

EAORC BULLETIN 926 – 14 March 2021

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NOTICES

PUBLICATION ALERTS

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

PUBLICATION ALERT – Neanderthal Language: Demystifying the Linguistic Powers of our Extinct Cousins

Cambridge University Press: Cambridge, UK (2020)

RUDOLF BOTHA – Neanderthal Language: Demystifying the Linguistic Powers of our Extinct Cousins

Did Neanderthals have language, and if so, what was it like? Scientists agree overall that the behaviour and cognition of Neanderthals resemble that of early modern humans in important ways. However, the existence and nature of Neanderthal language remains a controversial topic. The first in-depth treatment of this intriguing subject, this book comes to the unique conclusion that, collective hunting is a better window on Neanderthal language than other behaviours. It argues that Neanderthal hunters employed linguistic signs akin to those of modern language, but lacked complex grammar. Rudolf Botha unpacks and appraises important inferences drawn by researchers working in relevant branches of archaeology and other prehistorical fields, and uses a large range of multidisciplinary literature to bolster his arguments. An important contribution to this lively field, this book will become a landmark book for students and scholars alike, in essence, illuminating Neanderthals’ linguistic powers.

<https://www.cambridge.org/gb/academic/subjects/languages-linguistics/evolution-language/neanderthal-language-demystifying-linguistic-powers-our-extinct-cousins?format=HB&isbn=9781108491327>

ACADEMIA.EDU – Communication, semiotics, and the language Rubicon

Russian Journal of Communication 10:1 (2018)

ALEXANDER KOZINTSEV – Communication, semiotics, and the language Rubicon

Attempts at combining Uexküll’s ideas with those of Peirce within a single quasi-discipline called ‘biosemiotics’ are ill-founded. Peirce’s ‘interpretant’ sensu lato refers to two qualitatively different mental states, one relating to indexes and

icons (INT 1) and the other to symbols (INT 2). Animal communication is dyadic – the referent is a directly induced mental state (INT 1). Glottocentric communication is triadic because the connection between symbol and INT 1 is mediated by INT 2. Whereas the gradualist view of glottogenesis is erroneous, Müller's and Chomsky's saltationist theories may imply that the idea of language Rubicon is anti-evolutionary. However, the views of Pavlov and Vygotsky and of their modern followers, Deacon and Tomasello, while being Darwinian, support the saltationist scenario. The emergence of the second signal system, of symbols, and of INT 2 was a psychological leap. In human communication, apart from the semiotic triangle (INT 1 – INT 2 – symbol), the dyadic relation between non-symbolic signs and INT 1 still holds.

https://www.academia.edu/35640227/Communication_Semiotics_and_the_Language_Rubicon_2018?email_work_card=vi ew-paper

ACADEMIA.EDU – Meaningful Informational Exchange and Pantomime in Chimpanzees and Bonobos

Human Evolution 30:3-4 141-174 (2015)

ITAI ROFFMAN et al – Meaningful Informational Exchange and Pantomime in Chimpanzees and Bonobos: Implications for Proto-Language in Hominins

The various modes of meaningful informational exchange exhibited by chimpanzees (*Pan troglodytes*) and bonobos (*Pan paniscus*), from the very basic to the complex, are surveyed in comparison to humans, and hypothesized for extinct hominins. Signaling by facial expressions, body language and manual gestures are demonstrated for message transmission, whereas iconographic mark-making and miming are described as more advanced means of communication (requiring high mental competency and developed spatial mapping). Music, vocal control and vocal learning are exemplified as another complex means of conveying context specific bilateral messages. Moreover, personal, social and cultural consequences of the different informational exchange modes in Pan are dealt with in comparison to humans (e.g., individual versus group identity, selfhood and personality). The Pan subjects described in this study include bonobos and chimpanzees from different sanctuaries and zoos in three continents, thus providing a broad vision on the communicational repertoire of captive Pan. This essay confirms that Pan possess all the essential attributes required for hominin-type communication and argues that as such they should be allowed to fulfill their potential as sister species to humans. We propose that further studies conducted in captivity and in the wild will enable the construction of a lexicon for Pan proto-language, and thus promote the development of a Pan/human dialog through alliance building.

https://www.academia.edu/33436667/meaningful_informational_exchange_and_pantomime_in_chimpanzees_and_bonobos_Implications_for_Proto_Language_in_Hominins?email_work_card=title

ACADEMIA.EDU – The Natural Selection of Private and Inner Speech

Frontiers in Psychology February 2020, 11, Article 163 (2020)

SEAN O'CONNOR – The Natural Selection of Private and Inner Speech

This article analyzes the emergence of private and inner speech from the perspective of natural selection, arguing that social speech acts as a selection pressure for the emergence of private speech, that private speech acts as a selection pressure that leads to the emergence of inner speech, and that this view of private and inner speech may help to explain the natural selection of a variety of other traits of the human mind in an asymmetric intraspecific evolutionary arms race.

https://www.academia.edu/45384047/The_Natural_Selection_of_Private_and_Inner_Speech

PSYARXIV PREPRINTS – Non-juxtaposed conjunctive semantic compositionality in wild chimpanzees

PETAR GABRIĆ – Overlooked evidence for non-juxtaposed conjunctive semantic compositionality in wild chimpanzees?

