

EAORC BULLETIN 915 – 27 December 2020

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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.

ACADEMIA.EDU – Exploring scalar transformations in social interaction and intersubjectivity

Phenomenology and the Cognitive Sciences (2019) 18:65–89.

ALEXANDER ASTON – Metaplasticity and the boundaries of social cognition: exploring scalar transformations in social interaction and intersubjectivity

Through the application of Material Engagement Theory (MET) to enactivist analyses of social cognition, this paper seeks to examine the role of material culture in shaping the development of intersubjectivity and long-term scalar transformations in

social interaction. The deep history of human sociality reveals a capacity for communities to self-organise at radically emergent scales across a variety of temporal and spatial ranges. This ability to generate and participate in heterogeneous, multiscale relationships and identities demonstrates the developmental plasticity of human intersubjectivity. Perhaps human sociality's most unique feature is this intersubjective plasticity, that is, the ability for diverse collectivities of individuals and groups to adopt and transition between numerous social identities and behaviours with profound rapidity and flexibility. However, the most influential models in the study of social cognition, the Social Intelligence Hypothesis and Theory of Mind, promote a view of intersubjectivity that is rooted in methodological individualism and primarily understood as a capacity for observation and prediction. This approach leads to significant issues when confronted with the diversity and plasticity of hominin social organisation, particularly in regards to the computational burdens and information processing bottlenecks such as scalar changes imply for cognitivist models. This paper examines the metaphysical assumptions in computational models of the mind that result in representational apriorism and an epiphenomenal treatment of material culture that hinder our understanding of the evolution and development of social cognition. Specifically, this article critiques the logics of computation, information processing, representationalism, and content within NeoDarwinian frameworks that obscure and distort the interrelationships of evolutionary, developmental, ecological and cultural processes. Through a synthesis of material engagement and enactivist approaches to social cognition, this article argues that it is possible to explain the emergent and multiscale dynamics of hominin sociality in terms of ecologically distributed and developmentally plastic interactions between brains, bodies and material culture.

[https://www.academia.edu/37603993/Metaplasticity and the Boundaries of Social Cognition Exploring scalar transformations in social interaction and intersubjectivity?email work card=view-paper](https://www.academia.edu/37603993/Metaplasticity_and_the_Boundaries_of_Social_Cognition_Exploring_scalar_transformations_in_social_interaction_and_intersubjectivity?email_work_card=view-paper)

ACADEMIA.EDU – The evolution of stories

WIREs Cognitive Science (2017), e1444.

BRIAN BOYD – The evolution of stories: from mimesis to language, from fact to fiction

Why a species as successful as *Homo sapiens* should spend so much time in fiction, in telling one another stories that neither side believes, at first seems an evolutionary riddle. Because of the advantages of tracking and recombining true information, capacities for event comprehension, memory, imagination, and communication evolved in a range of animal species — yet even chimpanzees cannot communicate beyond the here and now. By *Homo erectus*, our forebears had reached an increasing dependence on one another, not least in sharing information in mimetic, prelinguistic ways. As Daniel Dor shows, the pressure to pool ever more information, even beyond currently shared experience, led to the invention of language. Language in turn swiftly unlocked efficient forms of narrative, allowing early humans to learn much more about their kind than they could experience at first hand, so that they could cooperate and compete better through understanding one another more fully. This changed the payoff of sociality for individuals and groups. But true narrative was still limited to what had already happened. Once the strong existing predisposition to play combined with existing capacities for event comprehension, memory, imagination, language, and narrative, we could begin to invent fiction, and to explore the full range of human possibilities in concentrated, engaging, memorable forms. First language, then narrative, then fiction, created niches that altered selection pressures, and made us ever more deeply dependent on knowing more about our kind and our risks and opportunities than we could discover through direct experience.

[https://www.academia.edu/33190544/The evolution of stories from mimesis to language from fact to fiction?email work card=view-paper](https://www.academia.edu/33190544/The_evolution_of_stories_from_mimesis_to_language_from_fact_to_fiction?email_work_card=view-paper)

ACADEMIA.EDU – Language and its evolution as a social communication technology

Journal of Neurolinguistics 43 (2017) 107-119.

DANIEL DOR – From experience to imagination: Language and its evolution as a social communication technology

In this paper, I present a new general hypothesis concerning the origin and evolutionary development of human language and its speakers. The hypothesis is based on the theory of language I develop in Dor (2015): language should be properly understood as a social communication technology of a very particular type, collectively constructed for the specific function of the instruction of imagination. The hypothesis, then, runs as follows: pre-linguistic humans (most probably *Homo erectus*) developed their culture and their pre-linguistic communication to the point where the collective invention of language became both necessary and possible. The moment of the origin consisted of no more than exploratory attempts to use what had already been achieved to go into the realm of the instruction of imagination. When the new function began to show its potential, a developmental process was launched that was directly driven throughout by the constant pressure to raise the levels of collective success in instructive communication. Throughout the process, individuals were selected for their ability to meet the challenges of the emerging technology, and the required capacities were (partially and variably) genetically accommodated. *Homo sapiens*, an imaginative species adapted for fast speech, and maybe our sister species too, eventually emerged from the collectively-driven process with unique adaptations to language.

