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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, 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, let me know.

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

ACADEMIA.EDU – Disorders of embodiment

In J. Radden (ed.), The Oxford Reader in Philosophy of Psychiatry. Oxford: Oxford University Press, 118-32 (2004).

SHAUN GALLAGHER & METTE VÆVER – Disorders of embodiment

Proponents of non-dualistic philosophical theories – whether those in materialist traditions who argue that cognitive processes are identical with or reducible to brain functions, or those in the phenomenological tradition who argue that the experiencing subject is primarily a living body – could claim that in some sense all psychiatric disorders are bodily disorders. Psychiatric symptoms are generated insofar as something goes wrong with the brain and/or body. This is a statement of objective etiology. In this paper we are not primarily concerned with etiology but with understanding the structure and dynamics of bodily experiences in disorders where the body is not only the cause of the problem, but the locus or theme of the symptomatology. https://www.academia.edu/58667839/Disorders_of_Embodiment

ACADEMIA.EDU – Disorders of embodiment

In P. Ungar (ed.), Evolution of the human diet: the known, the unknown and the unknowable. Oxford: Oxford University Press, 321-351 (2007).

JOHN J. SHEA – Lithic archaeology, or what stone tools can (and can't) tell us about early hominin diets.

Stone tools are the most durable residues of hominin behavior. Our ancestors left these “Stone Age visiting cards,” as Isaac (1981) called them, on every major land mass humans have inhabited, except Antarctica. Before the advent of cheap and efficient methods for producing metal implements, stone tools were employed in subsistence tasks by all known human societies. Stone tools are also still used as subsistence aids by chimpanzees, our nearest primate relatives. To the extent that we believe major changes in hominin evolution have been accompanied by dietary shifts, it is reasonable to seek clues to these changes in stone-tool design and variability. In seeking these clues, however, we need to be alert to the complicating effects of behavioral variability. Recent stone-tool-using humans exhibit considerable variability, not only in the kinds of tasks

for which stone tools are used but also in the choice of technological strategies they deploy in their land-use strategies and subsistence adaptations.

https://www.academia.edu/3291695/John_J_Shea_2007_Lithic_Archaeology_or_What_Stone_Tools_Can_and_Cant_Tell_Us_About_Early_Hominin_Diets_In_Peter_Ungar_Ed_Evolution_of_the_Human_Diet_The_Known_the_Unknown_and_the_Unknownable_pp_212_229_Oxford_UK_Oxford_University_Press

OTHER PUBLICATIONS – Paleoanthropology of the Kibish Formation, southern Ethiopia

In Journal of Human Evolution 55:3, 360-365 (2008).

JOHN G. FLEAGLE et al with JOHN J. SHEA – Paleoanthropology of the Kibish Formation, southern Ethiopia: Introduction

Cranial and skeletal remains of modern humans, *Homo sapiens*, were discovered in the Kibish Formation in 1967 by a team from the Kenya National Museums directed by Richard Leakey. Omo I, from Kamoya's Hominid Site (KHS), consists of much of a skeleton, including most of the cranial vault, parts of the face and mandible, and many postcranial elements. Omo II, from Paul's Hominid Site (PHS), is a virtually complete calvaria. Only a limited fauna and a few stone artifacts attributed to the Middle Stone Age were recovered in conjunction with the fossil hominids. The available dating techniques suggested a very early age, over 100 ka, for Member I, from which the Omo I and Omo II fossils were recovered. However, in subsequent decades, the reliability of the dates and the provenance of the Kibish hominids were repeatedly questioned. The papers in this volume provide a detailed stratigraphic analysis of the Kibish Formation and a series of new radiometric dates that indicate an age of 196 ± 2 ka for Member I and 104 ± 1 for Member III, confirming the antiquity of the lower parts of the Kibish Formation and, in turn, the fossils from Member I. Studies of the postcranial remains of Omo I indicate an overall modern human morphology with a number of primitive features. Studies of an extensive lithic record from Members I and III indicate a Middle Stone Age technology comparable to assemblages of similar age elsewhere in Ethiopia. Studies of the mammalian, avian, and fish faunas indicate overall similarities to those found in the region today, with a few distinctive differences.

<https://www.sciencedirect.com/science/article/pii/S0047248408000985>

CONFERENCE ALERT – Selfish Evolution: Mechanisms & Consequences of Genetic Conflict

AGA2022 President's Symposium – Time to register!

<https://www.theaga.org/agatwentytwentytwo>

President Lila Fishman will hold the 2022 Symposium, July 25-28, 2022, at the beautiful IslandWood campus on Bainbridge Island near Seattle, Washington (with virtual options for speakers and attendees). The Symposium will open Monday evening with a reception and the AGA Key Distinguished Lecture by David Haig, followed by two days of invited talks, panels, and poster sessions on topics spanning the field of genetic conflict and selfish evolution.

