EAORC BULLETIN 913 – 13 December 2020

CONTENTS

EAORC NOTICES

PUBLICATION ALERTS

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

RESEARCHGATE – Explaining human altruism

Synthese, published online 5 October 2020

MICHAEL VLERICK – Explaining human altruism

Humans often behave altruistically towards strangers with no chance of reciprocation. From an evolutionary perspective, this is puzzling. The evolution of altruistic cooperative behavior—in which an organism's action reduces its fitness and increases the fitness of another organism (e.g. by sharing food)—only makes sense when it is directed at genetically related organisms (kin selection) or when one can expect the favor to be returned (reciprocal altruism). Therefore, evolutionary theorists such as Sober and Wilson have argued that we should revise Neo-Darwininian evolutionary theory. They argue that human altruism evolved through group selection in which groups of altruists were naturally selected because they had a comparative advantage over other groups. Wilson and Sober's hypothesis attracted followers but is rejected by most of their peers. The heated debate between advocates and critics of group selection often suffers from a lack of conceptual clarity. In response, I set out to clearly distinguish 'genetic' from 'cultural' group selection (developed by Boyd, Richerson & Henrich) and argue that the latter does not face the potentially debilitating problems plaguing the former. I defend the claim that human altruistic dispositions evolved through cultural group selection and gene-culture coevolution and offer empirical evidence in support. I also argue that actual altruistic behavior often goes beyond the kind of behavior humans have evolved to display. Conscious and voluntary reasoning processes, I show, have an important role in altruistic behavior. This is often overlooked in the scientific literature on human altruism.
https://www.researchgate.net/publication/344610819_Explaining_human_altruism

NEWS

BREAKING SCIENCE – Paleolithic Humans Deliberately Crossed Ocean to Japanese Islands 35,000 Yrs Ago

Paleolithic people deliberately crossed the challenging ocean to migrate to the Ryukyu Islands of southwestern Japan, even though the islands would not have been visible on the horizon when they set out, according to new research by scientists from the University Museum at the University of Tokyo, the National Taiwan University's Institute of Oceanography and Japan's National Museum of Nature and Science.
http://feedproxy.google.com/~r/BreakingScienceNews/~3/Kb6mcwdSRXY/taiwan-ryukyu-islands-migration-09124.html?utm_source=feedburner&utm_medium=email

LIVESCIENCE – Child's bones buried 40,000 years ago solve long-standing Neanderthal mystery

We don't know whether it was a boy or a girl. But this ancient child, a Neanderthal, only made it to about two years of age. This short life, lived about 41,000 years ago, was uncovered at a famous archaeological site in southwestern France, called La Ferrassie. The remains of several Neanderthals have been found there, including the most recent discovery, the child, known only as La Ferrassie 8.
https://www.livescience.com/neanderthal-child-burial-solves-mystery.html

SAPIENS – A Startling Link Between Neanderthals and COVID-19

Researchers recently announced a discovery that connects Neanderthal DNA and people who experience severe symptoms from COVID-19. Hugo Zeberg, one of the scientists who led the study, speaks with SAPIENS host Chip Colwell.
https://www.sapiens.org/biology/neanderthals-covid-19/

SCIENCE DAILY – Natural selection plays major role in an organism's capacity to evolve and adapt

It's widely assumed within the evolutionary biology field that weak selection provides an advantage to an organism's ability to evolve. But new research may offer the first experimental proof that strong selection pressure enhances an organism's evolvability, by boosting robustness.
https://www.sciencedaily.com/releases/2020/12/201203144236.htm

SCIENCE DAILY – Honey bees fend off giant hornets with animal feces

Researchers discovered honeybees in Vietnam collect and apply animal dung around hive entrances to deter deadly nest raids by giant hornets. This finding is the first to document the use of tools by honeybees. Researchers found the hornets spent less time and did less chewing at hives with moderate to heavy dung spotting. They were also less likely to launch mass attacks on the more heavily spotted hives.
https://www.sciencedaily.com/releases/2020/12/201209170706.htm

