2010, the first draft sequence of a Neanderthal genome heralded a revolution in palaeogenomics, advancing our understanding of the relationships between extinct and extant hominin lineages and how modern humans spread throughout the world.

<https://www.nature.com/articles/d42859-020-00112-6>

Nature Reviews

PAPERS

LUDOVIC ORLANDO et al JOHANNES KRAUSE & ESKE WILLERSLEV – Ancient DNA analysis

Although the first ancient DNA molecules were extracted more than three decades ago, the first ancient nuclear genomes could only be characterized after high-throughput sequencing was invented. Genome-scale data have now been gathered from thousands of ancient archaeological specimens, and the number of ancient biological tissues amenable to genome sequencing is growing steadily. Ancient DNA fragments are typically ultrashort molecules and carry extensive amounts of chemical damage accumulated after death. Their extraction, manipulation and authentication require specific experimental wet-laboratory and dry-laboratory procedures before patterns of genetic variation from past individuals, populations and species can be interpreted. Ancient DNA data help to address an entire array of questions in anthropology, evolutionary biology and the environmental and archaeological sciences. The data have revealed a considerably more dynamic past than previously appreciated and have revolutionized our understanding of many major prehistoric and historic events. This Primer provides an overview of concepts and state-of-the-art methods underlying ancient DNA analysis and illustrates the diversity of resulting applications. The article also addresses some of the ethical challenges associated with the destructive analysis of irreplaceable material, emphasizes the need to fully involve archaeologists and stakeholders as part of the research design and analytical process, and discusses future perspectives.

<https://www.nature.com/articles/s43586-020-00011-0>

Nature Scientific Reports

PAPERS

GONÇALO COSME et al – Pupil dilation reflects the authenticity of received nonverbal vocalizations

The ability to infer the authenticity of other's emotional expressions is a social cognitive process taking place in all human interactions. Although the neurocognitive correlates of authenticity recognition have been probed, its potential recruitment of the peripheral autonomic nervous system is not known. In this work, we asked participants to rate the authenticity of authentic and acted laughs and cries, while simultaneously recording their pupil size, taken as proxy of cognitive effort and arousal. We report, for the first time, that acted laughs elicited higher pupil dilation than authentic ones and, reversely, authentic cries elicited higher pupil dilation than acted ones. We tentatively suggest the lack of authenticity in others' laughs elicits increased pupil dilation through demanding higher cognitive effort; and that, reversely, authenticity in cries increases pupil dilation, through eliciting higher emotional arousal. We also show authentic vocalizations and laughs (i.e. main effects of authenticity and emotion) to be perceived as more authentic, arousing and contagious than acted vocalizations and cries, respectively. In conclusion, we show new evidence that the recognition of emotional authenticity can be manifested at the level of the autonomic nervous system in humans. Notwithstanding, given its novelty, further independent research is warranted to ascertain its psychological meaning.

<https://www.nature.com/articles/s41598-021-83070-x>

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>

New Scientist

ARTICLES

RICHARD KEMENY – Orangutans create new ways to communicate with each other in captivity

What's in a somersault? A flap of the lip, a spit of water in the face? More than meets the eye, it seems. They may all be new ways of communicating that orangutans have come up with in captivity. This suggests that such gestural creativity may be ancestral in the great ape line, adding a new piece to the puzzle of language evolution.

<https://www.newscientist.com/article/2266828-orangutans-create-new-ways-to-communicate-with-each-other-in-captivity/#ixzz6mCTTWR6F>

Philosophical Transactions of the Royal Society B

PAPERS

GÁSPÁR JÉKELY, PETER GODFREY-SMITH & FRED KEIJZER – Reafference and the origin of the self in early nervous system evolution

