

## EAORC BULLETIN 1,013 – 13 November 2022

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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.

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### ACADEMIA.EDU – Major Fallacies Surrounding Stone Artifacts and Assemblages

*In Journal of Archaeological Method and Theory 24, 813-851 (2017).*

#### HAROLD L. DIBBLE et al with DENNIS SANDGATHE – Major Fallacies Surrounding Stone Artifacts and Assemblages

While lithic objects can potentially inform us about past adaptations and behaviors, it is important to develop a comprehensive understanding of all of the various processes that influence what we recover from the archaeological record. We argue here that many assumptions used by archaeologists to derive behavioral inferences through the definition, conceptualization, and interpretation of both individual stone artifact forms and groups of artifacts identified as assemblages do not fit squarely with what we have learned from both ethnographic sources and analyses of archaeological materials. We discuss this in terms of two fallacies. The first is the fallacy of the “desired end product” in stone artifact manufacture, which also includes our ability to recognize such end products. The second fallacy has to do with the notions that lithic assemblages represent simple accumulations of contemporary behaviors and the degree to which the composition of the depositional units we study reliably match the kinds of activities that took place. Although it is beyond the scope of this paper to offer a comprehensive set of new methodologies and theoretical perspectives to solve these problems, our goal here is to stress the importance of rethinking some of our most basic assumptions regarding the nature of lithic objects and how they become part of the archaeological record. Such a revision is needed if we want to be able to develop research questions that can be addressed with the data we have available to us.

[https://www.academia.edu/27785065/Major Fallacies Surrounding Stone Artifacts and Assemblages](https://www.academia.edu/27785065/Major_Fallacies_Surrounding_Stone_Artifacts_and_Assemblages)

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## NEWS

### GUARDIAN SCIENCE – Oldest known written sentence discovered – on a head-lice comb

Timeless fret over hygiene picked out on engraved Bronze age comb from ancient kingdom of Judah.

{Well, oldest known translated written sentence in an alphabetic script, maybe...}

<https://www.theguardian.com/science/2022/nov/09/oldest-known-written-sentence-discovered-on-a-head-lice-comb>

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### SAPIENS – More Than Cousins?

These members of the genus Homo have long occupied two different branches on the family tree. But now that researchers think these groups interbred, scholars are giving serious consideration to whether we are the same species after all.

<https://www.sapiens.org/biology/hominin-species-neanderthals/>

### SAPIENS – Neanderthal Anatomy

Our interactive graphic tours the Neanderthal body, pinpointing clues about ancient life gleaned from ancient bones.

<https://www.sapiens.org/biology/neanderthal-anatomy/>

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### SCIENCE NEWS – Human population boom may have doomed Madagascar's giant animals

Two previously isolated groups of people mixed 1000 years ago, spelling the demise of elephant birds and jumbo lemurs.

<https://www.science.org/content/article/human-population-boom-may-have-doomed-madagascar-s-giant-animals>

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### SCIENCE NEWS – As Musk reshapes Twitter, academics ponder taking flight

Many researchers are setting up profiles on social media site Mastodon.

<https://www.science.org/content/article/musk-reshapes-twitter-academics-ponder-taking-flight>

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### SOCIETY FOR SCIENCE – This ancient Canaanite comb is engraved with a plea against lice

The Canaanite comb bears the earliest known instance of a complete sentence written in a phonetic alphabet, researchers say.

<http://click.societyforscience->

[email.com/?qs=e0284029bfd3bd0ad8e740396aae45df25b10443a51e8a940fee9778b90057c5c46184c584358fa574ffa1c929b90cf715597ba01627837b936e8effec5f2eaf](http://click.societyforscience-email.com/?qs=e0284029bfd3bd0ad8e740396aae45df25b10443a51e8a940fee9778b90057c5c46184c584358fa574ffa1c929b90cf715597ba01627837b936e8effec5f2eaf)

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### THE CONVERSATION – The study of evolution is fracturing – and that may be a good thing

There is more to evolution than the genes species inherit.