SCIENCE DAILY – Neanderthals buried their dead: New evidence

Was burial of the dead practiced by Neanderthals or is it an innovation specific to our species? Researchers have demonstrated, using a variety of criteria, that a Neanderthal child was buried, probably around 41,000 years ago, at the Ferrassie site (Dordogne, France).
https://www.sciencedaily.com/releases/2020/12/201209140358.htm

SCIENCE DAILY – Researcher adds to timeline of human evolution by studying an island fox

Nearly two decades ago, a small-bodied 'human-like' fossil, Homo floresiensis, was discovered on an island in Indonesia. Some scientists have credited the find, now nicknamed 'Hobbit,' as representative of a human ancestor who developed dwarfed features after living on the island, while others suggest it represents a modern human suffering from some type of disease because of its distinct human-like face and small brain.
https://www.sciencedaily.com/releases/2020/12/201209170647.htm

SCIENCE DAILY – Brains work harder while processing descriptions of motion in other languages

Different languages describe motion differently, according to distinct lexical rules. And though we may not consciously notice those rules, we follow them -- and researchers have found they affect how our brains perceive and process descriptions of physical movement.
https://www.sciencedaily.com/releases/2020/12/201209170625.htm

SOCIETY FOR SCIENCE – Two stones fuel debate over when America's first settlers arrived

Stones possibly used to break mastodon bones 130,000 years ago in what is now California get fresh scrutiny.
http://click.societyforscience-email.com/?qs=04594d77881e899c56f58765f8d43fee202e8ffda5b26dfe23fcf62864ea15c3d2512ec649786035382dd75fa22e9ed230d813e97613b4d9

SOCIETY FOR SCIENCE – Ancient humans may have deliberately voyaged to Japan's Ryukyu Islands

Satellite-tracked buoys suggest that long ago, a remote Japanese archipelago was reached by explorers on purpose, not accidentally.
http://click.societyforscience-email.com/?qs=57b77435755a5bf4d4db7d1ad9522754331b13cc97b619e3d45100513a60fab624f4b7aca9b1d6e75263cc571b1fc9e0d37479b1a7b06576

PUBLICATIONS

American Journal of Physical Anthropology

PAPERS

YUKI KINOSHITA et al – A comparison of axial trunk rotation during bipedal walking between humans and Japanese macaques

Human walking involves out-of-phase axial rotations of the thorax and pelvis. It has long been believed that this rotational capability is a distinctive feature of the genus Homo. However, Thompson et al. (2015) showed that chimpanzees also counter-rotate their thorax relative to the pelvis during bipedal walking, which raised questions regarding the origins and development of this characteristic. In this study, we measured the axial rotation of the trunk during bipedal walking in humans and macaques to investigate if intra-trunk axial rotations are observed in non-hominoid primate species.
We collected three-dimensional trunk kinematic data during bipedal walking in six humans and five Japanese macaques. The human subjects walked on a treadmill, and the animal subjects walked on a 5-m runway. During walking, the positions of

cluster markers, which defined trunk segments, were recorded by multiple video cameras. Segmental xyz coordinates were digitized, and transverse rotations were calculated using motion analysis software.
Although trunk rotations in the global coordinate system were greater in macaques than in humans, the intra-trunk rotation and range of motion showed a similar pattern in the two species.
Thoracic rotation relative to the pelvis during bipedal walking is not unique to the hominid lineage but rather a characteristic generated by the mechanical requirements of bipedal walking. The fact that the range of motion of counter rotation is similar in these species infers that an optimal range of rotation exists for bipedal walking.
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.24136?campaign=woletoc