Discussions of the function of early nervous systems usually focus on a causal flow from sensors to effectors, by which an animal coordinates its actions with exogenous changes in its environment. We propose, instead, that much early sensing was reafferent; it was responsive to the consequences of the animal's own actions. We distinguish two general categories of reafference—translocational and deformational—and use these to survey the distribution of several often-neglected forms of sensing, including gravity sensing, flow sensing and proprioception. We discuss sensing of these kinds in sponges, ctenophores, placozoans, cnidarians and bilaterians. Reafference is ubiquitous, as ongoing action, especially whole-body motility, will almost inevitably influence the senses. Corollary discharge—a pathway or circuit by which an animal tracks its own actions and their reafferent consequences—is not a necessary feature of reafferent sensing but a later-evolving mechanism. We also argue for the importance of reafferent sensing to the evolution of the body-self, a form of organization that enables an animal to sense and act as a single unit.

<https://royalsocietypublishing.org/doi/full/10.1098/rstb.2019.0764>

SIMONA GINSBURG & EVA JABLONKA – Evolutionary transitions in learning and cognition

We define a cognitive system as a system that can learn, and adopt an evolutionary-transition-oriented framework for analysing different types of neural cognition. This enables us to classify types of cognition and point to the continuities and discontinuities among them. The framework we use for studying evolutionary transitions in learning capacities focuses on qualitative changes in the integration, storage and use of neurally processed information. Although there are always grey areas around evolutionary transitions, we recognize five major neural transitions, the first two of which involve animals at the base of the phylogenetic tree: (i) the evolutionary transition from learning in non-neural animals to learning in the first neural animals; (ii) the transition to animals showing limited, elemental associative learning, entailing neural centralization and primary brain differentiation; (iii) the transition to animals capable of unlimited associative learning, which, on our account, constitutes sentience and entails hierarchical brain organization and dedicated memory and value networks; (iv) the transition to imaginative animals that can plan and learn through selection among virtual events; and (v) the transition to human symbol-based cognition and cultural learning. The focus on learning provides a unifying framework for experimental and theoretical studies of cognition in the living world.

<https://royalsocietypublishing.org/doi/abs/10.1098/rstb.2019.0766>

Proceedings of the Royal Society B

PAPERS

GLADYS BARRAGAN-JASON et al – Schoolchildren cooperate more successfully with non-kin than with siblings

Cooperation plays a key role in the development of advanced societies and can be stabilized through shared genes (kinship) or reciprocation. In humans, cooperation among kin occurs more readily than cooperation among non-kin. In many organisms, cooperation can shift with age (e.g. helpers at the nest); however, little is known about developmental shifts between kin and non-kin cooperation in humans. Using a cooperative game, we show that 3- to 10-year-old French schoolchildren cooperated less successfully with siblings than with non-kin children, whether or not non-kin partners were friends. Furthermore, children with larger social networks cooperated better and the perception of friendship among non-friends improved after cooperating. These results contrast with the well-established preference for kin cooperation among adults and indicate that non-kin cooperation in humans might serve to forge and extend non-kin social relationships during middle childhood and create opportunities for future collaboration beyond kin. Our results suggest that the current view of cooperation in humans may only apply to adults and that future studies should focus on how and why cooperation with different classes of partners might change during development in humans across cultures as well as other long-lived organisms.

<https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.2951>

CHRISTINE J. CHARVET – Cutting across structural and transcriptomic scales translates time across the lifespan in humans and chimpanzees

How the unique capacities of human cognition arose in evolution is a question of enduring interest. It is still unclear which developmental programmes are responsible for the emergence of the human brain. The inability to determine corresponding ages between humans and apes has hampered progress in detecting developmental programmes leading to the emergence of the human brain. I harness temporal variation in anatomical, behavioural and transcriptional variation to determine corresponding ages from fetal to postnatal development and ageing, between humans and chimpanzees. This multi-dimensional approach results in 137 corresponding time points across the lifespan, from embryonic day 44 to approximately 55 years of age, in humans and their equivalent ages in chimpanzees. I used these data to test whether developmental programmes, such as the timeline of prefrontal cortex (PFC) maturation, previously claimed to differ between humans and chimpanzees, do so once variation in developmental schedules is controlled for. I compared the maturation of frontal cortex projections from structural magnetic resonance (MR) scans and from temporal variation in the expression of genes used to track long-range projecting neurons (i.e. supragranular-enriched genes) in chimpanzees and humans. Contrary to what has been suggested, the timetable of PFC maturation is not unusually extended in humans. This dataset, which is the largest with which to determine corresponding ages across humans and chimpanzees, provides a rigorous approach to control for variation in developmental schedules and to identify developmental programmes responsible for unique features of the human brain.