<https://theconversationuk.cmail19.com/t/r-l-tjuutjl-khhiliah-w/>

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## PUBLICATIONS

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### eLife

#### PAPERS

#### **GUANGYAO QI et al – Neural dynamics of causal inference in the macaque frontoparietal circuit**

Natural perception relies inherently on inferring causal structure in the environment. However, the neural mechanisms and functional circuits essential for representing and updating the hidden causal structure and corresponding sensory representations during multisensory processing are unknown. To address this, monkeys were trained to infer the probability of a potential common source from visual and proprioceptive signals based on their spatial disparity in a virtual reality system. The proprioceptive drift reported by monkeys demonstrated that they combined previous experience and current multisensory signals to estimate the hidden common source and subsequently updated the causal structure and sensory representation. Single-unit recordings in premotor and parietal cortices revealed that neural activity in the premotor cortex represents the core computation of causal inference, characterizing the estimation and update of the likelihood of integrating multiple sensory inputs at a trial-by-trial level. In response to signals from the premotor cortex, neural activity in the parietal cortex also represents the causal structure and further dynamically updates the sensory representation to maintain consistency with the causal inference structure. Thus, our results indicate how the premotor cortex integrates previous experience and sensory inputs to infer hidden variables and selectively updates sensory representations in the parietal cortex to support behavior. This dynamic loop of frontal-parietal interactions in the causal inference framework may provide the neural mechanism to answer long-standing questions regarding how neural circuits represent hidden structures for body awareness and agency.

<https://elifesciences.org/articles/76145>

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### Frontiers in Human Neuroscience

#### PAPERS

#### **MARIANNE SCHELL, ANGELA D. FRIEDERICI & EMILIANO ZACCARELLA – Neural classification maps for distinct word combinations in Broca's area**

Humans are equipped with the remarkable ability to comprehend an infinite number of utterances. Relations between grammatical categories restrict the way words combine into phrases and sentences. How the brain recognizes different word combinations remains largely unknown, although this is a necessary condition for combinatorial unboundedness in language. Here, we used functional magnetic resonance imaging and multivariate pattern analysis to explore whether distinct neural populations of a known language network hub—Broca's area—are specialized for recognizing distinct simple word combinations. The phrases consisted of a noun (flag) occurring either with a content word, an adjective (green flag), or with a function word, a determiner (that flag). The key result is that the distribution of neural populations classifying word combination in Broca's area seems sensitive to neuroanatomical subdivisions within this area, irrespective of task. The

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information patterns for adjective + noun were localized in its anterior part (BA45) whereas those for determiner + noun were localized in its posterior part (BA44). Our findings provide preliminary answers to the fundamental question of how lexical and grammatical category information interact during simple word combination, with the observation that Broca's area is sensitive to the recognition of categorical relationships during combinatory processing, based on different demands placed on syntactic and semantic information. This supports the hypothesis that the combinatorial power of language consists of some neural computation capturing phrasal differences when processing linguistic input.

<https://www.frontiersin.org/articles/10.3389/fnhum.2022.930849/full>

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## Frontiers in Psychology

### PAPERS

#### **AXEL G. EKSTRÖM – Motor constellation theory: A model of infants' phonological development**

Every normally developing human infant solves the difficult problem of mapping their native-language phonology, but the neural mechanisms underpinning this behavior remain poorly understood. Here, motor constellation theory, an integrative neurophonological model, is presented, with the goal of explicating this issue. It is assumed that infants' motor-auditory phonological mapping takes place through infants' orosensory "reaching" for phonological elements observed in the language-specific ambient phonology, via reference to kinesthetic feedback from motor systems (e.g., articulators), and auditory feedback from resulting speech and speech-like sounds. Attempts are regulated by basal ganglion–cerebellar speech neural circuitry, and successful attempts at reproduction are enforced through dopaminergic signaling. Early in life, the pace of anatomical development constrains mapping such that complete language-specific phonological mapping is prohibited by infants' undeveloped supralaryngeal vocal tract and undescended larynx; constraints gradually dissolve with age, enabling adult phonology. Where appropriate, reference is made to findings from animal and clinical models. Some implications for future modeling and simulation efforts, as well as clinical settings, are also discussed.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2022.996894/full>

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## Nature

### NEWS

#### **Ancient DNA reveals rapid natural selection during the Black Death**

Human DNA from the Middle Ages reveals that natural selection occurred at pace in survivors of a bubonic plague pandemic, perhaps leaving their descendants at increased risk of autoimmune diseases.