Registration includes all meals, talks, and events. The cost is \$300 for students & postdocs, \$450 for AGA members, \$500 non-members. All registrants may submit poster abstracts.

Invited speakers: David Haig, AGA Key Distinguished Lecturer; Yaniv Brandvain; Justin Havird; SaraH Zanders; Amanda Larracuent; Daven Presgraves; Hanna Johannessen; Anna Lindholm; Polly Campbell; Jenn Coughlan; Kelly Dawe; Omar Akbari; Carl Veller; Mia Levine

Islandwood is a non-profit environmental education organization that provides a welcoming space for conferences and special events at its 250-acre campus. There are meadows and forests, delicious and plentiful shared meals, and spacious light-filled meeting rooms and sleeping lodges. We will have the whole campus to enjoy for our symposium registrants and their guests.

Visit the website <https://www.theaga.org/agatwentytwentytwo> or contact Lila Fishman lila.fishman@umontana.edu for more details.

NEWS

SCIENCE DAILY – New theory of decision-making: why humans don't make optimal choices

A new theory of economic decision-making offers an explanation as to why humans, in general, make decisions that are simply adequate, not optimal.

<https://www.sciencedaily.com/releases/2022/06/220607121038.htm>

SCIENCE DAILY – How mothers calm their distressed infants with soothing signals

This study demonstrates empirically, for the first time, that synchronized physiology between mothers and babies plays a role in soothing distressed infants, and that treating postpartum depression with cognitive behavioral therapy can improve the synchronicity patterns and thereby augment mothers' ability to soothe their distressed babies.

<https://www.sciencedaily.com/releases/2022/06/220607120918.htm>

SCIENCE DAILY – Sign languages change, too: The evolution of SELF in ASL

A new study shows that American Sign Language (ASL) is more linguistically complex than previously understood. In particular, new research documents the emergence of the copula --- a word meaning to be (e.g. is, was, are, were) --- in ASL, something that has been overlooked in previous linguistic analyses

<https://www.sciencedaily.com/releases/2022/06/220606181215.htm>

SCIENCE DAILY – Why people don't view the world the same way others do

Why are we so sure that the way we see people, situations and politics is accurate, and the way other people see them is foolishly wrong? The answer, according to new research lies in a region of the brain he calls the 'gestalt cortex,' which helps people make sense of information that is ambiguous or incomplete -- and dismiss alternative interpretations.

<https://www.sciencedaily.com/releases/2022/06/220609132011.htm>

THE CONVERSATION – Why we're searching England for new dialects

Dialects can unlock secrets of history, culture, class and movements of people. An expert explains what they are and why they matter.

<https://theconversationuk.cmail20.com/t/r-l-tyikjuud-khhililah-s/>

PUBLICATIONS

American Journal of Biological Anthropology

PAPERS

TEJESHWAR DHANANJAYA et al – Can urbanization accentuate hand use in the foraging activities of primates?

How a species uses its anatomical manipulators is determined by its anatomy, physiology, and ecology. While ecology explains interspecific variation in gripping, grasping, and manipulating objects, its role in intraspecific variation in mouth- and hand-use by animals is less explored. Primates are distinguished by their prehensile capabilities and manual dexterity. In context to the adaptive pressures of urbanization on primates, we examined if mouth and hand use differed across the forest-urban gradient in food retrieval and processing under experimental and naturalistic conditions in cercopithecids, a family comprising several urbanizing primates.

We recorded the acquisition and processing of peanuts under experimental conditions in three groups of bonnet macaques (BM, *Macaca radiata*) differing in their dietary dependence on packaged food items along a rural–urban gradient. To affirm the pattern obtained in the experiment, we coded food acquisition of three cercopithecoid species in similar habitats from video sources.

Urban macaques had a disproportionately higher hand use to acquire and process peanuts while rural macaques had higher mouth use. Based on analyses of videos, urban populations of BM, Japanese macaque (*M. fuscata*) and vervet monkey (*Chlorocebus pygerythrus*) showed a bias toward hand use during food acquisition.

