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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.

THOUGHTS – Martin P.J. Edwardes – The collapse of traditional academic publishing

This is the first in an occasional series. If you have something that may be of interest to the EAORC community, then do please submit a thought-piece.

This thought-piece is not based on any scientifically valid studies, it is anecdotal. However, my weekly experience with some of the leading journal publishers indicates to me that they may be losing contact with what academic publishing is about. Their success has traditionally been measured in terms of the references made by others to the papers they publish; but, if a paper is to be referenced, it has to be read.

In the early days of academic publishing, the model was simple: a paper was published in a journal which charged for access, and which advertised the available published papers with free abstracts. The reader had a three-stage triage process to assess whether they needed to buy the paper: first, is the title relevant? Second, is the abstract relevant? Third, is the price for the full paper reasonable? Publishers had long been able to mitigate this third question by getting academic organisations to pay for communal access “up front”, which meant that academic membership of an appropriate school or college would include free access to academic resources. This model was so successful that it transferred to the internet with little tweaking.

When pay-to-publish began, this triage publishing model proved successful in promoting what were now free-to-read papers. An abstract for a free-to-read paper became a fuller summary of the paper, but it still helped the reader quickly decide whether or not they needed to read the full paper. However, the role of an abstract as a free taster for the paper also became less vital, because the paper itself was free. For similar reasons, a clear and informative title for the paper seemed to become less important.

This is where the academic organisations should have stepped in with their own publishing models – and, indeed, some did so. Pay-to-publish transfers the cost of reading from the reader to the writer – which, in academic publishing, is a reasonable

thing to do. A lot of peer-reviewed academic writing seems to be done not so much to publish as to record: academics need to record their work history so that it is available for inspection by future employers, and a peer-reviewed record helps everyone.

The work record of an academic is also the work record of the institution where they are working, so it makes sense for the institution to provide an in-house route to publishing for their academics; yet academic institutions do not seem to have spotted this. Instead, a series of pay-to-publish initiatives were organised by academics themselves – such as PLoS and Frontiers – and they have proved to be effective but costly. Indeed, the perceived “gold mine” of pay-to-publish has encouraged a flock of flimflam artists into the field, intent on expropriating scientific research funds.

So what were the pre-existing academic publishers doing while all this was going on? The answer seems to be that they were flailing around, trying to find ways to make the old pay-to-read model work in the new pay-to-publish environment. In some cases, traditional publishers have themselves developed pay-to-publish resources to sit alongside their pay-to-read journals (e.g. Science Advances, Science Express, Nature Scientific Reports, Nature Communications); others have introduced dual models, so pay-to-publish papers sit side-by-side with pay-to-read papers in the same journal. Recently, though, academic organisations have been asking why they should pay “up front” for communal access to pay-to-read papers when pay-to-publish was available, and why they should pay the same price as before for a journal that was now funded (at least in part) by pay-to-publish. These questions have thrown the academic publishing world into further turmoil.

And this is where traditional publishers are now shooting themselves in the foot. In an effort to keep their publications behind firewalls, they are also moving abstracts behind firewalls, or making them more difficult to access. It is true that, for pay-to-publish papers, abstracts and titles have become less important: it costs the reader nothing to check the paper itself; but the roles of title and abstract in the triage of pay-to-read papers has increased, not reduced. Many academics are now faced with the problem that the payment to read the paper now comes out of their own project funding, and they cannot take a risk on purchasing a paper without some certainty that it will be useful. Without access to an informative title and free abstract, the email announcing the publication of new content for a journal is just unnecessary spam. It doesn't matter how “attractive” or “colourful” the email is, it doesn't do the job it has to do. Even if the email links to free but uncopyable versions of the abstract text (often in tiny and blurry type), the opportunity for the reader to bring the paper to the attention of colleagues is compromised, and potential readers – and citers – are lost.

It seems that one simple solution to this dilemma is that, if you are providing pay-to-read, don't hide what you are selling. Yet many traditional publishers seem to be missing this. This publicity dilemma is, however, just one small part of the problem: the whole academic publishing model needs to be stripped down and reworked, and this will not happen until academic institutions and academic publishers come together formally to define a new model which works for all parties and all payment models.

Comments gratefully received.

ACADEMIA.EDU – Death among primates

Biological Reviews 94(4), 1502-1529, (2019).

ANDRÉ GONÇALVES & SUSANA CARVALHO – Death among primates: a critical review of non-human primate interactions towards their dead and dying

For the past two centuries, non-human primates have been reported to inspect, protect, retrieve, carry or drag the dead bodies of their conspecifics and, for nearly the same amount of time, sparse scientific attention has been paid to such behaviours. Given that there exists a considerable gap in the fossil and archaeological record concerning how early hominins might have interacted with their dead, extant primates may provide valuable insight into how and in which contexts thanatological behaviours would have occurred. First, we outline a comprehensive history of comparative thanatology in non-human primates, from the earliest accounts to the present, uncovering the interpretations of previous researchers and their contributions to the field of primate thanatology. Many of the typical behavioural patterns towards the dead seen in the past are consistent with those observed today. Second, we review recent evidence of thanatological responses and organise it into distinct terminologies: direct interactions (physical contact with the corpse) and secondary interactions (guarding the corpse, vigils and visitations). Third, we provide a critical evaluation regarding the form and function of the behavioural and emotional aspects of these responses towards infants and adults, also comparing them with non-conspecifics. We suggest that thanatological interactions: promote a faster re-categorisation from living to dead, decrease costly vigilant/caregiving behaviours, are crucial to the management of grieving responses, update position in the group's hierarchy, and accelerate the formation of new social bonds. Fourth, we propose an integrated model of Life-Death Awareness, whereupon neural circuitry dedicated towards detecting life, i.e. the agency system (animate agency, intentional agency, mentalistic agency) works with a corresponding system that interacts with it on a decision-making level (animate/inanimate distinction, living/dead discrimination, death awareness). Theoretically, both systems are governed by specific cognitive mechanisms (perceptual categories, associative concepts and high-order reasoning, respectively). Fifth, we present an evolutionary timeline from rudimentary thanatological responses likely occurring in earlier non-human primates