ZACHARY COFRAN, MADELEINE BOONE & MARISA PETTICORD – Virtually estimated endocranial volumes of the Krapina Neandertals
The Krapina rock shelter has yielded a large assemblage of early Neandertals. Although endocranial volume (ECV) has been estimated for four individuals from the site, several published values that appear in the literature warrant revisiting.
We used virtual methods, including high-resolution surface models of fossils and 3D geometric morphometrics, to reconstruct endocasts and estimate ECV for five Krapina crania. We generated 10 reconstructions of each endocast to quantify missing data uncertainty. To assess the method and our ECV estimates, we applied these techniques to the Spy II Neandertal, and estimated ECV of a human reference endocast simulating the missing data of the Krapina fossils.
We obtained an average ECV estimate of 1,526 cm3 for Spy II, consistent with previous research. Estimated ECV of juveniles Krapina 1 and 2 average 1,419 and 1,286 cm3, respectively. Estimates for the relatively complete adults Krapina 3 and 6 range from 1,247 to 1,310 cm3 and 1,135 to 1,207 cm3, respectively, while the more fragmentary Krapina 5 averaged 1,397 cm3. The missing data simulation suggests more fragmentary crania yield more uncertain and possibly overestimated ECVs.
We have provided new estimates of brain size of the Krapina Neandertals, including the first estimates for Krapina 2. Brain size at Krapina was similar to other pre-Würm Neandertals, within the range of but lower than the average of later Neandertals. Although the virtual approach overcomes many challenges of fossil preservation, our results are nevertheless subject to future revision.
https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.24165?campaign=woletoc

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Current Biology

PAPERS

ORI OSSMY & KAREN E. ADOLPH – Real-Time Assembly of Coordination Patterns in Human Infants
Flexibility and generativity are fundamental aspects of functional behavior that begin in infancy and improve with experience. How do infants learn to tailor their real-time solutions to variations in local conditions? On a nativist view, the developmental process begins with innate prescribed solutions, and experience elaborates on those solutions to suit variations in the body and the environment. On an emergentist view, infants begin by generating a variety of strategies indiscriminately, and experience teaches them to select solutions tailored to the current relations between their body and the environment. To disentangle these accounts, we observed coordination patterns in 11-month-old pre-walking infants with a range of cruising (moving sideways in an upright posture while holding onto a support) and crawling experience as they cruised over variable distances between two handrails they held for support. We identified infants' coordination patterns using a novel combination of computer-vision, machine-learning, and time-series analyses. As predicted by the emergentist view, the least experienced infants generated multiple coordination patterns inconsistently regardless of body size and handrail distance, whereas the most experienced infants tailored their coordination patterns to body-environment relations and switched solutions only when necessary. Moreover, the beneficial effects of experience were specific to cruising and not crawling, although both skills involve anti-phase coordination among the four limbs. Thus, findings support an emergentist view and suggest that everyday experience with the target skill may promote "learning to learn," where infants learn to assemble the appropriate solution for new problems on the fly.
https://www.cell.com/current-biology/fulltext/S0960-9822(20)31263-X

Mind & Language

PAPERS

AXEL CONSTANT et al with ANDY CLARK – Extended active inference: Constructing predictive cognition beyond skulls
Cognitive niche construction is the process whereby organisms create and maintain cause–effect models of their niche as guides for fitness influencing behavior. Extended mind theory claims that cognitive processes extend beyond the brain to include predictable states of the world. Active inference and predictive processing in cognitive science assume that organisms embody predictive (i.e., generative) models of the world optimized by standard cognitive functions (e.g., perception, action, learning). This paper presents an active inference formulation that views cognitive niche construction as a cognitive function aimed at optimizing organisms' generative models. We call that process of optimization extended active inference.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12330

ROBERT J. MATTHEWS – That-clauses: Some bad news for relationalism about the attitudes
Propositional relationalists about the attitudes claim to find support for their view in what they assume to be the dyadic relational logical form of the predicates by which we canonically attribute propositional attitudes. In this paper I argue that the considerations that they adduce in support of this assumption, specifically for the assumption that the that-clauses that figure in these predicates are singular terms, are suspect on linguistic grounds. Propositional relationalism may nonetheless be true, but the logical form of attitude predicates provides no grounds for thinking this to be so.
https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12318