Recent discoveries of semantic compositionality in Japanese tits have enlivened the discussions on the presence of this phenomenon in animal communication. However, data on semantic compositionality in primates are lacking. In this paper, I revisit the study by Boesch [1991 (*Hum Evol* 6:81-89)] who investigated drumming sequences by an alpha male in a chimpanzee (*Pan troglodytes*) community in the Taï National Park, Côte d'Ivoire. A reanalysis of the data reveals that, similar to the Japanese tits, the alpha male produced conjunctively ("additively") combined messages of travel direction change and resting period initiation. Unlike the Japanese tits, the elements of the conjunctive message were not simply juxtaposed but displayed structural reduction reminiscent of fusion in human languages. Also unlike the Japanese tits, the elements of the conjunctive message did not pass the movement test for syntactic constituents. Additionally, limited data possibly point to processes similar to reduplication in human languages.

<https://psyarxiv.com/kgqy9/>

CONFERENCE ALERT – Animal Behavior Society 2021 Virtual Conference, August 3rd-6th, 2021

Together with the ABS Meeting Planning Committee and the ABS Executive Committee, we are excited to invite you to our 2021 Annual Meeting. This will be the second ABS annual meeting to be held in virtual format. While we all miss the pleasures of meeting our colleagues in person during the annual meeting, the virtual format offers undeniable benefits in terms of accessibility, inclusivity, and engagement with our world-wide community of animal behaviorists.

CLICK HERE TO LEARN MORE ABOUT ABS 2021

http://r20.rs6.net/tn.jsp?f=001x1xhkV3ZT7bZ2Z6dNgq4e_EkS822Mfb0gXLS1dMxPtl_xqOJhq2YpRl9BeJ-HrwqQe81_pb-nqzJ7QHNxBm_Rrjk6WVAuo2FDWM8LgeSo3LNuLm7xFImvOYYpxXTD1uiFtAWVyr7wmmhqol-sBuFtV1PQ4PFMYCTIp-

[JkTbTU=&c=VD6BmLio6xY7bWJd_j8J0cYHU20u34D5gTRdKvtG8dw0N2h21vBvow==&ch=8kVfdhDjj1c63hIGeNNEMu-72IRfQtG-gH-1df87SGuwAd9TEIA7fw==](http://r20.rs6.net/tn.jsp?f=001x1xhkV3ZT7bZ2Z6dNgq4e_EkS822Mfb0gXLS1dMxPTRL_xqOJhq2YpRI9BeJ-HrwLYECQUTcm3QfZ3gdc-flkHOJ13Gb9uNa9xqnXUSHFib7hK7C-CdI3_hEoSfGa1ElndFbJ2W0jQt-unnsRizB4ZntB413wAicsf7v02ImZO5eLPVjHRcMXw==&c=VD6BmLio6xY7bWJd_j8J0cYHU20u34D5gTRdKvtG8dw0N2h21vBvw==&ch=8kVfdhDjj1c63hIGeNNEMu-72IRfQtG-gH-1df87SGuwAd9TEIA7fw==)

Registration costs for the meeting will be \$60 for regular ABS members and free for students, postdocs and participants from developing countries who are current ABS members. Click here for additional registration information.

To register please login or create an ABS account using the button below. An active ABS membership is required to register.

[CLICK HERE TO LOGIN AND REGISTER](#)

http://r20.rs6.net/tn.jsp?f=001x1xhkV3ZT7bZ2Z6dNgq4e_EkS822Mfb0gXLS1dMxPTRL_xqOJhq2YpRI9BeJ-HrwLYECQUTcm3QfZ3gdc-flkHOJ13Gb9uNa9xqnXUSHFib7hK7C-CdI3_hEoSfGa1ElndFbJ2W0jQt-unnsRizB4ZntB413wAicsf7v02ImZO5eLPVjHRcMXw==&c=VD6BmLio6xY7bWJd_j8J0cYHU20u34D5gTRdKvtG8dw0N2h21vBvw==&ch=8kVfdhDjj1c63hIGeNNEMu-72IRfQtG-gH-1df87SGuwAd9TEIA7fw==

Abstract Submission Opens: March 25th

Submission Deadline: May 5th

ABS policy is that acceptance of submissions for the talk sessions are on a first-come, first-served basis. Registrants may submit one abstract and mark their preference for a talk or poster presentation.

Please note that abstracts cannot be submitted until you have completed your meeting registration.