during the Eocene to the more elaborate mortuary practices attributed to genus Homo throughout the Pleistocene. Finally, we discuss the importance of detailed reports on primate thanatology and propose several empirical avenues to shed further light on this topic. This review expands and builds upon previous attempts to evaluate the body of knowledge on this subject, providing an integrative perspective and bringing together different fields of research to detail the evolutionary, sensory/cognitive, developmental and historical/archaeological aspects of primate thanatology. Considering all these findings and given their cognitive abilities, we argue that non-human primates are capable of an implicit awareness of death.
[https://www.academia.edu/38813224/Death among primates a critical review of non human primate interactions towards their dead and dying](https://www.academia.edu/38813224/Death_among_primates_a_critical_review_of_non_human_primate_interactions_towards_their_dead_and_dying)

ACADEMIA.EDU – Later Stone Age bone point assemblages

South African Archaeological Bulletin 67 (195): 32–43, 2012

JUSTIN BRADFIELD – A comparison of three Later Stone Age bone point assemblages from South Africa

The presence of bone points in archaeological contexts has previously been interpreted as evidence for hunting. These interpretations, however, are based on the morphological similarity of the bone points with ethnographic and historical bone-tipped arrows, and not on any functional studies. Macrofracture analysis has been used successfully on experimental stone- and bone-tipped hunting weapons and is applied here on a set of bone points from three Later Stone Age sites. It confirms that bone points from Nelson Bay Cave, Jubilee Shelter and Rose Cottage Cave were indeed used for hunting activities. The results presented here suggest that there may be some patterning in the size distribution of bone points across the landscape.

[https://www.academia.edu/3249487/A comparison of three Later Stone Age bone point assemblages from South Africa](https://www.academia.edu/3249487/A_comparison_of_three_Later_Stone_Age_bone_point_assemblages_from_South_Africa)

RESEARCHGATE – Can Nonhuman Primate Signals be Arbitrarily Meaningful like Human Words?

Animal Behavior and Cognition 7(2):140-150, (2020).

CHRISTINE SIEVERS & THIBAUD GRUBER – Can Nonhuman Primate Signals be Arbitrarily Meaningful like Human Words? An Affective Approach

Whether one can label nonhuman primate signals as ‘meaningful’ hinges on what one takes as central features to meaning. If one targets a notion of meaning closely related and comparable to meaning in human words, two features must be identified: firstly, a concrete ascribable meaning to the signal and, secondly, an element of convention or arbitrariness of the signal’s meaning. In their seminal paper published in 1980, Seyfarth, Cheney and Marler demonstrated that vervet monkey alarm calls have concrete, discrete, ascribable meaning. But what about their arbitrariness? Here we will suggest a potential way into the investigation of this second feature: Human individuals are capable of comprehending arbitrary word meaning through learning and teaching processes. The current theory suggests in particular that imitation learning and natural pedagogy-like teaching behavior are necessary. For nonhuman primate signals, there is high doubt that learning processes are involved in the acquisition of novel signals, for instance, during ontogeny, and even higher doubt in the involvement of natural pedagogy. We will tackle the question of why complex imitation learning and natural pedagogy is not necessary for animal signals to be arbitrarily meaningful. We will also argue that the framework of ASL – Affective Social Learning – can help us determine whether simple forms of learning and passive forms of (indirect) teaching hinging on affective states of the teacher are involved, allowing for an arbitrary character of nonhuman signals.

[https://www.researchgate.net/publication/341108865 Can nonhuman primate signals be arbitrarily meaningful like human words An affective approach](https://www.researchgate.net/publication/341108865_Can_nonhuman_primate_signals_be_arbitrarily_meaningful_like_human_words_An_affective_approach)

RESEARCHGATE – Primate Pragmatics, Expressive Behavior and the Evolution of Language

Animal Behavior and Cognition 7(2):117-130, (2020).

KATE ARNOLD & DORIT BAR-ON – Primate Pragmatics, Expressive Behavior and the Evolution of Language

Cheney and Seyfarth’s groundbreaking studies on vervet monkey alarm calls paved the way for a serious investigation of what animal signals might mean and their relevance to the evolution of language. Although the question of what drives call production remains largely unanswered, and parallels with language cannot be discerned in this domain, there appear to be some similarities to language in the way primates, and other animals, derive information from utterances by pragmatically interpreting their significance using available contextual cues. We describe some of the advances that Cheney and Seyfarth’s work spurred and illustrate our current understanding using the alarm calling system of putty-nosed monkeys as an example. We also briefly indicate some of the obstacles to adopting either a purely ‘Carnapian’ or purely ‘Gricean’ pragmatic approach to the evolution of language. We conclude by briefly sketching an intermediate pragmatic framework. This framework takes account of the expressive character of a subset of communicative signals that are biologically designed to openly reveal psychological states, thereby allowing mutually beneficial interactions among, specifically, signalers and receivers that live in social groups.