<https://www.nature.com/articles/d41586-022-03160-2>

### REVIEWS

#### **STUART MATHIESON – Huxley: the family that championed evolution**

Review of 'An Intimate History of Evolution: The Story of the Huxley Family' by Alison Bashford, Allen Lane, 2022.

<https://www.nature.com/articles/d41586-022-03579-7>

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## Nature Human Behaviour

### PAPERS

#### **SEAN J. TAYLOR et al – Identity effects in social media**

Identity cues appear ubiquitously alongside content in social media today. Some also suggest universal identification, with names and other cues, as a useful deterrent to harmful behaviours online. Unfortunately, we know little about the effects of identity cues on opinions and online behaviours. Here we used a large-scale longitudinal field experiment to estimate the extent to which identity cues affect how people form opinions about and interact with content online. We randomly assigned content produced on a social news aggregation website to 'identified' and 'anonymous' conditions to estimate the causal effect of identity cues on how viewers vote and reply to content. The effects of identity cues were significant and heterogeneous, accounting for between 28% and 61% of the variation in voting associated with commenters' production, reputation and reciprocity. Our results also showed that identity cues cause people to vote on content faster (consistent with heuristic processing) and to vote according to content producers' reputations, production history and reciprocal votes with content viewers. These results provide evidence that rich-get-richer dynamics and inequality in social content evaluation are mediated by identity cues. They also provide insights into the evolution of status in online communities. From a practical perspective, we show via simulation that social platforms may improve content quality by including votes on anonymized content as a ranking signal.

<https://www.nature.com/articles/s41562-022-01459-8>

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## Nature Reviews Neuroscience

### PAPERS

#### **KELLY G. GARNER & PAUL E. DUX – Knowledge generalization and the costs of multitasking**

Humans are able to rapidly perform novel tasks, but show pervasive performance costs when attempting to do two things at once. Traditionally, empirical and theoretical investigations into the sources of such multitasking interference have largely focused on multitasking in isolation to other cognitive functions, characterizing the conditions that give rise to performance decrements. Here we instead ask whether multitasking costs are linked to the system's capacity for knowledge generalization, as is required to perform novel tasks. We show how interrogation of the neurophysiological circuitry underlying these two facets of cognition yields further insights for both. Specifically, we demonstrate how a system that rapidly generalizes knowledge may induce multitasking costs owing to sharing of task contingencies between contexts in neural representations encoded in frontoparietal and striatal brain regions. We discuss neurophysiological insights suggesting that prolonged learning segregates such representations by refining the brain's model of task-relevant contingencies, thereby reducing information sharing between contexts and improving multitasking performance while reducing flexibility and generalization. These proposed neural mechanisms explain why the brain shows rapid task understanding, multitasking limitations and practice effects. In short, multitasking limits are the price we pay for behavioural flexibility.

<https://www.nature.com/articles/s41583-022-00653-x>

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## Nature Scientific Reports

### PAPERS

#### **KALLIE TZELIOS et al – Evidence of the unidimensional structure of mind perception**

The last decade has witnessed intense interest in how people perceive the minds of other entities (humans, non-human animals, and non-living objects and forces) and how this perception impacts behavior. Despite the attention paid to the topic, the psychological structure of mind perception—that is, the underlying properties that account for variance across judgements of entities—is not clear and extant reports conflict in terms of how to understand the structure. In the present research, we evaluated the psychological structure of mind perception by having participants evaluate a wide array of human, non-human animal, and non-animal entities. Using an entirely within-participants design, varied measurement approaches, and data-driven analyses, four studies demonstrated that mind perception is best conceptualized along a single dimension.