[CLICK HERE FOR ABSTRACT SUBMISSION INFORMATION](#)

http://r20.rs6.net/tn.jsp?f=001x1xhkV3ZT7bZ2Z6dNgq4e_EkS822Mfb0gXLS1dMxPTRL_xqOJhq2YpRI9BeJ-HrwO8UiWeL0RSF7BhG7KIFLIXjZiRaQYldGpdNwSnSoGA-Xc6iBehyAAEjPBfz8O1EzsRZVHSyHQqoUofos_p3ZXH0yR8pw1cZA_cCo2VV5bVpV4MXIOitDF8GIQBFBStfZ&c=VD6BmLio6xY7bWJd_j8J0cYHU20u34D5gTRdKvtG8dw0N2h21vBvow==&ch=8kVfdhDjj1c63hIGeNNEMu-72IRfQtG-gH-1df87SGuwAd9TEIA7fw==

CONFERENCE ALERT – 2021 EHBEA Conference, 24th-27th March 2021

Registration for the 2021 EHBEA Conference closes on the 14th March

<https://click.updates.cambridge.org/?qs=29d903da7fd5e331eb7be1ca7938acd8979d74cc1c587c442a63e70aaeafa77fe20d135fcc80345c295b79361ea5709be2fc7bd2e0e10ef5>

This year's conference will be held fully online between 24th-27th March 2021. For more information, please click here.

<https://click.updates.cambridge.org/?qs=29d903da7fd5e331254f32c5ae99df23fd5c7ecf65bbd58a9bac832daf2b58564035dcfd3d6fad0302eabb5cbb42c917304762c915deaa8>

If you would like to attend the conference, please click here to register.

<https://click.updates.cambridge.org/?qs=29d903da7fd5e331f544597cb770431f627e7f749447b332ccb5c73d102a34186de8d1f4af37d127da6dc5cdd78a1efb39bef51585881791>

CONFERENCE ALERT – 30th European Systemic Functional Linguistics – Online 15-17 Sep 2021

The organising committee for the 30th European Systemic Functional Linguistics Conference (ESFLC2021) is delighted to announce that the conference will go ahead this year as a fully online conference. The Conference will take place between 15th and 17th September 2021 and this year's theme is "Social Semiotics and Social Justice".

Please find the Call for Papers at <https://www.esflc2021.org.uk/call-for-papers/>. Follow the website and twitter page for more information and regular updates.

Proposals for papers, workshops and symposia will be accepted via the website from 12th April 2021. Papers that were accepted for the postponed 2020 conference (on the same theme) will be accepted again on resubmission.

Conference email: esflc2021@shu.ac.uk

Conference Twitter page: @esflc2021 #esflc2021

Conference Website: <https://www.esflc2021.org.uk/>

NEWS

BREAKING SCIENCE – Scythians Led More Complex Lives Than Previously Assumed

Scythian-era populations in ancient Ukraine were less mobile than previously thought and were engaged in agro-pastoralism focused primarily on millet agriculture, according to new research led by University of Michigan scientists.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/JMkD46qWbp8/scythian-ukraine-09439.html?utm_source=feedburner&utm_medium=email

SCIENCE DAILY – Oldest documented site of indiscriminate mass killing

DNA, archaeological and skeletal evidence demonstrates an indiscriminate massacre and haphazard burial of 41 individuals from an early pastoralist community in what is now eastern Croatia 6,200 years ago.

<https://www.sciencedaily.com/releases/2021/03/210310150456.htm>

SCIENCE DAILY – Scythian people weren't just nomadic warriors, but sometimes settled down

New research finds that Scythian people of ancient Ukraine led more complex lives than commonly assumed.

<https://www.sciencedaily.com/releases/2021/03/210310150420.htm>

SCIENCE DAILY – I ain't afraid of no ghosts: People with mind-blindness not so easily spooked

New research finds that people with aphantasia -- the inability to visualize mental images -- are harder to spook with scary stories. The findings suggest that imagery may have a closer link to emotions than scientists previously thought.

<https://www.sciencedaily.com/releases/2021/03/210310122434.htm>

SCIENCE DAILY – New study identifies a limit on the range of vocalizations that support infant cognition

A new study finds that although human and non-human primate vocalizations facilitate core cognitive processes in very young human infants, birdsong does not.

<https://www.sciencedaily.com/releases/2021/03/210311142203.htm>

SOCIETY FOR SCIENCE – Finds in a Spanish cave inspire an artistic take on warm-weather Neandertals

Iberia's mild climate fostered a host of resources for hominids often pegged as mammoth hunters.

<http://click.societyforscience-.>

<email.com/?qs=e7e0ed3c43cce16e68e9f4f3f248f65bfa7bbcb3766c8205e163f55b792d4e7169ca935c2f0cd685892b2c9e86dc4bea6a51229ff4313c0172630de600dc8a6b>

PUBLICATIONS

American Journal of Physical Anthropology

PAPERS

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

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

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24247?campaign=wolearlyview>

GARY D. RICHARDS et al – Neanderthal cranial remains from Baume Moula-Guercy (Soyons, Ardèche, France)

The Moula-Guercy hominins derive from deposits chronostratigraphically and biostratigraphically dated to the Eemian Interglacial (MIS 5e). For comparisons we compiled a sample of European and Southwest Asian subadult-adult Middle-to-Late Pleistocene hominins (~MIS 14–MIS 2; N = 184). This sample represents a Preneanderthal–Neanderthal group and a *H. sapiens* group, both of which were further divided into three time-successive subgroups defined by associated marine isotope stages (MIS). Metric and morphological observations were made on the original fossils and a virtual reconstruction of Guercy 1. Developmental age and sex and the minimum–maximum number of individuals were assessed.