Nature Scientific Reports

PAPERS

YOUSUKE KAIFU et al – Palaeolithic voyage for invisible islands beyond the horizon
How Palaeolithic maritime transportation originated and developed is one of the key questions to understand the world-wide dispersal of modern humans that began 70,000–50,000 years ago. However, although the earliest evidence of maritime migration to Sahul (Australia and New Guinea) has been intensively studied, succeeding development of Paleolithic maritime activity is poorly understood. Here, we show evidence of deliberate crossing of challenging ocean that occurred 35,000–30,000 years ago in another region of the western Pacific, the Ryukyu Islands of southwestern Japan. Our analysis of satellite-tracked buoys drifting in the actual ocean demonstrated that accidental drift does not explain maritime migration to this 1200 km-long chain of islands, where the local ocean flows have kept the same since the late Pleistocene. Migration to the Ryukyus is difficult because it requires navigation across one of the world's strongest current, the Kuroshio, toward an island that lay invisible beyond the horizon. This suggests that the Palaeolithic island colonization occurred in a wide area of the western Pacific was a result of human's active and continued exploration, backed up by technological advancement.
https://www.nature.com/articles/s41598-020-76831-7

RITA MENDONÇA, MARGARIDA V. GARRIDO & GÜN R. SEMIN – Asymmetric practices of reading and writing shape visuospatial attention and discrimination
Movement is generally conceived of as unfolding laterally in the writing direction that one is socialized into. In 'Western' languages, this is a left-to-right bias contributing to an imbalance in how attention is distributed across space. We propose that the rightward attentional bias exercises an additional unidirectional influence on discrimination performance thus shaping the congruency effect typically observed in Posner-inspired cueing tasks. In two studies, we test whether faces averted laterally serve as attention orienting cues and generate differences in both target discrimination latencies and gaze movements across left and right hemifields. Results systematically show that right-facing faces (i.e. aligned with the script direction) give rise to an advantage for cue-target pairs pertaining to the right (versus left) side of space. We report an asymmetry between congruent conditions in the form of right-sided facilitation for: (a) response time in discrimination decisions (experiment 1–2) and (b) eye-gaze movements, namely earlier onset to first fixation in the respective region of interest (experiment 2). Left and front facing cues generated virtually equal exploration patterns, confirming that the latter did not prime any directionality. These findings demonstrate that visuospatial attention and consequent discrimination are highly dependent on the asymmetric practices of reading and writing.
https://www.nature.com/articles/s41598-020-78080-0

ANTOINE BALZEAU et al with JEAN-JACQUES HUBLIN – Pluridisciplinary evidence for burial for the La Ferrassie 8 Neandertal child
The origin of funerary practices has important implications for the emergence of so-called modern cognitive capacities and behaviour. We provide new multidisciplinary information on the archaeological context of the La Ferrassie 8 Neandertal skeleton (grand abri of La Ferrassie, Dordogne, France), including geochronological data -14C and OSL-, ZooMS and ancient DNA data, geological and stratigraphic information from the surrounding context, complete taphonomic study of the skeleton and associated remains, spatial information from the 1968–1973 excavations, and new (2014) fieldwork data. Our results show that a pit was dug in a sterile sediment layer and the corpse of a two-year-old child was laid there. A hominin bone from this context, identified through Zooarchaeology by Mass Spectrometry (ZooMS) and associated with Neandertal based on its mitochondrial DNA, yielded a direct 14C age of 41.7–40.8 ka cal BP (95%), younger than the 14C dates of the overlying archaeopaleontological layers and the OSL age of the surrounding sediment. This age makes the bone one of the most recent directly dated Neandertals. It is consistent with the age range for the Châtelperronian in the site and in this region and represents the third association of Neandertal taxa to Initial Upper Palaeolithic lithic technocomplex in Western Europe. A detailed multidisciplinary approach, as presented here, is essential to advance understanding of Neandertal behavior, including funerary practices.
https://www.nature.com/articles/s41598-020-77611-z