<https://www.nature.com/articles/s41598-022-23047-6>

#### **LAURENT HUSSON et al with ASTER TEAM – Javanese Homo erectus on the move in SE Asia circa 1.8 Ma**

The migration of Homo erectus in Southeast Asia during Early Pleistocene is cardinal to our comprehension of the evolution of the genus Homo. However, the limited consideration of the rapidly changing physical environment, together with controversial datings of hominin bearing sites, make it challenging to secure the robust timeline needed to unveil the behavior of early humans. Here, we reappraise the first appearance datum of Javanese H. erectus by adding the most reliable age constraints based on cosmogenic nuclides  $^{10}\text{Be}$  and  $^{26}\text{Al}$  produced in situ to a compilation of earlier estimates. We find that H. erectus reached Java and dwelled at Sangiran, Java, ca. 1.8 Ma. Using this age as a baseline, we develop a probabilistic approach to reconstruct their dispersal routes, coupling ecological movement simulations to landscape evolution models forced by reconstructed geodynamic and climatic histories. We demonstrate that the hospitable terra firma conditions of Sundaland facilitated the prior dispersal of hominins to the edge of Java, where they conversely could not settle until the Javanese archipelago emerged from the sea and connected to Sundaland. The dispersal of H. erectus across Sundaland occurred over at least tens to hundreds kyr, a time scale over which changes in their physical environment, whether climatic or physiographic, may have become primary forcings on their behavior. Our comprehensive reconstruction method to unravel the peopling timeline of SE Asia provides a novel framework to evaluate the evolution of early humans.

<https://www.nature.com/articles/s41598-022-23206-9>

#### **ROTEM ABRAHAM, NOEMÍ GRINSPUN & TAL-CHEN RABINOWITZ – Children's perception of interpersonal coordination during joint painting**

Interpersonal coordination is important for many joint activities. A special case of interpersonal coordination is synchronization, which is required for the performance of many activities, but is also associated with diverse positive social and emotional attributes. The extent to which these effects are due to the reliance on synchrony for task performance or to its specific rhythmic characteristics, is not clear. To address these questions, we considered a more general form of interpersonal coordination, implemented during joint artmaking. This is a non-typical context for interpersonal coordination, not required for task success, and smoother and more loosely-structured than more standard forms of synchronous coordination. Therefore, comparing interpersonal coordination with non-coordination during shared painting, could help reveal general social-emotional reactions to coordination. To gain a more 'naïve' perspective we focused on children, and staged coordinated and non-coordinated art interactions between an adult and a child, asking child observers to judge various variables reflecting the perceived bond between the painters. We found an overall stronger perceived bond for the coordination condition. These results demonstrate that even a non-typical form of interpersonal coordination could be

attributed with positive social and emotional qualities, a capacity revealed already in childhood, with possible implications for development.

<https://www.nature.com/articles/s41598-022-22516-2>

### **MATHILDE FORT & JEAN-LUC SCHWARTZ – Resolving the bouba-kiki effect enigma by rooting iconic sound symbolism in physical properties of round and spiky objects**

The “bouba-kiki effect”, where “bouba” is perceived round and “kiki” spiky, remains a puzzling enigma. We solve it by combining mathematical findings largely unknown in the field, with computational models and novel experimental evidence. We reveal that this effect relies on two acoustic cues: spectral balance and temporal continuity. We demonstrate that it is not speech-specific but rather rooted in physical properties of objects, creating audiovisual regularities in the environment. Round items are mathematically bound to produce, when hitting or rolling on a surface, lower-frequency spectra and more continuous sounds than same-size spiky objects. Finally, we show that adults are sensitive to such regularities. Hence, intuitive physics impacts language perception and possibly language acquisition and evolution too.

<https://www.nature.com/articles/s41598-022-23623-w>

### **ISABELLE DAUTRICHE et al – Evidence for compositionality in baboons (*Papio papio*) through the test case of negation**

Can non-human animals combine abstract representations much like humans do with language? In particular, can they entertain a compositional representation such as ‘not blue’? Across two experiments, we demonstrate that baboons (*Papio papio*) show a capacity for compositionality. Experiment 1 showed that baboons can entertain negative, compositional, representations: they can learn to associate a cue with iconically related referents (e.g., a blue patch referring to all blue objects), but also to the complement set associated with it (e.g., a blue patch referring to all non-blue objects). Strikingly, Experiment 2 showed that baboons not only learn to associate a cue with iconically related referents, but can learn to associate complex cues (composed of the same cue and an additional visual element) with the complement object set. Thus, they can learn an operation, instantiated by this additional visual element, that can be compositionally combined with previously learned cues. These results significantly reduce any claim that would make the manipulation and combination of abstract representations a solely human privilege.