<https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.2987>

YOOSIK YOUM et al – Neural and social correlates of attitudinal brokerage: using the complete social networks of two entire villages

To avoid polarization and maintain small-worldness in society, people who act as attitudinal brokers are critical. These people maintain social ties with people who have dissimilar and even incompatible attitudes. Based on resting-state functional magnetic resonance imaging (n = 139) and the complete social networks from two Korean villages (n = 1508), we investigated the individual-level neural capacity and social-level structural opportunity for attitudinal brokerage regarding gender role attitudes. First, using a connectome-based predictive model, we successfully identified the brain functional connectivity that predicts attitudinal diversity of respondents' social network members. Brain regions that contributed most to the prediction included mentalizing regions known to be recruited in reading and understanding others' belief states. This result was corroborated by leave-one-out cross-validation, fivefold cross-validation and external validation where the brain connectivity identified in one village was used to predict the attitudinal diversity in another independent village. Second, the association between functional connectivity and attitudinal diversity of social network members was contingent on a specific position in a social network, namely, the structural brokerage position where people have ties with two people who are not otherwise connected.

<https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.2866>

Quarterly Review of Biology

PAPERS

ALEXIS DE TIÈGE, JAN VERPOOTEN & JOHAN BRAECKMAN – From Animal Signals to Art: Manipulative Animal Signaling and the Evolutionary Foundations of Aesthetic Behavior and Art Production

As humans are evolved animals, we propose a nonanthropocentric framework based on animal signaling theory to understand the evolutionary foundations of human art, instead of a classical anthropocentric approach based on sociocultural anthropology that may incorporate evolutionary thinking but does not start with it. First, we provide a concise review of the basics of the evolutionary theory of animal communication or signaling. Second, we apply this theory to specifically human aesthetic behavior and art and provide four empirical arguments or factors that reduce the conceptual gap between nonhuman animal signaling and human aesthetic-artistic behavior (two from the nonhuman and two from the human side) and that, as such, grant an implementation of human aesthetic behavior and art production within animal signaling theory. And, third, we explore the theory's explanatory power and value when applied to aesthetic behavior and art production through proposing four valuable insights or hypotheses that it may contribute or generate: on art's operation within multiple functionally adaptive signaling contexts; on the basic evolutionary economics of art or what art is (for); on why art is functionally adaptive rather than a nonfunctional byproduct; and on how art is functionally rooted in competitive-manipulative animal signaling and—unlike language—only to a lesser extent in cooperative-informative signaling. Overall, animal signaling theory offers a potentially integrating account of the arts because humans and their signaling behaviors are conceptually situated within a broader, transhuman field that also comprises nonhuman species and their behaviors, thus allowing for an identification of deeper commonalities (homologs, analogs) as well as unique differences. As such, we hope to increase insights into how acoustic, gestural/postural, visual, olfactory, and gustatory animal signaling evolved into music, dance, visual art, perfumery, and gastronomy, respectively.

<https://www.journals.uchicago.edu/doi/abs/10.1086/713210>

Science

ARTICLES

MARIA ANTONIETTA TOSCHES – Different origins for similar brain circuits

More than 320 million years ago, a reptile-like amniote ancestor abandoned aquatic habitats and fully adapted to life on land. This transition was arguably the most impactful event in vertebrate history and catalyzed evolutionary innovations. Soon after, sauropsids (birds and reptiles) diverged from the ancestors of mammals. Racing to survive in their new environments, birds and mammals evolved cognitive abilities unmatched by other vertebrates, such as vocal learning in songbirds and spoken language in humans. The evolution of the brain areas supporting these behaviors has been a dilemma for neuroscientists. On page 695 of this issue, Colquitt et al. (1) disentangle molecular similarities and differences between the song nuclei of birds and the cerebral cortex of mammals and propose that these brain areas have distinct evolutionary origins.