[https://www.researchgate.net/publication/341078838 Primate pragmatics expressive behavior and the evolution of language](https://www.researchgate.net/publication/341078838_Primate_pragmatics_expressive_behavior_and_the_evolution_of_language)

LECTURE ALERT – TAMAS DAVID-BARRETT – Human Beast

20th November 2020, 4am to 4am next day (GMT), on Zoom

Oxford academic pre-empts birthday zoom party with 24-hour lecture on humanity's mid-life crisis

Rogue anthropologist-economist Tamas David-Barrett set himself the challenge of giving a 24-hour lecture on the state of the species – all to avoid an awkward Zoom 50th birthday party.

The on-the-go lecture is a behavioural science account detailing how our species behaved well for much of its existence and has only recently gone off the rails to destroy the planet. Explaining the evolutionary drivers of human history, David-Barrett reveals that our original state was much more gender equal and environmentally respectful than the world in 2020.

Dr David-Barrett is a behavioural scientist who works on the evolutionary origins of social behaviour in humans. He teaches at the University of Oxford, and runs research projects around the world. He has recently finished a book titled *Matriocracy: the evolutionary case to end patriarchy*.

David-Barrett says, “we’ve all been on those painful birthday Zoom calls where everyone talks at once. It’s really nice of people to show up but it’s just not the same as a real party! When I realised my birthday would be in the middle of lockdown, I thought this was as crazy as I could possibly get.”

“But seriously, 2020 has shown how hopeless we are at tackling global problems and that, if anything, we are getting more polarised and less able to work together. I want to remind everyone that we humans are really sophisticated beings that could do amazing things!”

“Given that this is a birthday, the lecture will be more like an explorative salon, not particularly constrained by the strict rigour of science. This will be a space for messing around with ideas, in which speculation and hunches pepper the mathematical logic or data from 3bn social interactions.”

As one of Tamas’s friends observed, “Tamas is probably unique on the planet in having been a senior macroeconomist before becoming a professor of human evolution. This gives him a licence to be the Wagner of bullshit”.

A fellow scientist quipped, “normally we worry that people’s attention span has shrunk from 8 seconds to 4 or 3, and here we have an audacious 24 hours filled with science”.

The marathon begins with ‘Was planet Earth given to us by accident?’, while other episodes cover ‘how we ended up in large groups’, ‘saunas and temples’, ‘the cost of desperation for status’, ‘a new kind of mating’, and ‘radicalisation and fake news’. At 3am GMT on 21st November, hour 24 is a speech on the State of the Species.

The public lecture will be held on Friday 20th November 2020, 4am to 4am next day (GMT), on Zoom, and each one-hour episode includes 15 minutes for discussion. The lecture is FREE (as long as you do not mention the birthday).

To sign up: https://state_of_the_species_20nov2020.eventbrite.co.uk

For details email tamas.david-barrett@trinity.ox.ac.uk. For Dr David-Barrett’s science, www.tamasdavidbarrett.com

SCHEDULE

HOW WE GODS HAPPENED

4am: Was the planet given to us by accident? An economist goes back 2 million years

5am: Why didn’t we mess up Earth before? We were foragers, for a long-long time

LIVING IN LARGE GROUPS

6am: Our dirty secret: Did ancient wars in deep history make us smart?

7am: Synchrony: Music to language

8am: The ape that tells tall tales: Our shared stories map the world for us

9am: Inventing ancestors: We evolved to be religious

10am: Saunas and Temples: Architectures of culture push our social buttons

THINKING ABOUT OTHERS

11am: Here-and-now social cognition: We see ourselves as unique, but always label others

12pm: Friend, Love, Sister: Let’s just be friends. -- Ouch!

1pm: Cherubino’s Mind Fuck: Opera, silent movies, plays, and ballets

2pm: Stumbling upon the Best Friend: Women have real friends. Men are just shallow

HOW TO MAKE A SOCIETY HAPPY

3pm: An evolutionary logic to inequality: We have three (3!) inherited drivers of status

4pm: The cost of desperation for status: Cultures that regulate inequality survive

5pm: A trick of culture: Partying against inequality

6pm: Gender-equal foragers lose to farmers: Previously on Climate Change: patriarchy

7pm: The end of patriarchy: Male dominance is obsolete

8pm: Matriocracy is coming: Gender-equal democracy, a hint of feminine rule

A BRAVE NEW WORLD, FOR REAL

9pm: Fewer kids, human zoos: Rewiring societies for urban singles

10pm: Kinship to friendship: The natural history of law

11pm: Is polyamory the new kind of mating? How we choose partners in this crazy world

12am: Radicalisation and fake news: Are we all now Siths of the Dark Side?

OUR MOMENT

1am: Mother's milk to human sacrifice: The story of oxytocin-based bonding in our species

2am: Future-telling as social technology: Biosphere gardeners draw up a map

3am: State of the Species: We humans rock, but must grow the fuck up

For each hour: 00-45mins: science; 45-60mins: chat

NEWS

SCIENCENEWS – Female big-game hunters may have been common in the ancient Americas

A woman buried 9,000 years ago with her hunting toolkit is shedding new light on gender roles.