Guercy 1 represents the remains of a late stage adolescent (~15–16.0 years) female. Morphological and metric data combine to associate the total morphological pattern expressed in Guercy 1 with our MIS 7–MIS 5e (“Early Neanderthal”) subgroup. Some features, especially those related to the frontal, suggest linkage to a paleodemene comprising the Moula-Guercy, Artenac, La Chaise Abri Suard and, possibly, the Biache-Saint-Vaast samples.

Remains of MIS 7–MIS 5e Neanderthals are rare and fragmentary, especially those dated to the Last Interglacial. The Baume Moula-Guercy sample provides new insights into the total morphological pattern expressed in MIS 5e Neanderthals. Further, our results support earlier suggestions that MIS 7–MIS 5e European hominins represent a morphotype that is distinct from both earlier and later members of the Preneanderthal–Neanderthal group.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24256?campaign=wolearlyview>

Current Biology

PAPERS

CECILIA HEYES – Imitation

Since antiquity, the term ‘imitation’ has been used promiscuously in biology and everyday life. Anything that makes some individuals look or act like others has been called imitation, from the evolutionary process that makes edible butterflies look like their inedible cousins (better known as Batesian mimicry), to the rag-bag of psychological processes that make people wear similar clothes, eat in the same restaurants, and use the same gestures for communication.

<https://email.bt.com/mail/index-rui.jsp?v=2.20.2#app/mail>

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 $0.05\times$ coverage. This leaves the key transitional period covering $\sim 3,400\text{--}2,700$ 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 $\sim 3,400\text{--}1,600$ 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 $\sim 63.3\%$ in some individuals, and variable genetic contributions of steppe herders in Bell Beaker populations. We provide an estimate as late as $\sim 3,800$ years BCE for the admixture between Neolithic and Mesolithic populations and as early as $\sim 2,650$ 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_etoc_email](https://www.cell.com/current-biology/fulltext/S0960-9822(20)31835-2?dgcid=raven_jbs_etoc_email)

Evolutionary Human Sciences

PAPERS

BRISEIDA RESENDE et al with ELISABETTA VISALBERGHI – Revisiting the fourth dimension of tool use: how objects become tools for capuchin monkeys

Culture allows humans to adapt to a diversity of contexts. Participatory experience in technical activities and activity with artifacts provide the basis for learning traditional technical skills. Some populations of non-human animals use tools. The ways in which artifacts influence development of a traditional skill in nonhuman species can provide insight into essential supports for technical traditions in humans, and of shared learning processes across species. In wild bearded-capuchins, nut-cracking leaves edible bits of nuts, nut shells and stones used as hammers at anvil sites. We addressed how mastery of cracking nuts by young monkeys is associated with interactions with these objects. We studied monkeys’ reuse of nuts, hammers and anvils and the outcome of attempts to crack nuts, and from these data derived their behavioral variability and proficiency in nut-cracking. Behavioral variability was the most robust predictor of whether a monkey collects bits of nuts cracked by others or reuses stones and nuts, and was a stronger predictor of proficiency than age. Young monkeys were increasingly likely to reuse the stone used by another after the other monkey left the anvil as they increasingly focused their behavior on actions relevant to cracking nuts.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/revisiting-the-fourth-dimension-of-tool-use-how-objects-become-tools-for-capuchin-monkeys/6C7CB51D91EFE087925C087C3F27629A>

ADAM BAIMEL et al with JOSEPH HENRICH – Machiavellian strategist or cultural learner? Mentalizing and learning over development in a resource-sharing game

Theorists have sought to identify the key selection pressures that drove the evolution of our species’ cognitive abilities, life histories and cooperative inclinations. Focusing on two leading theories, each capable of accounting for many of the rapid changes in our lineage, we present a simple experiment designed to assess the explanatory power of both the Machiavellian Intelligence and the Cultural Brain/Intelligence Hypotheses. Children (aged 3–7 years) observed a novel social interaction that provided them with behavioural information that could either be used to outmanoeuvre a partner in subsequent interactions or for cultural learning. The results show that, even after four rounds of repeated interaction and sometimes lower pay-offs, children continued to rely on copying the observed behaviour instead of harnessing the available social information to strategically extract pay-offs (stickers) from their partners. Analyses further reveal that superior mentalizing abilities are associated with more targeted cultural learning – the selective copying of fewer irrelevant actions – while superior generalized cognitive abilities are associated with greater imitation of irrelevant actions. Neither mentalizing capacities nor more general measures of cognition explain children’s ability to strategically use social information to maximize pay-offs.