The adaptive pressures of urbanization, like the manual constraints of extracting packaged foods and perhaps, the need for visual-haptic exploration of novel objects seem to accentuate hand use in synanthropic groups of primates. Additional research should ascertain similar patterns in other primates and determine specific aspects of urbanization that modulate the observed trend.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/ajpa.24532>

eLife

PAPERS

DIANA C. DIMA et al – Social-affective features drive human representations of observed actions

Humans observe actions performed by others in many different visual and social settings. What features do we extract and attend when we view such complex scenes, and how are they processed in the brain? To answer these questions, we curated two large-scale sets of naturalistic videos of everyday actions and estimated their perceived similarity in two behavioral experiments. We normed and quantified a large range of visual, action-related, and social-affective features across the stimulus sets. Using a cross-validated variance partitioning analysis, we found that social-affective features predicted similarity judgments better than, and independently of, visual and action features in both behavioral experiments. Next, we conducted an electroencephalography experiment, which revealed a sustained correlation between neural responses to videos and their behavioral similarity. Visual, action, and social-affective features predicted neural patterns at early, intermediate, and late stages, respectively, during this behaviorally relevant time window. Together, these findings show that social-affective features are important for perceiving naturalistic actions and are extracted at the final stage of a temporal gradient in the brain.

<https://elifesciences.org/articles/75027>

AREFEH SHERAFATI et al – Prefrontal cortex supports speech perception in listeners with cochlear implants

Cochlear implants are neuroprosthetic devices that can restore hearing in people with severe to profound hearing loss by electrically stimulating the auditory nerve. Because of physical limitations on the precision of this stimulation, the acoustic information delivered by a cochlear implant does not convey the same level of acoustic detail as that conveyed by normal hearing. As a result, speech understanding in listeners with cochlear implants is typically poorer and more effortful than in listeners with normal hearing. The brain networks supporting speech understanding in listeners with cochlear implants are not well understood, partly due to difficulties obtaining functional neuroimaging data in this population. In the current study, we assessed the brain regions supporting spoken word understanding in adult listeners with right unilateral cochlear implants (n=20) and matched controls (n=18) using high-density diffuse optical tomography (HD-DOT), a quiet and non-invasive imaging modality with spatial resolution comparable to that of functional MRI. We found that while listening to spoken words in quiet, listeners with cochlear implants showed greater activity in the left prefrontal cortex than listeners with normal hearing, specifically in a region engaged in a separate spatial working memory task. These results suggest that listeners with cochlear implants require greater cognitive processing during speech understanding than listeners with normal hearing, supported by compensatory recruitment of the left prefrontal cortex.

<https://elifesciences.org/articles/75323>

Frontiers in Ecology and Evolution

PAPERS

BERNARD J. CRESPI, MARK V. FLINN & KYLE SUMMERS – Runaway Social Selection in Human Evolution

Darwin posited that social competition among conspecifics could be a powerful selective pressure. Alexander proposed a model of human evolution involving a runaway process of social competition based on Darwin's insight. Here we briefly review Alexander's logic, and then expand upon his model by elucidating six core arenas of social selection that involve runaway, positive-feedback processes, and that were likely involved in the evolution of the remarkable combination of adaptations in humans. We discuss how these ideas fit with the hypothesis that a key life history innovation that opened the door to runaway social selection, and cumulative culture, during hominin evolution was increased cooperation among individuals in small fission-fusion groups.

<https://www.frontiersin.org/articles/10.3389/fevo.2022.894506/full>

Mind & Language

PAPERS

ANDREW BUSKELL – Cumulative culture and complex cultural traditions

Cumulative cultural evolution is often claimed to be distinctive of human culture. Such claims are typically supported with examples of complex and historically late-appearing technologies. Yet by taking these as paradigm cases, researchers unhelpfully lump together different ways that culture accumulates. This article has two aims: (a) to distinguish four types of cultural accumulation: adaptiveness, complexity, efficiency, and disparity and (b) to highlight the epistemic implications of taking complex hominin technologies as paradigmatic instances of cumulative culture. Addressing these issues both clarifies the cumulative culture concept and demonstrates the importance of further cumulative culture research into non-human animals and ancestral hominins.

<https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12335>

SARAH ARNAUD – Self-consciousness in autism: A third-person perspective on the self

This paper suggests that autistic people relate to themselves via a third-person perspective, an objective and explicit mode of access, while neurotypical people tend to access the different dimensions of their self through a first-person perspective. This approach sheds light on autistic traits involving interactions with others, usage of narratives, sensitivity and interoception, and emotional consciousness. Autistic people seem to access these dimensions through comparatively indirect and effortful processes, while neurotypical development enables a more intuitive sense of self.