<https://www.sciencenews.org/article/female-game-hunters-ancient-americas>

SCIAM NEWS – In the Early Americas, Female Hunters Pursued Big Game

Millennia-old burial sites show equal-opportunity hunting roles might have been commonplace.

<http://links.email.scientificamerican.com/els/v1/87DLQm2P7jJaY/VVB2ZllkRjkwWS9FOE9qVnpNR01iU2JZRnY4eE1UZENadElyZ05EL1VCYTdyT09wdSs1eDM0dUhkc280OS9XT08xdjRmbkFCSmhXLzUyYjNuYzUzTGh2Zm1WVDEwd0NrOVQ3dEJZS1N4azQ9S0/>

BREAKING SCIENCE – Early Hunter-Gatherer Females Hunted Big-Game Animals

Archaeological excavations at the site of Wilamaya Patjxa in the high Peruvian Andes have revealed a 9,000-year-old female burial associated with a big-game hunting toolkit. "An archaeological discovery and analysis of early burial practices overturns the long-held 'man-the-hunter' hypothesis," said lead author Dr. Randy Haas, a researcher in the Department of Anthropology at the University of California Davis and the Collasuyo Archaeological Research Institute.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/MbDNRYzx8o8/early-hunter-gatherer-females-big-game-animals-09029.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – 2-my skull of Paranthropus suggests climate change drove rapid changes

Paranthropus robustus is a small-brained extinct hominin that lived between 2 million and 1.2 million years ago in what is now South Africa. Discovered in 1938, it was among the first early hominins described and the first discovered robust australopithecine.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/HA6idwbWiaQ/dnh-155-paranthropus-robustus-09035.html?utm_source=feedburner&utm_medium=email

SCIENCE DAILY – Small-scale evolutionary changes in an extinct human species

Males of the extinct human species Paranthropus robustus were thought to be substantially larger than females -- much like the size differences seen in modern-day primates such as gorillas, orangutans and baboons. But a new fossil discovery in South Africa instead suggests that P. robustus evolved rapidly during a turbulent period of local climate change about 2 million years ago, resulting in anatomical changes that previously were attributed to sex.

<https://www.sciencedaily.com/releases/2020/11/201109120640.htm>

THE CONVERSATION – When did humans first go to war?

A war with Neanderthals makes a compelling narrative but the evidence is limited is best.

<https://theconversationuk.cmail20.com/t/r-l-jutdkt-khhililahlh-u/>

THE CONVERSATION – Midnight digs opened window on prehistoric humans living on roof of the world

Early humans called Denisovans lived in a remote mountain cave between 100,000 and 60,000 years ago, and possibly longer still, raising intriguing questions about their relationship to modern humans.

<https://theconversationuk.cmail19.com/t/r-l-juthhlt-khhililahlh-e/>

PUBLICATIONS

Frontiers for Young Minds

PAPERS

NATHAN A. JORGENSEN & EVA H. TELZER – Who Does Your Brain Think You Are? The Science of Thinking About Yourself

Psychologists have been studying self-perceptions (how we think about ourselves) for a long time. They have learned that as kids transition into the teenage years, their self-perceptions become more social, meaning they start to think more about

other people. Recently, neuroscientists have been studying what is going on in our brains when we think about ourselves, which has helped us understand some of the reasons why self-perceptions become more social. Around the time that kids start going through puberty, the medial prefrontal cortex (mPFC), a part of the “social brain,” starts working a lot harder when they think about themselves. This means that the same part of the brain that thinks about others is also used to think about ourselves! Neuroscience has helped us understand that changes in the body and brain can explain some of the reasons why our self-perceptions become more social as we grow!

<https://kids.frontiersin.org/article/10.3389/frym.2020.529762>

Frontiers in Psychology

PAPERS

ANNELISE PESCH, ANDREI D. SEMENOV & STEPHANIE M. CARLSON – The Path to Fully Representational Theory of Mind: Conceptual, Executive, and Pragmatic Challenges

Although an explicit Theory of Mind (ToM) has been found to develop around 4 years of age in Western societies, recent work showing that 4- and 5-year-olds fail modified versions of False Belief tasks as well as seemingly easier True Belief tasks calls into question the robustness of preschoolers' belief understanding. Some have argued these findings illustrate children's conceptual limitations in their understanding of belief that are masked by standard False Belief tasks. However, others claim these examples of children's failure can be explained by pragmatics of the testing situation, rather than conceptual limitations. Given the documented relation between ToM and executive function, an unexamined possibility is that children's failure can be explained by certain executive demands. In the current study, we examined the relation between typically developing 4- (n = 43) and 5-year-olds' (n = 42) performance on traditional and modified False Belief tasks, True Belief tasks, and one component of executive functioning - working memory. We found that children performed worse on modified False Belief tasks and True Belief tasks compared to standard 2-option False Belief tasks, and that working memory was related to modified 3-option contents False Belief performance. These results suggest that a fully representational ToM, one that is stable in the context of increased conceptual, executive, and pragmatic demands, may develop later than traditional accounts have assumed.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2020.581117/full>

Nature Communications

PAPERS

MARIA TESCHLER-NICOLA et al – Ancient DNA reveals monozygotic newborn twins from the Upper Palaeolithic

The Upper Palaeolithic double burial of newborns and the single burial of a ca. 3-month-old infant uncovered at the Gravettian site of Krems-Wachtberg, Austria, are of paramount importance given the rarity of immature human remains from this time. Genome-wide ancient DNA shows that the male infants of the double grave are the earliest reported case of monozygotic twins, while the single grave's individual was their 3rd-degree male relative. We assessed the individuals' age at death by applying histological and μ CT inspection of the maxillary second incisors (i2) in conjunction with C- and N-isotope ratios and Barium (Ba) intake as biomarker for breastfeeding. The results show that the twins were full-term newborns, and that while individual 2 died at birth, individual 1 survived for about 50 days. The findings show that Gravettian mortuary behaviour also included re-opening of a grave and manipulation of its layout and content.