These results provide developmental evidence favouring the Cultural Brain/Intelligence Hypothesis over the Machiavellian Intelligence Hypothesis.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/machiavellian-strategist-or-cultural-learner-mentalizing-and-learning-over-development-in-a-resource-sharing-game/3775530F483D2FC580F8C763A990031C>

YAGO LUKSEVICIUS DE MORAES et al – Adult playful individuals have more long- and short-term relationships

Number of romantic/sexual relationships is suggested as a proxy of potential reproductive success. Cross-culturally, both sexes desire playful long-term mates and playfulness predicts relationship quality. It is yet to be tested, however, if playfulness is associated with number of long-term and short-term relationships. We hypothesized that specific playfulness dimensions would correlate with the number of lifetime short- and long-term relationships. Specifically, we expected that Lighthearted playfulness would be associated with more short-term relationships, while Other-directed playfulness would be associated with the number of long-term relationships. In total, 1191 Brazilian adults (mean age=28.7 years, SD=10.2) responded to online sociodemographic questions and playfulness inventory (OLIW). Other-directed playfulness positively predicted the number of short-term and long-term partners in men and Whimsical playfulness predicted number of short-term relationships in women. This suggests that playfulness is used by both sexes to compete for access to more and better mates, but in slightly different ways. For the first time, we show that playful adults have more partners and that playfulness can be used as a part of mating strategies.

<https://www.cambridge.org/core/journals/evolutionary-human-sciences/article/adult-playful-individuals-have-more-long-and-shortterm-relationships/C6F025906BD5678DC13F723E5FD6BF77>

Frontiers in Neuroscience

PAPERS

TAICHENG HUANG, ZONGLEI ZHEN & JIA LIU – Semantic Relatedness Emerges in Deep Convolutional Neural Networks Designed for Object Recognition

Human not only can effortlessly recognize objects, but also characterize object categories into semantic concepts with a nested hierarchical structure. One dominant view is that top-down conceptual guidance is necessary to form such hierarchy. Here we challenged this idea by examining whether deep convolutional neural networks (DCNNs) could learn relations among objects purely based on bottom-up perceptual experience of objects through training for object categorization. Specifically, we explored representational similarity among objects in a typical DCNN (e.g., AlexNet), and found that representations of object categories were organized in a hierarchical fashion, suggesting that the relatedness among objects emerged automatically when learning to recognize them. Critically, the emerged relatedness of objects in the DCNN was highly similar to the WordNet in human, implying that top-down conceptual guidance may not be a prerequisite for human learning the relatedness among objects. In addition, the developmental trajectory of the relatedness among objects during training revealed that the hierarchical structure was constructed in a coarse-to-fine fashion, and evolved into maturity before the establishment of object recognition ability. Finally, the fineness of the relatedness was greatly shaped by the demand of tasks that the DCNN performed, as the higher superordinate level of object classification was, the coarser the hierarchical structure of the relatedness emerged. Taken together, our study provides the first empirical evidence that semantic relatedness of objects emerged as a by-product of object recognition in DCNNs, implying that human may acquire semantic knowledge on objects without explicit top-down conceptual guidance.

https://www.frontiersin.org/articles/10.3389/fncom.2021.625804/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_1571277_55_Neuros_20210309_arts_A

Frontiers in Psychology

PAPERS

ELIF CANSEZA KAPLAN et al – Do Musicians and Non-musicians Differ in Speech-on-Speech Processing?

Earlier studies have shown that musically trained individuals may have a benefit in adverse listening situations when compared to non-musicians, especially in speech-on-speech perception. However, the literature provides mostly conflicting results. In the current study, by employing different measures of spoken language processing, we aimed to test whether we could capture potential differences between musicians and non-musicians in speech-on-speech processing. We used an offline measure of speech perception (sentence recall task), which reveals a post-task response, and online measures of real time spoken language processing: gaze-tracking and pupillometry. We used stimuli of comparable complexity across both paradigms and tested the same groups of participants. In the sentence recall task, musicians recalled more words correctly than non-musicians. In the eye-tracking experiment, both groups showed reduced fixations to the target and competitor words' images as the level of speech maskers increased. The time course of gaze fixations to the competitor did not differ between groups in the speech-in-quiet condition, while the time course dynamics did differ between groups as the two-talker masker was added to the target signal. As the level of two-talker masker increased, musicians showed reduced lexical competition as indicated by the gaze fixations to the competitor. The pupil dilation data showed differences mainly in one target-to-masker ratio. This does not allow to draw conclusions regarding potential differences in the use of cognitive resources between groups. Overall, the eye-tracking measure enabled us to observe that musicians may be using a different strategy than non-musicians to attain spoken word recognition as the noise level increased. However, further investigation

with more fine-grained alignment between the processes captured by online and offline measures is necessary to establish whether musicians differ due to better cognitive control or sound processing.

https://www.frontiersin.org/articles/10.3389/fpsyg.2021.623787/full?utm_source=FAAE&utm_medium=EMLF&utm_campaign=MRK_1571277_69_Psycho_20210309_arts_A

Language and Cognition

PAPERS

STEFAN HARTMANN, NIKOLAS KOCH & ANTJE ENDESFELDER QUICK – The traceback method in child language acquisition research: Identifying patterns in early speech

This paper discusses the traceback method, which has been the basis of some influential papers on first language acquisition. The method sets out to demonstrate that many or even all utterances in a test corpus (usually the last two sessions of recording) can be accounted for with the help of recurrent fixed strings (like What's that?) or frame-and-slot patterns (like [What's X?]) that can also be identified in the remaining dataset (i.e., the previous sessions of recording). This is taken as evidence that language learning is much more item-based than previously assumed. In the present paper we sketch the development of the method over the last two decades, and discuss its relation to usage-based theory, as well as the cognitive plausibility of its components, and we highlight both its potential and its limitations.