{Does "more intuitive" also mean "less aware"? And is that really what neurotypical means?}

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12356>

AXEL CONSTANT et al – 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>

BRANDON ASHBY – Rainbow's end: The structure, character, and content of conscious experience

Separatism, representationalism, and phenomenal intentionalism are the primary views on the relationship between the phenomenality and intentionality of experience. I defend a novel position that is incompatible with separatism, can enrich representationalism and phenomenal intentionalism, but can also be accepted independently of those views. I call it phenomenal schematics: The phenomenal characters of our experiences have structures that place a priori, formal, and sometimes semantic constraints on our experience's possible intentional contents. Phenomenal structures are like the grammar of a language (or the compositional rules governing maps, models, and diagrams). Unlike words, however, phenomenal characters possess their “grammatical properties” essentially.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12316>

ERIC FUNKHOUSER – A tribal mind: Beliefs that signal group identity or commitment

People are biased toward beliefs that are welcomed by their in-group. Some beliefs produced by these biases—such as climate change denial and religious belief—can be fruitfully modeled by signaling theory. The idea is that the beliefs function so as to be detected by others and manipulate their behavior, primarily for the benefits that accrue from favorable tribal self-presentation. Signaling theory can explain the etiology, distinctive form, proper function, and alterability of these beliefs.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12326>

ARMIN W. SCHULZ – Enhancing thoughts: Culture, technology, and the evolution of human cognitive uniqueness

Three facts are widely thought to be key to the characterization of human cognitive uniqueness (though a number of other factors are often cited as well): (a) humans are sophisticated cultural learners; (b) humans often rely on mental states with rich representational contents; and (c) humans have the ability and disposition to make and use tools. This article argues that (a)–(c) create a positive feedback loop: Sophisticated cultural learning makes possible the manufacture of tools that increase the sophistication of representational decision-making, which in turn allows for yet further increases in the sophistication of cultural learning and tool manufacture.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12320>

DANIEL W. HARRIS – Semantics without semantic content

I argue that semantics is the study of the proprietary database of a centrally inaccessible and informationally encapsulated input–output system. This system's role is to encode and decode partial and defeasible evidence of what speakers are saying. Since information about nonlinguistic context is therefore outside the purview of semantic processing, a sentence's semantic value is not its content but a partial and defeasible constraint on what it can be used to say. I show how to translate this thesis into a detailed compositional-semantic theory based on the influential framework of Heim and Kratzer. This approach situates semantics within an independently motivated account of human cognitive architecture and reveals the semantics–pragmatics interface to be grounded in the underlying interface between modular and central systems.

{“This approach situates semantics within an independently motivated account of human cognitive architecture...” – OK, that’s all I need to know.}

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12290>

Nature

ARTICLES

LUDOVIC SLIMAK – My work digging up the shelters of our ancestors

Ludovic Slimak, a cultural anthropologist at the CNRS and the University of Toulouse — Jean Jaurès, describes his research and the changing face of archaeology in France.

<https://www.nature.com/articles/d41586-022-01593-3>

Nature Ecology & Evolution

PAPERS

SANDRA OLIVEIRA et al with JOHANNES KRAUSE – Ancient genomes from the last three millennia support multiple human dispersals into Wallacea

Previous research indicates that human genetic diversity in Wallacea— islands in present-day Eastern Indonesia and Timor-Leste that were never part of the Sunda or Sahul continental shelves—has been shaped by complex interactions between migrating Austronesian farmers and indigenous hunter–gatherer communities. Yet, inferences based on present-day groups proved insufficient to disentangle this region’s demographic movements and admixture timings. Here, we investigate the spatio-temporal patterns of variation in Wallacea based on genome-wide data from 16 ancient individuals (2600–250 years BP) from the North Moluccas, Sulawesi and East Nusa Tenggara. While ancestry in the northern islands primarily reflects contact between Austronesian- and Papuan-related groups, ancestry in the southern islands reveals additional contributions from Mainland Southeast Asia that seem to predate the arrival of Austronesians. Admixture time estimates further support multiple and/or continuous admixture involving Papuan- and Asian-related groups throughout Wallacea. Our results clarify previously debated times of admixture and suggest that the Neolithic dispersals into Island Southeast Asia are associated with the spread of multiple genetic ancestries.

<https://www.nature.com/articles/s41559-022-01775-2>

OBITUARIES

ROBERT FOLEY – Paul Mellars (1939–2022)

Archaeologist who emphasized the importance of chronology in understanding Palaeolithic Europe, and laid the framework for the archaeology of modern human origins.

<https://www.nature.com/articles/s41559-022-01804-0>

Nature Reviews Psychology

PAPERS

RYAN W. CARLSON et al – How inferred motives shape moral judgements

When people judge acts of kindness or cruelty, they often look beyond the act itself to infer the agent's motives. These inferences, in turn, can powerfully influence moral judgements. The mere possibility of self-interested motives can taint otherwise helpful acts, whereas morally principled motives can exonerate those behind harmful acts. In this Review, we survey research showcasing the importance of inferred motives for moral judgements, and show how motive inferences are connected to judgements of actions, intentions and character. This work suggests that the inferences observers draw about peoples' motives are sufficient for moral judgement (they drive character judgements even without actions) and functional (they effectively aid observers in predicting peoples' future behaviour). Research that directly probes when and how people infer motives, and how motive properties guide those inferences, can deepen our understanding of the role of inferred motives in moral life.