<https://www.nature.com/articles/s42003-020-01372-8>

Nature Ecology & Evolution

PAPERS

JESSE M. MARTIN et al – Drimolen cranium DNH 155 documents microevolution in an early hominin species

Paranthropus robustus is a small-brained extinct hominin from South Africa characterized by derived, robust craniodental morphology. The most complete known skull of this species is DNH 7 from Drimolen Main Quarry, which differs from *P. robustus* specimens recovered elsewhere in ways attributed to sexual dimorphism. Here, we describe a new fossil specimen from Drimolen Main Quarry, dated from approximately 2.04–1.95 million years ago, that challenges this view. DNH 155 is a well-preserved adult male cranium that shares with DNH 7 a suite of primitive and derived features unlike those seen in adult *P. robustus* specimens from other chronologically younger deposits. This refutes existing hypotheses linking sexual dimorphism, ontogeny and social behaviour within this taxon, and clarifies hypotheses concerning hominin phylogeny. We document small-scale morphological changes in *P. robustus* associated with ecological change within a short time frame and restricted geography. This represents the most highly resolved evidence yet of microevolutionary change within an early hominin species.

<https://www.nature.com/articles/s41559-020-01319-6>

Nature Neuroscience

PAPERS

PRABAHA GANGOPADHYAY et al – Prefrontal–amygdala circuits in social decision-making

An increasing amount of research effort is being directed toward investigating the neural bases of social cognition from a systems neuroscience perspective. Evidence from multiple animal species is beginning to provide a mechanistic

understanding of the substrates of social behaviors at multiple levels of neurobiology, ranging from those underlying high-level social constructs in humans and their more rudimentary underpinnings in monkeys to circuit-level and cell-type-specific instantiations of social behaviors in rodents. Here we review literature examining the neural mechanisms of social decision-making in humans, non-human primates and rodents, focusing on the amygdala and the medial and orbital prefrontal cortical regions and their functional interactions. We also discuss how the neuropeptide oxytocin impacts these circuits and their downstream effects on social behaviors. Overall, we conclude that regulated interactions of neuronal activity in the prefrontal–amygdala pathways critically contribute to social decision-making in the brains of primates and rodents.

<https://www.nature.com/articles/s41593-020-00738-9>

TALMO D. PEREIRA, JOSHUA W. SHAEVITZ & MALA MURTHY – Quantifying behavior to understand the brain

Over the past years, numerous methods have emerged to automate the quantification of animal behavior at a resolution not previously imaginable. This has opened up a new field of computational ethology and will, in the near future, make it possible to quantify in near completeness what an animal is doing as it navigates its environment. The importance of improving the techniques with which we characterize behavior is reflected in the emerging recognition that understanding behavior is an essential (or even prerequisite) step to pursuing neuroscience questions. The use of these methods, however, is not limited to studying behavior in the wild or in strictly ethological settings. Modern tools for behavioral quantification can be applied to the full gamut of approaches that have historically been used to link brain to behavior, from psychophysics to cognitive tasks, augmenting those measurements with rich descriptions of how animals navigate those tasks. Here we review recent technical advances in quantifying behavior, particularly in methods for tracking animal motion and characterizing the structure of those dynamics. We discuss open challenges that remain for behavioral quantification and highlight promising future directions, with a strong emphasis on emerging approaches in deep learning, the core technology that has enabled the markedly rapid pace of progress of this field. We then discuss how quantitative descriptions of behavior can be leveraged to connect brain activity with animal movements, with the ultimate goal of resolving the relationship between neural circuits, cognitive processes and behavior.

<https://www.nature.com/articles/s41593-020-00734-z>

Nature Scientific Reports

PAPERS

ELISABETTA PALAGI et al – Mirror replication of sexual facial expressions increases the success of sexual contacts in bonobos

Rapid Facial Mimicry (RFM), one of the possible predictors of emotional contagion, is defined as the rapid, involuntary and automatic replication of a facial expression. Up to now, RFM has been demonstrated in nonhuman animals exclusively during play. Since in bonobos, as in humans, socio-sexuality is a powerful tool for assessing/strengthening inter-individual relationships, we investigated RFM in this domain. Bonobos displayed silent bared-teeth (sbt, the most common facial expression during sexual contacts) more frequently after the detection of an sbt emitted by the trigger than in the no-detection condition. This is the first demonstration of the presence of RFM during sex. The occurrence of RFM was positively affected by the sex of the partners with female homo-sexual contacts being punctuated by a higher presence of RFM. At an immediate level, RFM increased the duration of homo- and hetero-sexual contacts. This finding suggests that RFM can increase individuals' potential fitness benefits. By prolonging their sexual contacts, females can strengthen their social relationships thus increasing the probability to obtain priority over resources (RFM indirect fitness benefits). Via longer copulations, males can increase the probability to make females pregnant (RFM direct fitness benefits). In conclusion, in bonobos the access to the partner's face during sexual contacts (face-to-face, proximate factor) and the role of socio-sexuality in increasing the individual direct and indirect fitness (ultimate factor) could have favoured the evolution of specific sexual facial expressions and their rapid mirror replication. Our findings on bonobos expand the role of RFM well beyond the animal play domain thus opening new scenarios for future comparative studies exploring the evolution of socio-sexuality in humans.