<https://www.cambridge.org/core/journals/language-and-cognition/article/traceback-method-in-child-language-acquisition-research-identifying-patterns-in-early-speech/EA3602D82C2904365A827D88F033AA2C>

Nature Communications

PAPERS

HIDEKI OKU, NAOHIKO IDE & NAOMICHI OGIHARA – Forward dynamic simulation of Japanese macaque bipedal locomotion demonstrates better energetic economy in a virtualised plantigrade posture

A plantigrade foot with a large robust calcaneus is regarded as a distinctive morphological feature of the human foot; it is presumably the result of adaptation for habitual bipedal locomotion. The foot of the Japanese macaque, on the other hand, does not have such a feature, which hampers it from making foot–ground contact at the heel during bipedal locomotion. Understanding how this morphological difference functionally affects the generation of bipedal locomotion is crucial for elucidating the evolution of human bipedalism. In this study, we constructed a forward dynamic simulation of bipedal locomotion in the Japanese macaque based on a neuromusculoskeletal model to evaluate how virtual manipulation of the foot structure from digitigrade to plantigrade affects the kinematics, dynamics, and energetics of bipedal locomotion in a nonhuman primate whose musculoskeletal anatomy is not adapted to bipedalism. The normal bipedal locomotion generated was in good agreement with that of actual Japanese macaques. If, as in human walking, the foot morphology was altered to allow heel contact, the vertical ground reaction force profile became double-peaked and the cost of transport decreased. These results suggest that evolutionary changes in the foot structure were important for the acquisition of human-like efficient bipedal locomotion.

<https://www.nature.com/articles/s42003-021-01831-w>

Nature Scientific Reports

PAPERS

JAVIER RODRIGUEZ LUIS et al – The Y chromosome of autochthonous Basque populations and the Bronze Age replacement

Here we report on the Y haplogroup and Y-STR diversity of the three autochthonous Basque populations of Alava ($n = 54$), Guipuzcoa ($n = 30$) and Vizcaya ($n = 61$). The same samples genotyped for Y-chromosome SNPs were typed for 17 Y-STR loci (DYS19, DYS385a/b, DYS398I/II, DYS390, DYS391, DYS392, DYS393, DYS437, DYS438, DYS439, DYS448, DYS456, DYS458, DYS635, Y-GATA H4) using the AmpFLISTR Yfiler system. Six major haplogroups (R, I, E, J, G, and DE) were detected, being R-S116 (P312) haplogroup the most abundant at 75.0% in Alava, 86.7% in Guipuzcoa and 87.3% in Vizcaya. Age estimates for the R-S116 mutation in the Basque Country are 3975 ± 303 , 3680 ± 345 and 4553 ± 285 years for Alava, Guipuzcoa and Vizcaya, respectively. Pairwise Rst genetic distances demonstrated close Y-chromosome affinities among the three autochthonous Basque populations and between them and the male population of Ireland and Gascony. In a MDS plot, the population of Ireland segregates within the Basque cluster and closest to the population of Guipuzcoa, which plots closer to Ireland than to any of the other Basque populations. Overall, the results support the notion that during the Bronze Age a dispersal of individuals carrying the R-S116 mutation reached the Basque Country replacing the Paleolithic/Neolithic Y chromosome of the region.

<https://www.nature.com/articles/s41598-021-84915-1>

EDUARDO MAYORAL et al – Tracking late Pleistocene Neandertals on the Iberian coast

Here, we report the recent discovery of 87 Neandertal footprints on the Southwest of the Iberian Peninsula (Doñana shoreline, Spain) located on an upper Pleistocene aeolian littoral setting (about 106 ± 19 kyr). Morphometric comparisons, high resolution digital photogrammetric 3D models and detailed sedimentary analysis have been provided to characterize the footprints and the palaeoenvironment. The footprints were impressed in the shoreline of a hypersaline swamped area

related to benthic microbial mats, close to the coastline. They have a rounded heel, a longitudinal arch, relatively short toes, and adducted hallux, and represent the oldest upper Pleistocene record of Neandertal footprints in the world. Among these 87 footprints, 31 are longitudinally complete and measure from 14 to 29 cm. The calculated statures range from 104 to 188 cm, with half of the data between 130 and 150 cm. The wide range of sizes of the footprints suggests the existence of a social group integrated by individuals of different age classes but dominated, however, by non-adult individuals. The footprints, which are outside the flooded area are oriented perpendicular to the shoreline. These 87 footprints reinforce the ecological scenario of Neandertal groups established in coastal areas.