<https://www.nature.com/articles/s44159-022-00071-x>

Nature Scientific Reports

PAPERS

EDUARDO VIJANDE-VILA et al with JOSÉ RAMOS-MUÑOZ – At the beginnings of the funerary Megalithism in Iberia at Campo de Hockey necropolis

The excavations undertaken at the Campo de Hockey site in 2008 led to the identification of a major Neolithic necropolis in the former Island of San Fernando (Bay of Cádiz). This work presents the results of the latest studies, which indicate that the site stands as one of the oldest megalithic necropolises in the Iberian Peninsula. The main aim of this work is to present with precision the chronology of this necropolis through a Bayesian statistical model that confirms that the necropolis was in use from c. 4300 to 3800 cal BC. The presence of prestige grave goods in the earliest and most monumental graves suggest that the Megalithism phenomenon emerged in relation to maritime routes linked to the distribution of exotic products. We also aim to examine funerary practices in these early megalithic communities, and especially their way of life and the social reproduction system. As such, in addition to the chronological information and the Bayesian statistics, we provide the results of a comprehensive interdisciplinary study, including anthropological, archaeometric and genetic data.

<https://www.nature.com/articles/s41598-022-13014-6>

AMY M. WAY et al with LYN WADLEY – Howiesons Poort backed artifacts provide evidence for social connectivity across southern Africa during the Final Pleistocene

Examining why human populations used specific technologies in the Final Pleistocene is critical to understanding our evolutionary path. A key Final Pleistocene techno-tradition is the Howiesons Poort, which is marked by an increase in behavioral complexity and technological innovation. Central to this techno-tradition is the production of backed artifacts—small, sharp blades likely used as insets in composite tools. Although backed artifacts were manufactured for thousands of years before the Howiesons Poort, this period is marked by a phenomenal increase in their production. In this paper we test both social and environmental hypotheses to explain this phenomenon. We correlate environmental data with changing frequencies of backed artifact production at Sibudu and assess morphological similarity across seven sites in southern Africa. We find that these artifacts are made to a similar template across different regions and that their increased production correlates with multiple paleo-environmental proxies. When compared to an Australian outgroup, the backed artifacts from the seven southern African sites cluster within the larger shape space described by the Australian group. This leads us to argue that the observed standardized across southern Africa is related to cultural similarities and marks a strengthening of long-distance social ties during the MIS4.

<https://www.nature.com/articles/s41598-022-12677-5>

PLoS One

PAPERS

MARIAGRAZIA RANZINI et al – Influences of hand action on the processing of symbolic numbers: A special role of pointing?

Embodied and grounded cognition theories state that cognitive processing is built upon sensorimotor systems. In the context of numerical cognition, support to this framework comes from the interactions between numerical processing and the hand actions of reaching and grasping documented in skilled adults. Accordingly, mechanisms for the processing of object size and

location during reach and grasp actions might scaffold the development of mental representations of numerical magnitude. The present study exploited motor adaptation to test the hypothesis of a functional overlap between neurocognitive mechanisms of hand action and numerical processing. Participants performed repetitive grasping of an object, repetitive pointing, repetitive tapping, or passive viewing. Subsequently, they performed a symbolic number comparison task. Importantly, hand action and number comparison were functionally and temporally dissociated, thereby minimizing context-based effects. Results showed that executing the action of pointing slowed down the responses in number comparison. Moreover, the typical distance effect (faster responses for numbers far from the reference as compared to close ones) was not observed for small numbers after pointing, while it was enhanced by grasping. These findings confirm the functional link between hand action and numerical processing, and suggest new hypotheses on the role of pointing as a meaningful gesture in the development and embodiment of numerical skills.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0269557>

JULIE C. JARVEY, PAYAM AMINPOUR & CLIFFORD BOHM – The effects of social rank and payoff structure on the evolution of group hunting

Group hunting is common among social carnivores, and mechanisms that promote this behavior are a central topic in evolutionary biology. Increased prey capture success and decreased losses from competitors are often invoked as factors promoting group hunting. However, many animal societies have linear dominance hierarchies where access to critical resources is determined by social rank, and group-hunting rewards are shared unequally. Despite this inequality, animals in such societies cooperate to hunt and defend resources. Game theoretic models predict that rank and relative rewards from group hunting vs. solitary hunting affect which hunting strategies will evolve. These predictions are partially supported by empirical work, but data needed to test these predictions are difficult to obtain in natural systems. We use digital evolution to test how social rank and tolerance by dominants of subordinates feeding while sharing spoils from group hunting influence which hunting strategies evolve in digital organisms. We created a computer-simulated world to reflect social and hunting dynamics of spotted hyenas (*Crocuta crocuta*). We found that group hunting increased as tolerance increased and as the relative payoff from group hunting increased. Also, top-ranking agents were more likely to group hunt than lower-ranking agents under despotic sharing conditions. These results provide insights into mechanisms that may promote cooperation in animal societies structured by dominance hierarchies.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0269522>