<https://www.nature.com/articles/s41598-020-75790-3>

MARCUS J. HAMILTON, ROBERT S. WALKER & CHRISTOPHER P. KEMPES – Diversity begets diversity in mammal species and human cultures

Across the planet the biogeographic distribution of human cultural diversity tends to correlate positively with biodiversity. In this paper we focus on the biogeographic distribution of mammal species and human cultural diversity. We show that not only are these forms of diversity similarly distributed in space, but they both scale superlinearly with environmental production. We develop theory that explains that as environmental productivity increases the ecological kinetics of diversity increases faster than expected because more complex environments are also more interactive. Using biogeographic databases of the global distributions of mammal species and human cultures we test a series of hypotheses derived from this theory and find support for each. For both mammals and cultures, we show that (1) both forms of diversity increase exponentially with ecological kinetics; (2) the kinetics of diversity is faster than the kinetics of productivity; (3) diversity scales superlinearly with environmental productivity; and (4) the kinetics of diversity is faster in increasingly productive environments. This biogeographic convergence is particularly striking because while the dynamics of biological and cultural evolution may be similar in principle the underlying mechanisms and time scales are very different. However, a common

currency underlying all forms of diversity is ecological kinetics; the temperature-dependent fluxes of energy and biotic interactions that sustain all forms of life at all levels of organization. Diversity begets diversity in mammal species and human cultures because ecological kinetics drives superlinear scaling with environmental productivity.

<https://www.nature.com/articles/s41598-020-76658-2>

New Scientist

NEWS

Men and women in early Americas shared hunting duties

A woman, buried with stone weapons 9000 years ago, has led to a reassessment of the role women played as hunters across the Americas in prehistory.

<http://click.e.newscientist.com/?qs=325e117bd2ae5e1c8fef8f93a8d89404d3673ab398a452274c64a506dda3ee0ac45bd8a77be14a598c9accbd93ca5bac6fb2b8b81c635876>

PLoS One

PAPERS

KEIKO KITAGAWA & NICHOLAS J. CONARD – Split-based points from the Swabian Jura highlight Aurignacian regional signatures

The systematic use of antlers and other osseous materials by modern humans marks a set of cultural and technological innovations in the early Upper Paleolithic, as is seen most clearly in the Aurignacian. Split-based points, which are one of the most common osseous tools, are present throughout most regions where the Aurignacian is documented. Using results from recent and ongoing excavations at Geißenklösterle, Hohle Fels and Vogelherd, we nearly tripled the sample of split-based points from 31 to 87 specimens, and thereby enhance our understanding of the technological economy surrounding the production of osseous tools. Aurignacian people of the Swabian Jura typically left spit-based points at sites that appear to be base camps rich with numerous examples of personal ornaments, figurative art, symbolic imagery, and musical instruments. The artifact assemblages from SW Germany highlight a production sequence that resembles that of SW France and Cantabria, except for the absence of tongued pieces. Our study documents the life histories of osseous tools and demonstrates templates for manufacture, use, recycling, and discard of these archetypal artifacts from the Aurignacian. The study also underlines the diversified repertoire of modern humans in cultural and technological realms highlighting their adaptive capabilities.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0239865>

MATHIAS TWARDAWSKI & BENJAMIN E. HILBIG – The motivational basis of third-party punishment in children

People willingly accept personal costs to sanction norm violations even if they are not personally affected by the wrongdoing and even if their sanctioning yields no immediate benefits—a behavior known as third-party punishment. A notable body of literature suggests that this behavior is primarily driven by retribution (i.e., evening out the harm caused), rather than by the utilitarian motives of special prevention (i.e., preventing recidivism), or general prevention (i.e., preventing imitation). This has led to the conclusion that laypeople are “retributivists” in general. More recent evidence, however, raises doubts about the ubiquity of retributivism, showing that punishment is driven by multiple motives. The present research adds to this debate by investigating the motives underlying punishment in children around age 10. Specifically, we investigate children’s (N = 238) punishment motives in an economic game paradigm, isolating punishment motives by experimentally manipulating the extent to which the offender and a bystander learn about the punishment. This offers the possibility to examine whether (and to what extent) children engage in punishment even when it is devoid of any preventive effects. Results show that children’s punishment is motivated by retributive, special preventive, and general preventive purposes. These results point to a clear need for further theory specification on the motivational basis of punishment in humans and provide practical implications for the treatment of child misbehavior.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0241919>

PNAS

ARTICLES

MELVYN A. GOODALE – Transforming abstract plans into concrete actions

Most of us, at one time or another, will have used a pen to sign our name on a check or legal document—or written our name on a white board with a magic marker. Some of us may even remember writing our name in the air with a sparkler in our younger years, or in the wet sand of a beach using our toe. What is striking is that the strokes and swirls we produce in writing our name in these various ways are remarkably similar, even though the muscles that are recruited to make the movements are quite different. The ability to generate the same pattern of movements with entirely different sets of muscles suggests that, somewhere in the brain, there must be an abstract high-level representation of the required action that transcends the recruitment of a particular limb or group of muscles. The fact that we can generate the same actions with different limbs and muscles is often referred to as “motor equivalence.”