ANDREW T. GLOSTER, MARCIA T. B. RINNER & ANDREA H. MEYER – Increasing prosocial behavior and decreasing selfishness in the lab and everyday life
The tension between selfishness and prosocial behavior is crucial to understanding many social interactions and conflicts. Currently little is known how to promote prosocial behaviors, especially in naturally occurring relationships outside the laboratory. We examined whether a psychological micro-intervention would promote prosocial behaviors in couples. Across

two studies, we randomized dyads of couples to a micro-intervention (15 min), which increased prosocial behaviors by 28% and decreased selfish behaviors by 35% a week later in behavioral games in a dose–response manner. Using event sampling methodology, we further observed an increase in prosocial behaviors across one week that was most pronounced in participants who received the intervention. These results from the laboratory and everyday life are important for researchers interested in prosocial behavior and selfishness and have practical relevance for group interactions.
https://www.nature.com/articles/s41598-020-78251-z

New Scientist

NEWS

Can you ever know yourself? Whatever the answer, it is worth trying
"Know thyself." The first of three maxims said to have been inscribed in the forecourt of the Temple of Apollo in Delphi sounds grand. What it actually means has been a matter of debate for millennia, and when it comes to knowing ourselves, modern science has made things deliciously more complex, too.
https://www.newscientist.com/article/mg24833124-700-can-you-ever-know-yourself-whatever-the-answer-it-is-worth-trying/#ixzz6gFLqfwt2

Ancient rock art reveals life of the Amazon's earliest inhabitants
An extensive collection of ancient rock art and archaeological remains found deep in the Colombian Amazon offers a rare glimpse into the lives of the earliest people to inhabit the region.
https://www.newscientist.com/article/2262013-ancient-rock-art-reveals-life-of-the-amazons-earliest-inhabitants/#ixzz6gFPXFJPN

ARTICLES

RICHARD WEBB – Do we have free will or are all our decisions predetermined?
According to the laws of physics, everything we do follows inevitably from what happened before – and yet we're convinced we can change the world. Can we?
https://www.newscientist.com/article/mg24833121-800-do-we-have-free-will-or-are-all-our-decisions-predetermined/#ixzz6gFO6Txxc

GRAHAM LAWTON – Why it's the aliens living inside you that create your sense of you
Foreign cells within our bodies help determine our mental states and even contribute to our immune defences – making it tricky to define where you end and the others begin
https://www.newscientist.com/article/mg24833121-700-why-its-the-aliens-living-inside-you-that-create-your-sense-of-you/#ixzz6gFONweVH

TIFFANY O'CALLAGHAN – You are not one person: Why your sense of self must be an illusion
We have a strong sense of continuous, coherent existence – yet from the cells that make our bodies to our defining character traits, we are in a constant state of change
https://www.newscientist.com/article/mg24833121-600-you-are-not-one-person-why-your-sense-of-self-must-be-an-illusion/#ixzz6gFOhAuFm

ALISON GEORGE – Think your sense of self is located in your brain? Think again
Most of us instinctively think that our sense of self is located in our head – but experiments show that our brains aren't working alone in creating our sense of self
https://www.newscientist.com/article/mg24833121-500-think-your-sense-of-self-is-located-in-your-brain-think-again/#ixzz6gFOxk9YC

ALISON GEORGE – Why we're in tune with our emotions – but suck at judging our smarts
"Know thyself" is a piece of wisdom handed down from the ancients – but a slew of delusions and biases means you might be better off asking someone else
https://www.newscientist.com/article/mg24833122-000-why-were-in-tune-with-our-emotions-but-suck-at-judging-our-smarts/#ixzz6gFPCG9OF

PLoS Biology

PAPERS

THOMAS THIERY et al – Decoding the neural dynamics of free choice in humans
[This is an uncorrected proof.]
How do we choose a particular action among equally valid alternatives? Nonhuman primate findings have shown that decision-making implicates modulations in unit firing rates and local field potentials (LFPs) across frontal and parietal cortices. Yet the electrophysiological brain mechanisms that underlie free choice in humans remain ill defined. Here, we

address this question using rare intracerebral electroencephalography (EEG) recordings in surgical epilepsy patients performing a delayed oculomotor decision task. We find that the temporal dynamics of high-gamma (HG, 60–140 Hz) neural activity in distinct frontal and parietal brain areas robustly discriminate free choice from instructed saccade planning at the level of single trials. Classification analysis was applied to the LFP signals to isolate decision-related activity from sensory and motor planning processes. Compared with instructed saccades, free-choice trials exhibited delayed and longer-lasting HG activity during the delay period. The temporal dynamics of the decision-specific sustained HG activity indexed the unfolding of a deliberation process, rather than memory maintenance. Taken together, these findings provide the first direct electrophysiological evidence in humans for the role of sustained high-frequency neural activation in frontoparietal cortex in mediating the intrinsically driven process of freely choosing among competing behavioral alternatives.
https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000864