<https://www.nature.com/articles/s41598-021-83413-8>

YUKAKO INOUE et al – People prefer joint outcome prosocial resource distribution towards future others

Today, developing and maintaining sustainable societies is becoming a notable social concern, and studies on altruism and prosociality toward future generations are increasing in importance. Although altruistic behaviors toward future generations have previously been observed in some experimental situations, it remains unknown whether prosocial preferences toward future others are based on equality or joint outcome orientations. In the present research, we exploratorily investigated preferences regarding resource distribution by manipulating the time points (i.e., present/future) of the participants and their imaginary partners. The results indicate that prosocial preference toward future others was as strong as that toward present others and seemed to be based on a joint outcome prosocial preference. Notably, when participants and their partners were at different time points, participants preferred to leave resources for the persons in the future. The findings indicate that the type of altruistic preference toward future others may differ from that toward present others, which is mainly equality.

<https://www.nature.com/articles/s41598-021-84796-4>

BRUNA EUGÊNIA FERREIRA MOTA et al – Pictures of social interaction prompt a sustained increase of the smile expression and induce sociability

Viewing pictures of social interaction can facilitate approach behaviors. We conducted two studies to investigate if social interaction cues, empathy, and/or social touch modulate facial electromyographic (EMG) reactivity (as evidenced by the zygomaticus major and corrugator supercilii muscles) and mood states. We presented bonding pictures (depicting social interaction) and control pictures (without social interaction) while continuously recording zygomatic and corrugator EMG activities. In both studies, picture blocks were paired by valence and arousal. All participants were college students. In study 1, participants ($n = 80$, 47 women) read relevant priming texts immediately before viewing each block of 14 pictures. In study 2, participants did not read ($n = 82$, 63 women) priming texts before each block of 28 pictures. In study 1 and study 2, participants also completed mood states questionnaires to assess sociability and altruistic behavior. Empathy and social touch frequency were also assessed by self-reported questionnaires. In both studies, bonding pictures increased the zygomatic activity and the self-reported sociability feeling compared to control pictures. Only in study 2, bonding pictures decreased median corrugator activity compared to control pictures. We concluded that social interaction cues were efficient to increase sociability and prompt a sustained smile expression regardless of priming texts.

<https://www.nature.com/articles/s41598-021-84880-9>

New Scientist

NEWS

Indian stone tool may be earliest evidence of humans outside Africa

Ancestral humans may have left Africa half a million years earlier than generally thought, according to archaeologists who claim to have found a primitive stone tool from 2.6 million years ago in northern India.

<https://www.newscientist.com/article/2270525-indian-stone-tool-may-be-earliest-evidence-of-humans-outside-africa/#ixzz6or0JQhjt>

PLoS One

PAPERS

KALI WOODRUFF CARR et al – Birdsong fails to support object categorization in human infants

Recent evidence reveals a precocious link between language and cognition in human infants: listening to their native language supports infants' core cognitive processes, including object categorization, and does so in a way that other acoustic signals (e.g., time-reversed speech; sine-wave tone sequences) do not. Moreover, language is not the only signal that confers this cognitive advantage: listening to vocalizations of non-human primates also supports object categorization in 3- and 4-month-olds. Here, we move beyond primate vocalizations to clarify the breadth of acoustic signals that promote infant cognition. We ask whether listening to birdsong, another naturally produced animal vocalization, also supports object categorization in 3- and 4-month-old infants. We report that listening to zebra finch song failed to confer a cognitive advantage. This outcome brings us closer to identifying a boundary condition on the range of non-linguistic acoustic signals that initially support infant cognition.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0247430>

ALICIA R. VENTRESCA MILLER et al – Re-evaluating Scythian lifeways: Isotopic analysis of diet and mobility in Iron Age Ukraine

The Scythians are frequently presented, in popular and academic thought alike, as highly mobile warrior nomads who posed a great economic risk to growing Mediterranean empires from the Iron Age into the Classical period. Archaeological studies provide evidence of first millennium BCE urbanism in the steppe while historical texts reference steppe agriculture, challenging traditional characterizations of Scythians as nomads. However, there have been few direct studies of the diet and mobility of populations living in the Pontic steppe and forest-steppe during the Scythian era. Here, we analyse strontium, oxygen, and carbon isotope data from human tooth enamel samples, as well as nitrogen and carbon isotope data of bone collagen, at several Iron Age sites across Ukraine commonly associated with ‘Scythian’ era communities. Our multi-isotopic approach demonstrates generally low levels of human mobility in the vicinity of urban locales, where populations engaged in agro-pastoralism focused primarily on millet agriculture. Some individuals show evidence for long-distance mobility, likely associated with significant inter-regional connections. We argue that this pattern supports economic diversity of urban locales and complex trading networks, rather than a homogeneous nomadic population.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0245996>