<https://science.sciencemag.org/content/371/6530/676>

PAPERS

CLEBER A. TRUJILLO et al – Reintroduction of the archaic variant of NOVA1 in cortical organoids alters neurodevelopment

Current views of human evolution, as supported by the fossil record, indicate that many hominin lineage branches arose, but only one survived to the present. Neanderthals and Denisovans, two of these extinct lineages, are our closest evolutionary relatives and therefore provide the most subtle genetic and phenotypic contrast to our species. Comparison of Neanderthal, Denisovan, and extant human genomes has shown that many humans today carry genes introduced through past admixture events and has allowed enumeration of human-specific genetic differences that may have been important for recent human evolution. Neuro-oncological ventral antigen 1 (NOVA1) includes one of the few protein-coding differences between modern human and archaic hominin genomes that could affect human neurodevelopment.

A subset of genetic changes may underly the phenotypic traits that separate our species from these extinct relatives. We developed a platform to test the impact of human-specific genetic variants by reintroducing the archaic form found in Neanderthals and Denisovans and measuring its effects during neurodevelopment using human brain organoids. Our results suggest that the human-specific substitution in NOVA1, which became fixed in modern humans after divergence from Neanderthals, may have had functional consequences for our species' evolution.

<https://science.sciencemag.org/content/371/6530/eaax2537>

BRADLEY M. COLQUITT et al – Cellular transcriptomics reveals evolutionary identities of songbird vocal circuits

Birds have complex motor and cognitive abilities that rival or exceed the performance of many mammals, but their brains are organized in a notably different way. Parts of the bird brain have been functionally compared to the mammalian neocortex. However, it is still controversial to what extent these regions are truly homologous with the neocortex or if instead they are examples of evolutionary convergence. Colquitt et al. Used single-cell sequencing to identify and characterize the major classes of neurons that comprise the song-control system in birds (see the perspective by Tosches). They found multiple previously unknown neural classes in the bird telencephalon and shed new light on the long-standing controversy regarding the nature of homology between avian and mammalian brains.

<https://science.sciencemag.org/content/371/6530/eabd9704>

Science Advances

PAPERS

C. FRITZ et al – First record of the sound produced by the oldest Upper Paleolithic seashell horn

Anthropologists and ethnomusicologists assert that there is no society without song, and more specifically, there is no ritual or celebration without accompanying sound. The production of sounds in social contexts is very ancient. Here, we report on the study of a seashell from the decorated cave of Marsoulas and demonstrate that the Magdalenian occupants of this site transformed this shell into a wind instrument. It is one of the very rare examples, if not the only one for the Paleolithic period, of a musical instrument fashioned from a large shell, and the first conch shell of this use thus far discovered. We already know that prehistoric people transformed many shells into portable ornaments and that they thus attributed substantial corporal symbolism to them. This seashell horn, with its unique sonority, both deep and strong with an enduring reverberation, sheds light on a musical dimension until now unknown in the context of Upper Paleolithic societies.

https://advances.sciencemag.org/content/7/7/eabe9510?utm_campaign=toc_advances_2021-02-12&et rid=17774313&et cid=3664472

Trends in Cognitive Sciences

PAPERS

CLAY B. HOLROYD & TOM VERGUTS – The Best Laid Plans: Computational Principles of Anterior Cingulate Cortex