PNAS

PAPERS

DAVID W. ROBINSON et al – Datura quids at Pinwheel Cave, California, provide unambiguous confirmation of the ingestion of hallucinogens at a rock art site

While debates have raged over the relationship between trance and rock art, unambiguous evidence of the consumption of hallucinogens has not been reported from any rock art site in the world. A painting possibly representing the flowers of Datura on the ceiling of a Californian rock art site called Pinwheel Cave was discovered alongside fibrous quids in the same ceiling. Even though Native Californians are historically documented to have used Datura to enter trance states, little evidence exists to associate it with rock art. A multianalytical approach to the rock art, the quids, and the archaeological context of this site was undertaken. Liquid chromatography–mass spectrometry (LC-MS) results found hallucinogenic alkaloids scopolamine and atropine in the quids, while scanning electron microscope analysis confirms most to be Datura wrightii. Three-dimensional (3D) analyses of the quids indicate the quids were likely masticated and thus consumed in the cave under the paintings. Archaeological evidence and chronological dating shows the site was well utilized as a temporary residence for a range of activities from Late Prehistory through Colonial Periods. This indicates that Datura was ingested in the cave and that the rock painting represents the plant itself, serving to codify communal rituals involving this powerful entheogen. These results confirm the use of hallucinogens at a rock art site while calling into question previous assumptions concerning trance and rock art imagery.
https://www.pnas.org/content/117/49/31026.abstract?etoc

ARIANA ORVELL, ETHAN KROSS, & SUSAN A. GELMAN – "You" speaks to me: Effects of generic-you in creating resonance between people and ideas

Creating resonance between people and ideas is a central goal of communication. Historically, attempts to understand the factors that promote resonance have focused on altering the content of a message. Here we identify an additional route to evoking resonance that is embedded in the structure of language: the generic use of the word "you" (e.g., "You can't understand someone until you've walked a mile in their shoes"). Using crowd-sourced data from the Amazon Kindle application, we demonstrate that passages that people highlighted—collectively, over a quarter of a million times—were substantially more likely to contain generic-you compared to yoked passages that they did not highlight. We also demonstrate in four experiments (n = 1,900) that ideas expressed with generic-you increased resonance. These findings illustrate how a subtle shift in language establishes a powerful sense of connection between people and ideas.
https://www.pnas.org/content/117/49/31038.abstract?etoc

Proceedings of the Royal Society B

PAPERS

MARC-ANTOINE POIRIER et al – How general is cognitive ability in non-human animals? A meta-analytical and multi-level reanalysis approach

General intelligence has been a topic of high interest for over a century. Traditionally, research on general intelligence was based on principal component analyses and other dimensionality reduction approaches. The advent of high-speed computing has provided alternative statistical tools that have been used to test predictions of human general intelligence. In comparison, research on general intelligence in non-human animals is in its infancy and still relies mostly on factor-analytical procedures. Here, we argue that dimensionality reduction, when incorrectly applied, can lead to spurious results and limit our understanding of ecological and evolutionary causes of variation in animal cognition. Using a meta-analytical approach, we show, based on 555 bivariate correlations, that the average correlation among cognitive abilities is low (r = 0.185; 95% CI: 0.087–0.287), suggesting relatively weak support for general intelligence in animals. We then use a case study with relatedness (genetic) data to demonstrate how analysing traits using mixed models, without dimensionality reduction, provides new insights into the structure of phenotypic variance among cognitive traits, and uncovers genetic associations that would be hidden otherwise. We hope this article will stimulate the use of alternative tools in the study of cognition and its evolution in animals.
https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.1853

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