[https://www.academia.edu/35571619/Perspective From experience to imagination Language and its evolution as a social communication technology?email work card=view-paper](https://www.academia.edu/35571619/Perspective_From_experience_to_imagination_Language_and_its_evolution_as_a_social_communication_technology?email_work_card=view-paper)

ACADEMIA.EDU – Language as a Social Communication Technology

(2015). Oxford University Press: Oxford, UK.

DANIEL DOR – The Instruction of Imagination: Language as a Social Communication Technology

In 'The Instruction of Imagination', Daniel Dor offers a new perspective on the essence of human language. This enormous achievement of our species is best characterized as a communication technology - not unlike the social media on the Net today - that was collectively invented by ancient humans for a very particular communicative function: the instruction of imagination. While all other systems of communication in the biological world target the interlocutors' senses, language allows speakers to systematically instruct their interlocutors in the process of imagining the intended meaning, instead of directly experiencing it. This revolutionary function changed human life forever, and in this book it operates as a unifying concept around which a new general theory of language gradually emerges. Dor identifies a set of fundamental problems in the linguistic sciences: the nature of words; the complexities of syntax; the interface between semantics and pragmatics; the causal relationship between language and thought; language processing; the dialectics of universality and variability; the intricacies of language and power; knowledge of language and its acquisition; the fragility of linguistic communication; and the origins and evolution of language. Dor then shows how the theory provides fresh answers to these problems, resolves persistent difficulties in existing accounts, enhances the significance of empirical and theoretical achievements in the field, and identifies new directions for empirical research. The theory thus opens a new path toward the unification of the linguistic sciences - on both sides of the cognitive-social divide.

https://www.academia.edu/35571744/The_Instruction_of_Imagination_Language_as_a_Social_Communication_Technology?email_work_card=view-paper

NEWS

BREAKING SCIENCE – Archaeologists Find Evidence of Neolithic Mega-Tsunami in Israel

A catastrophic tsunami occurred sometimes between 7,910 and 7,290 BCE with an extreme 16 m (52.5 feet) wave height and 1.5-3.5 km (0.93-2.2 mile) run-up on the Carmel coast of Israel, according to new research published in the journal PLoS ONE.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/PHk_XDMLaRE/neolithic-mega-tsunami-israel-09188.html?utm_source=feedburner&utm_medium=email

SCIAM NEWS – Brain Sides Are Both Busy in New Language Learning

A study of adults learning a new language found that speaking primarily activated regions in the left side of the brain, but reading and listening comprehension were much more variable.

<http://links.email.scientificamerican.com/els/v1/vZDYhG0bvwfr/bTdnSDI5Z0hESIN4allvK0ILUjh0NnRLWlo1U1g4SEFJVlxMnQ0Q09RNDNMcit5eUJqYjBxalV3VUkwZE9jTHJlb1pQ0VGcGxLT0R4T21EVINrRkMwUDZhQkRQci9sTW9mT09ENWRmb2c9S0/>

SCIENCE NEWS – Even as young adults, male chimps are 'mama's boys'

Even though male chimps need their moms. Chimpanzees live in a male-dominated society, where most of their valuable allies are other males. However, as young male chimpanzees become adults, they continue to maintain tight bonds with their mothers, a new study reveals. And for about one-third of them, this mother-son relationship is the closest one they have.

https://www.sciencemag.org/news/2020/12/even-young-adults-male-chimps-are-mama-s-boys?utm_campaign=news_daily_2020-12-21&et rid=17774313&et cid=3606713

SCIENCE NEWS – Neanderthal gene may open cells to coronavirus and increase COVID-19 severity

If you become infected with the coronavirus SARS-CoV-2, you might wish there was a fast way to check your Neanderthal ancestry. A small but significant number of people have an ancient gene variant from the extinct hominin that may double, or even quadruple, their risk of serious complications from COVID-19.

https://www.sciencemag.org/news/2020/12/neanderthal-gene-found-many-people-may-open-cells-coronavirus-and-increase-covid-19?utm_campaign=news_daily_2020-12-21&et rid=17774313&et cid=3606713

PUBLICATIONS

Current Biology

PAPERS

ASIF A. GHAZANFAR et al – Domestication Phenotype Linked to Vocal Behavior in Marmoset Monkeys

The domestication syndrome refers to a set of traits that are the by-products of artificial selection for increased tolerance toward humans. One hypothesis is that some species, like humans and bonobos, "self-domesticated" and have been under selection for that same suite of domesticated phenotypes. However, the evidence for this has been largely circumstantial. Here, we provide evidence that, in marmoset monkeys, the size of a domestication phenotype—a white facial fur patch—is linked to their degree of affiliative vocal responding. During development, the amount of parental vocal feedback experienced influences the rate of growth of this facial white patch, and this suggests a mechanistic link between the two

phenotypes, possibly via neural crest cells. Our study provides evidence for links between vocal behavior and the development of morphological phenotypes associated with domestication in a nonhuman primate.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(20\)31419-6?dgcid=raven_jbs_etoc_email](https://www.cell.com/current-biology/fulltext/S0960-9822(20)31419-6?dgcid=raven_jbs_etoc_email)