<https://www.pnas.org/content/early/2020/11/10/2020708117?etoc=>

COMMENTARIES

MICHAEL L. WILSON – Hawks, Doves, and mongooses

In 1795, philosopher Immanuel Kant proposed rules to promote perpetual peace among nations (1). He first required that all nations be republics, because when “the consent of the subjects is required to determine whether there shall be war or not, nothing is more natural than that they should weigh the matter well, before undertaking such a bad business” ref. 1, p. 122. In contrast, a despotic ruler “does not lose a whit by the war, while he goes on enjoying the delights of his table or sport, or of his pleasure palaces and gala days. He can therefore decide on war for the most trifling reasons, as if it were a kind of pleasure party” ref. 1, p. 123. In a PNAS paper that marries evolutionary game theory with tests of data from a long-term study of banded mongooses (Fig. 1), Johnstone et al. (2) confirm Kant’s insight that destructive intergroup fighting becomes more likely when leaders have more to gain, or less to lose, from fighting than do their followers.

<https://www.pnas.org/content/early/2020/11/12/2021188117?etoc=>

Proceedings of the Royal Society B

PAPERS

M. BOECKLE et al with T. SUDDENDORF – New Caledonian crows plan for specific future tool use

The ability to plan for future events is one of the defining features of human intelligence. Whether non-human animals can plan for specific future situations remains contentious: despite a sustained research effort over the last two decades, there is still no consensus on this question. Here, we show that New Caledonian crows can use tools to plan for specific future events. Crows learned a temporal sequence where they were (a) shown a baited apparatus, (b) 5 min later given a choice of five objects and (c) 10 min later given access to the apparatus. At test, these crows were presented with one of two tool–apparatus combinations. For each combination, the crows chose the right tool for the right future task, while ignoring previously useful tools and a low-value food item. This study establishes that planning for specific future tool use can evolve via convergent evolution, given that corvids and humans shared a common ancestor over 300 million years ago, and offers a route to mapping the planning capacities of animals.

<https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.1490>

Quarterly Review of Biology

REVIEWS

SARA R. CHANT – Human Language: From Genes and Brains to Behavior

Review of ‘Human Language: From Genes and Brains to Behavior’ edited by Editor-in-Chief: Peter Hagoort; Section Editors: Christian F. Beckmann et al.

http://el.press.uchicago.edu/ls/click?upn=o2H23VWQ-2BQo-2Ffsjd3JPbqtlfxhBflj9rA-2FTSPexyEN0SzPAfrDJn1HDCG4q9GnLIXOneTj9nSxNizFwyM3i4t0H-2B5CvaFOVJKD-2FcI9JeG8Jh6INvESN0bfydKfsd7MXeucfj_BzL71Iq2G9-2F1EmNzIPxI-2B-2Bq67iilaJOGj9t7DE7KWwkA1H6DK2eNISaHx1QpoUOVcb0EN0kHBbCUh0hr-2ByblEarz5-2Bg-2FQ-2BiywXPHeY3WoKmf2ldQQDK-2B1jzcYfMqaxnkEftStNt673pMdl4ih8mot4dwLPM0zazcCpfZLCgUGoimca1W2b0-2FMDy30Az2lwXwiXK3Exy2m4-2F5Mi3ndFMzyt9Kew5EdP8SzEVb8RHxpYtsYjB6dg3wLiEQdMTEWPP-2BXlmtzuGSFkLVuUX47I7emYwJMGox7zyjYL7Vlj1GQS4EbjZLQhUmXzCX6n2CGOy

CHARLES ALT – The Selfish Ape

Review of ‘The Selfish Ape: Human Nature and Our Path to Extinction’ by Nicholas P. Money.

http://el.press.uchicago.edu/ls/click?upn=o2H23VWQ-2BQo-2Ffsjd3JPbqtlfxhBflj9rA-2FTSPexyEN0SzPAfrDJn1HDCG4q9GnLIIQQ0iBfwzchPf2RRBM8EB-2FqANiku4rEWkb-2FUvKlyXkKcCIUyg3OrdSI1rj4ErJ7-2F6b2F_BzL71Iq2G9-2F1EmNzIPxI-2B-2Bq67iilaJOGj9t7DE7KWwkA1H6DK2eNISaHx1QpoUOVcb0EN0kHBbCUh0hr-2ByblEarz5-2Bg-2FQ-2BiywXPHeY3WoKmf2ldQQDK-2B1jzcYfMqaxnk6RTDLFiWIK1Mx-2FTrD5PjpQhjhig1g5cjGEniEAxIQe2mepHX21k0wgfOit1JiifrQGROVsjj2K1eMDsrsLlwgmkEtkA2U4YB-2Bg29r9VvSI4ZuVQ8A6hELbgFOLcCRMDnNsKbCbBd96W4dxvuK0d2EODOeb5em-2Flm5yDGWYhcahXptQiwU1c1yXemUZD0BV