REMI VAN TRIJP, KATRIEN BEULS & PAUL VAN EECKE – The FCG Editor: An innovative environment for engineering computational construction grammars

Since its inception in the mid-eighties, the field of construction grammar has been steadily growing and constructionist approaches to language have by now become a mainstream paradigm for linguistic research. While the construction grammar community has traditionally focused on theoretical, experimental and corpus-based research, the importance of computational methodologies is now rapidly increasing. This movement has led to the establishment of a number of exploratory computational construction grammar formalisms, which facilitate the implementation of construction grammars, as well as their use for language processing purposes. Yet, implementing large grammars using these formalisms still remains a challenging task, partly due to a lack of powerful and user-friendly tools for computational construction grammar engineering. In order to overcome this obstacle, this paper introduces the FCG Editor, a dedicated and innovative integrated development environment for the Fluid Construction Grammar formalism. Offering a straightforward installation and a user-friendly, interactive interface, the FCG Editor is an accessible, yet powerful tool for construction grammarians who wish to operationalise their construction grammar insights and analyses in order to computationally verify them, corroborate them with corpus data, or integrate them in language technology applications.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0269708>

KATHRIN ROTHERMICH et al – Perception of speaker sincerity in complex social interactions by cochlear implant users

Understanding insincere language (sarcasm and teasing) is a fundamental part of communication and crucial for maintaining social relationships. This can be a challenging task for cochlear implant (CIs) users who receive degraded suprasegmental information important for perceiving a speaker's attitude. We measured the perception of speaker sincerity (literal positive, literal negative, sarcasm, and teasing) in 16 adults with CIs using an established video inventory. Participants were presented with audio-only and audio-visual social interactions between two people with and without supporting verbal context. They were instructed to describe the content of the conversation and answer whether the speakers meant what they said. Results showed that subjects could not always identify speaker sincerity, even when the content of the conversation was perfectly understood. This deficit was greater for perceiving insincere relative to sincere utterances. Performance improved when additional visual cues or verbal context cues were provided. Subjects who were better at perceiving the content of the interactions in the audio-only condition benefited more from having additional visual cues for judging the speaker's sincerity, suggesting that the two modalities compete for cognitive resources. Perception of content also did not correlate with perception of speaker sincerity, suggesting that what was said vs. how it was said were perceived using unrelated segmental versus suprasegmental cues. Our results further showed that subjects who had access to lower-order resolved harmonic information provided by hearing aids in the contralateral ear identified speaker sincerity better than those who used

implants alone. These results suggest that measuring speech recognition alone in CI users does not fully describe the outcome. Our findings stress the importance of measuring social communication functions in people with CIs.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0269652>

JOSEPH C. Y. LAU et al – Cross-linguistic patterns of speech prosodic differences in autism: A machine learning study

Differences in speech prosody are a widely observed feature of Autism Spectrum Disorder (ASD). However, it is unclear how prosodic differences in ASD manifest across different languages that demonstrate cross-linguistic variability in prosody. Using a supervised machine-learning analytic approach, we examined acoustic features relevant to rhythmic and intonational aspects of prosody derived from narrative samples elicited in English and Cantonese, two typologically and prosodically distinct languages. Our models revealed successful classification of ASD diagnosis using rhythm-relative features within and across both languages. Classification with intonation-relevant features was significant for English but not Cantonese. Results highlight differences in rhythm as a key prosodic feature impacted in ASD, and also demonstrate important variability in other prosodic properties that appear to be modulated by language-specific differences, such as intonation.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0269637>

MARLENE STOLL et al – Plain language summaries: A systematic review of theory, guidelines and empirical research