Despite continual debate for the past 30 years about the function of anterior cingulate cortex (ACC), its key contribution to neurocognition remains unknown. However, recent computational modeling work has provided insight into this question. Here we review computational models that illustrate three core principles of ACC function, related to hierarchy, world

models, and cost. We also discuss four constraints on the neural implementation of these principles, related to modularity, binding, encoding, and learning and regulation. These observations suggest a role for ACC in hierarchical model-based hierarchical reinforcement learning (HMB-HRL), which instantiates a mechanism motivating the execution of high-level plans. [https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(21\)00010-3?dgcid=raven_jbs_aip_email](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(21)00010-3?dgcid=raven_jbs_aip_email)

Trends in Ecology and Evolution

COMMENTARIES

NIELS J. DINGEMANSE, BARBARA CLASS & BENEDIKT HOLTMANN – Nonrandom Mating for Behavior in the Wild?

In a recent article in Trends in Ecology and Evolution, Munson and colleagues provide an overview of current mate choice theory in the context of behavioral (or ‘personality’) types. Personality-dependent mate choice may generate nonrandom mating patterns, which may be adaptive due to direct (e.g., social niche specialization or improved coordination) or indirect benefits (e.g., genetic compatibility). A particularly appealing idea is that frequency-dependent selection for personality type may exist ‘within’ breeding pairs: positive frequency dependence might favor assortative, while negative frequency dependence might favor disassortative, mating for personality; which form perseveres might vary with ecology. Empirical verification of this idea will require demonstrating, first, that nonrandom assortment for personality exists in nature and, second, that social selection favors optimal combinations of phenotypes between mating partners. We detail here study designs and statistical approaches required to forcefully address this appealing idea. Our message is important because recent research in this area implies that meta-analytical support for assortative mating may well result entirely from biases caused by methodological practices or biological processes other than assortative mating.

[https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347\(20\)30340-2?dgcid=raven_jbs_etoc_email](https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(20)30340-2?dgcid=raven_jbs_etoc_email)

AMELIA A. MUNSON et al – A Broader View on Mate Choice and Assortative Mating by Behavioral Type: A Reply to Dingemanse et al.

Dingemanse et al., in their comment on our recent synthesis of the role that behavioral types (BTs) may play in mate choice, outline study designs and statistical approaches necessary to rigorously test for assortative mating. They argue that most of the empirical support for assortative mating comes not from mate choice, but from methodological biases and biological processes not related to mate choice per se. While assortative mating was only a small part of our paper on the broader subject of BT-dependent mate choice, it is an important topic in many organisms (including humans). Humans largely assort positively on a variety of traits including political ideology. As with nonhuman animals, there are many proposed reasons for this pattern. If space use is, in part, dependent on politics then individuals are likely to assort positively at a population level. While this likely contributes, spousal correlations within demographic categories remain, suggesting there is either initial mate choice or that partners become more similar over time. Similar levels of political correlation between partners across couples married for different lengths of time suggests that assimilation alone is not the answer. Research using online dating profiles suggests that people are more likely to reach out to potential matches that share political ideology or traits that relate to political ideology. Much of the research on political concordance is framed around increasing political polarization. Political affiliations are culturally and genetically heritable, so the concern becomes that positive assorting of individuals who produce offspring that are more extreme in terms of political ideology who later marry partners that match their politics (and so on), could lead to a widening of variance of traits and more individuals at the extremes.

[https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347\(20\)30355-4?dgcid=raven_jbs_etoc_email](https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(20)30355-4?dgcid=raven_jbs_etoc_email)

SUBSCRIBE to the EAORC Bulletin

If you would like to subscribe to this free weekly newsletter, please contact martin.edwardes@btopenworld.com.

UNSUBSCRIBE from the EAORC Bulletin

Send an email to martin.edwardes@btopenworld.com with the subject "EAORC unsubscribe".

PRODUCED BY AND FOR THE EAORC EMAIL GROUP

EAORC is a fee-free academic internet news service and has no commercial sponsorship or other commercial interests.

EAORC website information is at <http://martinedwardes.me.uk/eaorc/>

If you have received this bulletin, and are unhappy about receiving it, please contact martin.edwardes@btopenworld.com.