<https://www.nature.com/articles/s41598-022-21143-1>

### **MARLOU RASENBERG et al with MARK DINGEMANSE – The multimodal nature of communicative efficiency in social interaction**

How does communicative efficiency shape language use? We approach this question by studying it at the level of the dyad, and in terms of multimodal utterances. We investigate whether and how people minimize their joint speech and gesture efforts in face-to-face interactions, using linguistic and kinematic analyses. We zoom in on other-initiated repair—a conversational microcosm where people coordinate their utterances to solve problems with perceiving or understanding. We find that efforts in the spoken and gestural modalities are wielded in parallel across repair turns of different types, and that people repair conversational problems in the most cost-efficient way possible, minimizing the joint multimodal effort for the dyad as a whole. These results are in line with the principle of least collaborative effort in speech and with the reduction of joint costs in non-linguistic joint actions. The results extend our understanding of those efficiency principles by revealing that they pertain to multimodal utterance design.

<https://www.nature.com/articles/s41598-022-22883-w>

## **PLoS One**

### **PAPERS**

#### **ANDREW MILES, LAURA UPENIEKS & CHRISTOS ORFANIDIS – Beyond prosociality: Recalling many types of moral behavior produces positive emotion**

Prosocial acts can increase positive emotions and contribute to emotional well-being, but it is unclear whether other types of moral behavior have similar effects. Respondents from a large online sample (N = 1783) were randomly assigned to recall recent instances when they had performed moral, self-indulgent, or routine acts. Those who recalled self-indulgent behaviors or acts associated with care, fairness, loyalty, authority, and sanctity-based morality increased in positive emotions relative to routine acts controls. Initial evidence suggests that effects for recalling moral acts occurred in part because individuals who recalled these behaviors generated positive moral self-appraisals and satisfied a basic psychological need for relatedness. Study results are consistent with the recent claim that morality is a basic psychological need.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0277488>

#### **JONATHAN MIRAULT et al – Transposed-word effects when reading serially**

When asked to decide if an ungrammatical sequence of words is grammatically correct or not readers find it more difficult to do so (longer response times (RTs) and more errors) if the ungrammatical sequence is created by transposing two words from a correct sentence (e.g., the white was cat big) compared with a set of matched ungrammatical sequences for which transposing any two words could not produce a correct sentence (e.g., the white was cat slowly). Here, we provide a further exploration of transposed-word effects while imposing serial reading by using rapid serial visual presentation (RSVP) in

Experiments 1 (respond at the end of the sequence) and 2 (respond as soon as possible—which could be during the sequence). Crucially, in Experiment 3 we compared performance under serial RSVP conditions with parallel presentation of the same stimuli for the same total duration and with the same group of participants. We found robust transposed-word effects in the RSVP conditions tested in all experiments, but only in error rates and not in RTs. This contrasts with the effects found in both errors and RTs in our prior work using parallel presentation, as well as the parallel presentation conditions tested in Experiment 3. We provide a tentative account of why, under conditions that impose a serial word-by-word reading strategy, transposed-word effects are only seen in error rates and not in RTs.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0277116>

### **Isu Cho, Nellie Kamkar & Niki Hosseini-Kamkar – Reasoning about mental states under uncertainty**

Theory of Mind (ToM), the ability to infer the mental states of others, is integral to facilitating healthy social interactions. People can reason about the mental states of others even with limited or (sometimes) inconsistent information. However, little is known about how people make inferences about the mental states of others under uncertainty, and what features of information are important in aiding mental state reasoning. In the current study, we conducted three unique experiments that alter participant's uncertainty when engaging in ToM tests. In Experiment 1, we simultaneously manipulated both the amount and consistency of information available in social stimuli presented to 59 participants. In Experiments 2 and 3, we aimed to decipher which feature of social stimuli is more conducive to mental state reasoning. Experiment 2 manipulated only the amount of information available to 47 participants, while Experiment 3 manipulated only the consistency of information available to 46 participants. Using both frequentist and Bayesian statistics, results confirmed that manipulating the amount and consistency of information alters ToM performance. Exploratory analysis comparing the effects of the amount and consistency of information suggests that the effects of the consistency of information seem to be stronger than those of the amount of information. Taken together, all three experiments suggest that while both the amount and consistency of information are important features of social stimuli—the consistency of information available is more salient when inferring mental states of others. These findings are discussed in relation to information theory and have important implications for creating enriched social stimuli, which may enhance mental state reasoning in individuals with social deficits.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0277356>