HUGH DESMOND – The Human Swarm

Review of ‘The Human Swarm: How Our Societies Arise, Thrive, and Fall’ by Mark W. Moffett

http://el.press.uchicago.edu/ls/click?upn=o2H23VWQ-2BQo-2Ffsjd3JPbqtlfxhBflj9rA-2FTSPexyEN0SzPAfrDJn1HDCG4q9GnLIIopwyCzhWR2hGLPCH-2FseNSM5sb2Ng1hmfpmHo-2FkCTN7a2uj8-2BJL443Y30h8u9OlaZXR6_BzL71Iq2G9-2F1EmNzIPxI-2B-2Bq67iilaJOGj9t7DE7KWwkA1H6DK2eNISaHx1QpoUOVcb0EN0kHBbCUh0hr-2ByblEarz5-2Bg-2FQ-2BiywXPHeY3WoKmf2ldQQDK-2B1jzcYfMqaxnkDXckzJNsBXTuAyyHHNxLoyy0GXUtN4-2B-2FBoteZ85ieVtfic7S2u2MgupJvyByGBUJEFKCVpVU-2B96IjKF8AumwGfeq-2FcBZdZ7HjznPqNWrw5v1O19daSkdNr-2FV51dYBtriRBM8zdchPWGqHE8kKUDEUG-2B1UCh7mhCNrhxZV56rhLntbxLh3QqNvsjG80Oy-2BZ-2F

Science Advances

PAPERS

K. YU, W. E. WOOD & F. E. THEUNISSEN – High-capacity auditory memory for vocal communication in a social songbird

Effective vocal communication often requires the listener to recognize the identity of a vocalizer, and this recognition is dependent on the listener's ability to form auditory memories. We tested the memory capacity of a social songbird, the zebra finch, for vocalizer identities using conditioning experiments and found that male and female zebra finches can remember a large number of vocalizers (mean, 42) based solely on the individual signatures found in their songs and distance calls. These memories were formed within a few trials, were generalized to previously unheard renditions, and were maintained for up to a month. A fast and high-capacity auditory memory for vocalizer identity has not been demonstrated previously in any nonhuman animals and is an important component of vocal communication in social species.

https://advances.sciencemag.org/content/6/46/eabe0440?utm_campaign=toc_advances_2020-11-13&et rid=17774313&et cid=3558120

Trends in Ecology and Evolution

PAPERS

KATE L. LASKOWSKI, MARIA MOIRON & PETRI NIEMELÄ – Integrating Behavior in Life-History Theory: Allocation versus Acquisition?

Central theories explaining the maintenance of individual differences in behavior build on the assumption that behavior mediates life-history trade-offs between current and future reproduction. However, current empirical evidence does not robustly support this assumption. This mismatch might be because current theory is not clear about the role of behavior in individual allocation versus acquisition of resources, hindering empirical testing. The relative importance of allocation compared to acquisition is a key feature of classic life-history theory, but appears to have been lost in translation in recent developments of life-history theory involving behavior. We argue that determining the relative balance between variation in resource allocation and acquisition, and the role of behavior in this process, will help to build more robust and precise predictions.

[https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347\(20\)30309-8?dgcid=raven_jbs_aip_email](https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(20)30309-8?dgcid=raven_jbs_aip_email)

COMMENTARIES

CYRIL C. GRUETER et al – On Multifaceted Definitions of Multilevel Societies: Response to Papageorgiou and Farine

Papageorgiou and Farine, in their comment on our recent synthesis of animal multilevel societies, provide several examples of nestedness in avian social systems and call for a fuller incorporation of birds into our theoretical framework. We focused mainly on mammals to construct our proposed framework because multilevel societies are best known from this taxonomic group. Papageorgiou and Farine point out several bird species that form nested social arrangements and argue that, by diving deeply into examples from birds, there may be variations in form that meet our criteria for a multilevel society: a social system with a stable core level and at least one recognizable upper level. Papageorgiou and Farine raise two questions: (i) whether the operational definition of multilevel societies should be relaxed to accommodate bird species that show more stability at higher levels of society; and (ii) whether societies with multiple tiers resulting solely from habitat preferences instead of social preferences should be classified as multilevel societies.

[https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347\(20\)30304-9?dgcid=raven_jbs_aip_email](https://www.cell.com/trends/ecology-evolution/fulltext/S0169-5347(20)30304-9?dgcid=raven_jbs_aip_email)

Trends in Neurosciences

PAPERS

MÍRIAM JAVIER-TORRENT, GERALDINE ZIMMER-BENSCH & LAURENT NGUYEN – Mechanical Forces Orchestrate Brain Development

During brain development, progenitors generate successive waves of neurons that populate distinct cerebral regions, where they settle and differentiate within layers or nuclei. While migrating and differentiating, neurons are subjected to mechanical forces arising from the extracellular matrix, and their interaction with neighboring cells. Changes in brain biomechanical properties, during its formation or aging, are converted in neural cells by mechanotransduction into intracellular signals that control key neurobiological processes. Here, we summarize recent findings that support the contribution of mechanobiology to neurodevelopment, with focus on the cerebral cortex. Also discussed are the existing toolbox and emerging technologies made available to assess and manipulate the physical properties of neurons and their environment.

[https://www.cell.com/trends/neurosciences/fulltext/S0166-2236\(20\)30245-9?dgcid=raven_jbs_aip_email](https://www.cell.com/trends/neurosciences/fulltext/S0166-2236(20)30245-9?dgcid=raven_jbs_aip_email)

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