Plain language summaries (PLSs) have been introduced to communicate research in an understandable way to a nonexpert audience. Guidelines for writing PLSs have been developed and empirical research on PLSs has been conducted, but terminology and research approaches in this comparatively young field vary considerably. This prompted us to review the current state of the art of the theoretical and empirical literature on PLSs. The two main objectives of this review were to develop a conceptual framework for PLS theory, and to synthesize empirical evidence on PLS criteria. We began by searching Web of Science, PubMed, PsycInfo and PSYNDEX (last search 07/2021). In our review, we included empirical investigations of PLSs, reports on PLS development, PLS guidelines, and theoretical articles referring to PLSs. A conceptual framework was developed through content analysis. Empirical studies investigating effects of PLS criteria on defined outcomes were narratively synthesized. We identified 7,714 records, of which 90 articles met the inclusion criteria. All articles were used to develop a conceptual framework for PLSs which comprises 12 categories: six of PLS aims and six of PLS characteristics. Thirty-three articles empirically investigated effects of PLSs on several outcomes, but study designs were too heterogeneous to identify definite criteria for high-quality PLSs. Few studies identified effects of various criteria on accessibility, understanding, knowledge, communication of research, and empowerment. We did not find empirical evidence to support most of the criteria we identified in the PLS writing guidelines. We conclude that although considerable work on establishing and investigating PLSs is available, empirical evidence on criteria for high-quality PLSs remains scarce. The conceptual framework developed in this review may provide a valuable starting point for future guideline developers and PLS researchers.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0268789>

CAMILO LÓPEZ-AGUIRRE, MADLEN M. LANG & MARY T. SILCOX – Diet drove brain and dental morphological coevolution in strepsirrhine primates

The evolution of the remarkably complex primate brain has been a topic of great interest for decades. Multiple factors have been proposed to explain the comparatively larger primate brain (relative to body mass), with recent studies indicating diet has the greatest explanatory power. Dietary specialisations also correlate with dental adaptations, providing a potential evolutionary link between brain and dental morphological evolution. However, unambiguous evidence of association between brain and dental phenotypes in primates remains elusive. Here we investigate the effect of diet on variation in primate brain and dental morphology and test whether the two anatomical systems coevolved. We focused on the primate suborder Strepsirrhini, a living primate group that occupies a very wide range of dietary niches. By making use of both geometric morphometrics and dental topographic analysis, we extend the study of brain-dental ecomorphological evolution beyond measures of size. After controlling for allometry and evolutionary relatedness, differences in brain and dental morphology were found between dietary groups, and brain and dental morphologies were found to covary. Historical trajectories of morphological diversification revealed a strong integration in the rates of brain and dental evolution and similarities in their modes of evolution. Combined, our results reveal an interplay between brain and dental ecomorphological adaptations throughout strepsirrhine evolution that can be linked to diet.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0269041>

PNAS

COMMENTARIES

ELLIOT MURPHY & EVELINA LEIVADA – A model for learning strings is not a model of language

Yang and Piantadosi attempt to show that language acquisition is possible without recourse to “innate knowledge of the structures that occur in natural language.” The authors claim that a domain-general rule-learning algorithm can “acquire key pieces of natural language.” Yang and Piantadosi provide a number of technical innovations and elegant arguments for why acquisition researchers should expand their conception of what a possible domain-general learner can achieve. Yet, we also believe that their findings do not directly pertain to human language.

<https://www.pnas.org/doi/full/10.1073/pnas.2201651119>

STEVEN T. PIANTADOSI & YUAN YANG – Reply to Murphy and Leivada: Program induction can learn language

We present a model that can learn patterns present in natural language, a feat long argued to be impossible. This is important because the study of learnability helps reveal human nature, potentially pinpointing what is distinctive about human cognition. In this reply, we contest several key points raised by a letter from Murphy and Leivada.

<https://www.pnas.org/doi/full/10.1073/pnas.2202925119>

Proceedings of the Royal Society B**PAPERS****AUBREY M. KELLY, JOSE ANTONIO GONZALEZ ABREU & RICHMOND R. THOMPSON – Beyond sex and aggression: testosterone rapidly matches behavioural responses to social context and tries to predict the future**

Although androgens are widely studied in the context of aggression, androgenic influences on prosocial behaviours have been less explored. We examined testosterone's (T) influence on prosocial and aggressive responses in a positively valenced social context (interacting with a pairbond partner) and a negatively valenced context (interacting with an intruder) in socially monogamous Mongolian gerbils. T increased and decreased prosocial responses in the same individuals towards a pairbond partner and an intruder, respectively, both within 30 min, but did not affect aggression. T also had persistent effects on prosocial behaviour; males in which T initially increased prosocial responses towards a partner continued to exhibit elevated prosocial responses towards an intruder male days later until a second T injection rapidly eliminated those responses. Thus, T surges can rapidly match behaviour to current social context, as well as prime animals for positive social interactions in the future. Neuroanatomically, T rapidly increased hypothalamic oxytocin, but not vasopressin, cellular responses during interactions with a partner. Together, our results indicate that T can facilitate and inhibit prosocial behaviours depending on social context, that it can influence prosocial responses across rapid and prolonged time scales, and that it affects oxytocin signalling mechanisms that could mediate its context-dependent behavioural influences.