### **SILVANA LAURA DANS et al – Seasonal variation and group size affect movement patterns of two pelagic dolphin species (*Lagenorhynchus obscurus* and *Delphinus delphis*)**

Movement is a key factor in the survival and reproduction of most organisms with important links to bioenergetics and population dynamics. Animals use movement strategies that minimize the costs of locating resources, maximizing energy gains. Effectiveness of these strategies depends on the spatial distribution, variability and predictability of resources. The study of fine-scale movement of small cetaceans in the pelagic domain is limited, in part because of the logistical difficulties associated with tagging and tracking them. Here we describe and model the fine-scale movement patterns of two pelagic dolphin species using georeferenced movement and behavioral data obtained by tracking dolphin groups on board small vessels. Movement patterns differed by species, group sizes and seasons. Dusky dolphin groups moved shorter distances when feeding and longer distances when traveling whereas the common dolphin did the same only when they moved in large groups. In summer, both dolphins cover longer distances in a more linear path, while in winter the movement is more erratic and moving shorter distances. Both species of dolphins prey on small pelagic fishes, which are patchily distributed and show seasonal variability in school sizes and distribution. However, dusky dolphins rely on anchovy to a larger extent than common dolphins. In Nuevo Gulf, anchovy shoals are smaller and separated by shorter distances in winter and dusky dolphins' movement pattern is consistent with this. Dusky and common dolphins are impacted by tourism and fisheries. Further modelling of movement could be inform spatial based management tools.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0276623>

### **DIEGO GÓMEZ-ZARÁ et al – In search of diverse and connected teams: A computational approach to assemble diverse teams based on members' social networks**

Previous research shows that teams with diverse backgrounds and skills can outperform homogeneous teams. However, people often prefer to work with others who are similar and familiar to them and fail to assemble teams with high diversity levels. We study the team formation problem by considering a pool of individuals with different skills and characteristics, and a social network that captures the familiarity among these individuals. The goal is to assign all individuals to diverse teams based on their social connections, thereby allowing them to preserve a level of familiarity. We formulate this team formation problem as a multi-objective optimization problem to split members into well-connected and diverse teams within a social network. We implement this problem employing the Non-dominated Sorting Genetic Algorithm II (NSGA-II), which finds team combinations with high familiarity and diversity levels in  $O(n^2)$  time. We tested this algorithm on three empirically collected team formation datasets and against three benchmark algorithms. The experimental results confirm that the proposed algorithm successfully formed teams that have both diversity in member attributes and previous connections between members. We discuss the benefits of using computational approaches to augment team formation and composition.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0276061>

**PETER GODFREY-SMITH et al – In the line of fire: Debris throwing by wild octopuses**

Wild Octopus tetricus frequently propel shells, silt, and algae through the water by releasing these materials from their arms while creating a forceful jet from the siphon held under the arm web. These "throws" occur in several contexts at a site in Jervis Bay, Australia, including in interactions with other octopuses. Material thrown in interactive contexts frequently hits other octopuses. Some throws appear to be targeted on other individuals, as suggested by several kinds of evidence: Throws in interactive contexts were more vigorous than others, and more often used silt, rather than shells or algae. High vigor throws were more often accompanied by uniform or dark body patterns than other throws. Some throws were directed differently from beneath the arms and such throws were more likely to hit other octopuses. Throwing at other individuals in the same population, as apparently seen in these octopuses, is a rare form of nonhuman projectile use, previously seen only in some social mammals.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0276482>

**PNAS****PAPERS****GLENN E. KING – Baboon perspectives on the ecology and behavior of early human ancestors**

For more than 70 y researchers have looked to baboons (monkeys of the genus *Papio*) as a source of hypotheses about the ecology and behavior of early hominins (early human ancestors and their close relatives). This approach has undergone a resurgence in the last decade as a result of rapidly increasing knowledge from experimental and field studies of baboons and from archeological and paleontological studies of hominins. The result is a rich array of analogies, scenarios, and other stimuli to thought about the ecology and behavior of early hominins. The main intent here is to illustrate baboon perspectives on early hominins, with emphasis on recent developments. This begins with a discussion of baboons and hominins as we know them currently and explains the reasons for drawing comparisons between them. These include occupation of diverse environments, combination of arboreal and terrestrial capabilities, relatively large body size, and sexual dimorphism. The remainder of the paper illustrates the main points with a small number of examples drawn from diverse areas of interest: diet (grasses and fish), danger (leopards and crocodiles), social organization (troops and multilevel societies), social relationships (male–male, male–female, female–female), communication (possible foundations of language), cognition (use of social information, comparison of self to others), and bipedalism (a speculative developmental hypothesis about the neurological basis). The conclusion is optimistic about the future of baboon perspectives on early hominins.