MARIO NOVAK et al with DAVID REICH – Genome-wide analysis of nearly all the victims of a 6200 year old massacre

Paleogenomic and bioanthropological studies of ancient massacres have highlighted sites where the victims were male and plausibly died all in battle, or were executed members of the same family as might be expected from a killing intentionally directed at subsets of a community, or where the massacred individuals were plausibly members of a migrant community in conflict with previously established groups, or where there was evidence that the killing was part of a religious ritual. Here we provide evidence of killing on a massive scale in prehistory that was not directed to a specific family, based on genome-wide ancient DNA for 38 of the 41 documented victims of a 6,200 year old massacre in Potočani, Croatia and combining our results with bioanthropological data. We highlight three results: (i) the majority of individuals were unrelated and instead were a sample of what was clearly a large farming population, (ii) the ancestry of the individuals was homogenous which makes it unlikely that the massacre was linked to the arrival of new genetic ancestry, and (iii) there were approximately equal numbers of males and females. Combined with the bioanthropological evidence that the victims were of a wide range of ages, these results show that large-scale indiscriminate killing is a horror that is not just a feature of the modern and historic periods, but was also a significant process in pre-state societies.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0247332>

PNAS

COMMENTARIES

JEAN-JACQUES HUBLIN – How old are the oldest *Homo sapiens* in Far East Asia?

There is abundant genetic and paleontological evidence supporting the African origin of our species. At some point in its evolution, *Homo sapiens* spread out of Africa into Eurasia, replacing or partially absorbing local populations of other hominin forms. Ultimately, it colonized regions where no humans had ever lived before. Although extant humans display some physical variations resulting from adaptation to local conditions and isolation, they all share a recent African ancestry. How many times, when, and why this dispersal out of Africa occurred have been a matter of continuous debate in the field of paleoanthropology. In the past decade, research efforts have intensified in Far East Asia to elucidate the timing of the arrival of our species and have produced several notable publications. In PNAS, Sun et al. question the dating of some of the foremost Chinese hominin sites that have been central to these discussions. They also raise important questions about the way the archeological and fossil records in this region can be interpreted.

<https://www.pnas.org/content/118/10/e2101173118?etoc=>

Proceedings of the Royal Society B

PAPERS

BILL THOMPSON & THOMAS L. GRIFFITHS – Human biases limit cumulative innovation

Is technological advancement constrained by biases in human cognition? People in all societies build on discoveries inherited from previous generations, leading to cumulative innovation. However, biases in human learning and memory may influence the process of knowledge transmission, potentially limiting this process. Here, we show that cumulative innovation in a continuous optimization problem is systematically constrained by human biases. In a large ($n = 1250$) behavioural study using a transmission chain design, participants searched for virtual technologies in one of four environments after inheriting a solution from previous generations. Participants converged on worse solutions in environments misaligned with their biases. These results substantiate a mathematical model of cumulative innovation in Bayesian agents, highlighting formal relationships between cultural evolution and distributed stochastic optimization. Our findings provide experimental evidence that human biases can limit the advancement of knowledge in a controlled laboratory setting, reinforcing concerns about bias in creative, scientific and educational contexts.

<https://royalsocietypublishing.org/doi/abs/10.1098/rspb.2020.2752>

MAURICIO CANTOR et al – Social network architecture and the tempo of cumulative cultural evolution

The ability to build upon previous knowledge—cumulative cultural evolution—is a hallmark of human societies. While cumulative cultural evolution depends on the interaction between social systems, cognition and the environment, there is increasing evidence that cumulative cultural evolution is facilitated by larger and more structured societies. However, such effects may be interlinked with patterns of social wiring, thus the relative importance of social network architecture as an additional factor shaping cumulative cultural evolution remains unclear. By simulating innovation and diffusion of cultural traits in populations with stereotyped social structures, we disentangle the relative contributions of network architecture from those of population size and connectivity. We demonstrate that while more structured networks, such as those found in multilevel societies, can promote the recombination of cultural traits into high-value products, they also hinder spread and make products more likely to go extinct. We find that transmission mechanisms are therefore critical in determining the outcomes of cumulative cultural evolution. Our results highlight the complex interaction between population size, structure and transmission mechanisms, with important implications for future research.

<https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.3107>

Trends in Cognitive Sciences

PAPERS

VIRGINIA SLAUGHTER – Do Newborns Have the Ability to Imitate?

Neonatal imitation is widely accepted as fact and cited as evidence of an inborn mirror neuron system that underpins human social behaviour, even though its existence has been debated for decades. The possibility that newborns do not imitate was reinvigorated recently by powerful longitudinal data and novel analyses. Although the evidence is still mixed, recent research progresses the debate by ruling out some long-standing explanations for why the effect might be difficult to detect, by showing that only some research groups observe it, and by revealing indications that the published literature is biased. Further advances will be made with updated testing procedures and reporting standards, and investigation of new research questions such as how infants could learn to imitate.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(21\)00050-4?dgcid=raven_jbs_aip_email](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(21)00050-4?dgcid=raven_jbs_aip_email)

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