<https://royalsocietypublishing.org/doi/abs/10.1098/rspb.2022.0453>

CHRISTOF NEUMANN et al – Temporal dynamics and fitness consequences of coalition formation in male primates

Coalition formation is one of the most striking forms of cooperation found in animals. Yet, there is substantial variation between taxa regarding the mechanisms by which coalitions can result in fitness consequences. Here, we investigate the influence of coalitions on dominance rank trajectories and subsequently on reproductive success in wild male crested macaques (*Macaca nigra*) at Tangkoko Nature Reserve (Sulawesi, Indonesia). We observed 128 coalition events involving 28 males and tested how a variety of coalition properties and factors related to the social environment influenced future male rank. We further used genetic paternity analysis of 19 infants conceived during the study to assess male reproductive success. Our results show that males participating in coalitions achieved higher-than-expected future ranks, while coalition targets had lower-than-expected future ranks. Additionally, all-up coalitions had stronger effects on rank than all-down and bridging coalitions, and these were modulated by the relative strength of coalition partners versus targets. Finally, higher ranking males were more likely to sire infants than lower ranking males. These results provide important insights regarding the mechanisms underlying coalition formation and support the idea that one major path by which coalitions can affect fitness is through influencing male dominance trajectories.

<https://royalsocietypublishing.org/doi/abs/10.1098/rspb.2021.2626>

RORY EGGLESTON et al – Vocal babbling in a wild parrot shows life history and endocrine affinities with human infants

Prelinguistic babbling is a critical phase in infant language development and is best understood in temperate songbirds where it occurs primarily in males at reproductive maturity and is modulated by sex steroids. Parrots of both sexes are icons of tropical vocal plasticity, but vocal babbling is unreported in this group and whether the endocrine system is involved is unknown. Here we show that vocal babbling is widespread in a wild parrot population in Venezuela, ensues in both sexes during the nestling stage, occurs amidst a captive audience of mixed-aged siblings, and is modulated by corticosteroids. Spectrographic analysis and machine learning found phoneme diversity and combinatorial capacity increased precipitously for the first week, thereafter, crystalizing into a smaller repertoire, consistent with the selective attrition model of language development. Corticosterone-treated nestlings differed from unmanipulated birds and sham controls in several acoustic properties and crystallized a larger repertoire post-treatment. Our findings indicate babbling occurs during an early life-history stage in which corticosteroids help catalyse the transition from a universal learning programme to one finely tuned for the prevailing ecological environment, a potentially convergent scenario in human prelinguistic development.

<https://royalsocietypublishing.org/doi/abs/10.1098/rspb.2022.0592>

WILL WHITHAM et al – The gaze of a social monkey is perceptible to conspecifics and predators but not prey

Eye gaze is an important source of information for animals, implicated in communication, cooperation, hunting and antipredator behaviour. Gaze perception and its cognitive underpinnings are much studied in primates, but the specific features that are used to estimate gaze can be difficult to isolate behaviourally. We photographed 13 laboratory-housed tufted capuchin monkeys (*Sapajus [Cebus] apella*) to quantify chromatic and achromatic contrasts between their iris, pupil, sclera and skin. We used colour vision models to quantify the degree to which capuchin eye gaze is discriminable to capuchins, their predators and their prey. We found that capuchins, regardless of their colour vision phenotype, as well as their predators, were capable of effectively discriminating capuchin gaze across ecologically relevant distances. Their prey, in

contrast, were not capable of discriminating capuchin gaze, even under relatively ideal conditions. These results suggest that specific features of primate eyes can influence gaze perception, both within and across species.

<https://royalsocietypublishing.org/doi/full/10.1098/rspb.2022.0194>

Trends in Cognitive Sciences

PAPERS

RICHARD COOK, ADAM EGGLESTON & HARRIET OVER – The cultural learning account of first impressions

Humans spontaneously attribute character traits to strangers based on their facial appearance. Although these 'first impressions' typically have no basis in reality, some authors have assumed that they have an innate origin. By contrast, the Trait Inference Mapping (TIM) account proposes that first impressions are products of culturally acquired associative mappings that allow activation to spread from representations of facial appearance to representations of trait profiles. According to TIM, cultural instruments, including propaganda, illustrated storybooks, art and iconography, ritual, film, and TV, expose many individuals within a community to common sources of correlated face–trait experience, yielding first impressions that are shared by many, but typically inaccurate. Here, we review emerging empirical findings, many of which accord with TIM, and argue that future work must distinguish first impressions based on invariant facial features (e.g., shape) from those based on facial behaviours (e.g., expressions).

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(22\)00113-9](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00113-9)

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