<https://www.pnas.org/doi/abs/10.1073/pnas.2116182119>

**Trends in Cognitive Sciences****ARTICLES****CHRIS D. FRITH & UTA FRITH – The mystery of the brain–culture interface**

Nature and culture work together to shape who we are. We are embedded in culture and are profoundly influenced by what those around us say and do. The interface between minds occurs at the level of explicit metacognition, which is at the top of our brain's control hierarchy. But how do our brains do this?

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(22\)00209-1](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00209-1)

**AGUSTIN IBANEZ – The mind's golden cage and cognition in the wild**

The mind has been traditionally conceived as a set of differentiated, compartmentalized cognitive elements. However, understanding everyday, naturalistic cognition across brain health and disease entails major challenges. How can mainstream approaches be extended to cognition in the wild? Pragmatic, methodological, disease-related, and theoretical turns are proposed for future scientific development.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(22\)00165-6](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00165-6)

**DAVID POEPEL & WILLIAM IDSARDI – We don't know how the brain stores anything, let alone words**

Cognitive, computational, and neurobiological approaches have made impressive advances in characterizing the operations that transform linguistic signals into meanings. But our understanding of how words and concepts are retained in the brain remains inadequate. How is the long-term storage of words, or in fact any representations, achieved? This puzzle requires new thinking to stimulate reinvestigation of the storage problem.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(22\)00206-6](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00206-6)

**PAPERS****BRANDON M. WOO et al – Socially evaluative contexts facilitate mentalizing**

Our ability to understand others' minds stands at the foundation of human learning, communication, cooperation, and social life more broadly. Although humans' ability to mentalize has been well-studied throughout the cognitive sciences, little attention has been paid to whether and how mentalizing differs across contexts. Classic developmental studies have examined mentalizing within minimally social contexts, in which a single agent seeks a neutral inanimate object. Such object-directed acts may be common, but they are typically consequential only to the object-seeking agent themselves. Here, we



review a host of indirect evidence suggesting that contexts providing the opportunity to evaluate prospective social partners may facilitate mentalizing across development. Our article calls on cognitive scientists to study mentalizing in contexts where it counts.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(22\)00264-9](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00264-9)

**JINGYI WANG, ARIELLE TAMBINI & REGINA C. LAPATE – The tie that binds: temporal coding and adaptive emotion**

Emotions are temporally dynamic, but the persistence of emotions outside of their appropriate temporal context is detrimental to health and well-being. Yet, precisely how temporal coding and emotional processing interact remains unclear. Recently unveiled temporal context representations in the hippocampus, entorhinal cortex (EC), and prefrontal cortex (PFC) support memory for what happened when. Here, we discuss how these neural temporal representations may interact with densely interconnected amygdala circuitry to shape emotional functioning. We propose a neuroanatomically informed framework suggesting that high-fidelity temporal representations linked to dynamic experiences promote emotion regulation and adaptive emotional memories. Then, we discuss how newly-identified synaptic and molecular features of amygdala–hippocampal projections suggest that intense, amygdala-dependent emotional responses may distort temporal-coding mechanisms. We conclude by identifying key avenues for future research.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(22\)00222-4](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00222-4)

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## Trends in Neurosciences

### PAPERS

**LISA C. HIURA & ZOE R. DONALDSON – Prairie vole pair bonding and plasticity of the social brain**

In monogamous species, pair bonding leads to striking changes in social behavior and neural circuitry. We outline the cognitive building blocks of monogamous pair bonding in prairie voles (*Microtus ochrogaster*), as well as opportunities afforded by the species to investigate diverse mechanisms underlying social experience-dependent plasticity and gain insights into the neurobiology of complex social behavior more generally.

[https://www.cell.com/trends/neurosciences/fulltext/S0166-2236\(22\)00210-7](https://www.cell.com/trends/neurosciences/fulltext/S0166-2236(22)00210-7)

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