Evolutionary Anthropology

PAPERS

JESSICA C. THOMPSON, DAVID K. WRIGHT & SARAH J. IVORY – The emergence and intensification of early hunter-gatherer niche construction

Hunter-gatherers, especially Pleistocene examples, are not well-represented in archeological studies of niche construction. However, as the role of humans in shaping environments over long time scales becomes increasingly apparent, it is critical to develop archeological proxies and testable hypotheses about early hunter-gatherer impacts. Modern foragers engage in niche constructive behaviors aimed at maintaining or increasing the productivity of their environments, and these may have had significant ecological consequences over later human evolution. In some cases, they may also represent behaviors unique to modern *Homo sapiens*. Archeological and paleoenvironmental data show that African hunter-gatherers were niche constructors in diverse environments, which have legacies in how ecosystems function today. These can be conceptualized as behaviorally mediated trophic cascades, and tested using archeological and paleoenvironmental proxies. Thus, large-scale niche construction behavior is possible to identify at deeper time scales, and may be key to understanding the emergence of modern humans.

<https://onlinelibrary.wiley.com/doi/abs/10.1002/evan.21877?campaign=wolearlyview>

Nature Scientific Reports

PAPERS

JUAN OZAITA, ANDREA BARONCHELLI & ANGEL SÁNCHEZ – Ethnic markers and the emergence of group-specific norms

Observable social traits determine how we interact meaningfully in society even in our globalized world. While a popular hypothesis states that observable traits may help promote cooperation, the alternative explanation that they facilitate coordination has gained ground in recent years. Here we explore this possibility and present a model that investigates the role of ethnic markers in coordination games. In particular, we aim to test the role of reinforcement learning as the microscopic mechanism used by the agents to update their strategies in the game. For a wide range of parameters, we observe the emergence of a collective equilibrium in which markers play an assorting role. However, if individuals are too conformist or too greedy, markers fail to shape social interactions. These results extend and complement previous work focused on agent imitation and show that reinforcement learning is a good candidate to explain many instances where ethnic markers influence coordination.

<https://www.nature.com/articles/s41598-020-79222-0>

PLoS Biology

PAPERS

THOMAS THIERY et al – Decoding the neural dynamics of free choice in humans

How do we choose a particular action among equally valid alternatives? Nonhuman primate findings have shown that decision-making implicates modulations in unit firing rates and local field potentials (LFPs) across frontal and parietal cortices. Yet the electrophysiological brain mechanisms that underlie free choice in humans remain ill defined. Here, we address this question using rare intracerebral electroencephalography (EEG) recordings in surgical epilepsy patients performing a delayed oculomotor decision task. We find that the temporal dynamics of high-gamma (HG, 60–140 Hz) neural activity in distinct frontal and parietal brain areas robustly discriminate free choice from instructed saccade planning at the level of single trials. Classification analysis was applied to the LFP signals to isolate decision-related activity from sensory and motor planning processes. Compared with instructed saccades, free-choice trials exhibited delayed and longer-lasting HG activity during the delay period. The temporal dynamics of the decision-specific sustained HG activity indexed the unfolding of a deliberation process, rather than memory maintenance. Taken together, these findings provide the first direct electrophysiological evidence in humans for the role of sustained high-frequency neural activation in frontoparietal cortex in mediating the intrinsically driven process of freely choosing among competing behavioral alternatives.

<https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3000864>

Proceedings of the Royal Society B

PAPERS

SPANDAN PATHAK et al – How strategy environment and wealth shape altruistic behaviour: cooperation rules affecting wealth distribution in dynamic networks

Societies rely on individual contributions to sustain public goods that benefit the entire community. Several mechanisms, that specify how individuals change their decisions based on past experiences, have been proposed to explain how altruists are not outcompeted by selfish counterparts. A key aspect of such strategy updates involves a comparison of an individual's latest payoff with that of a random neighbour. In reality, both the economic and social milieu often shapes cooperative

behaviour. We propose a new decision heuristic, where the propensity of an individual to cooperate depends on the local strategy environment in which she is embedded as well as her wealth relative to that of her neighbours. Our decision-making model allows cooperation to be sustained and also explains the results of recent experiments on social dilemmas in dynamic networks. Final cooperation levels depend only on the extent to which the strategy environment influences altruistic behaviour but are largely unaffected by network restructuring. However, the extent of wealth inequality in the community is affected by a subtle interplay between the environmental influence on a person's decision to contribute and the likelihood of reshaping social ties, with wealth-inequality levels rising with increasing likelihood of network restructuring in some situations.

<https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.2250>

JULIA FISCHER et al – Vocal convergence in a multi-level primate society: Insights into the evolution of vocal learning

The extent to which nonhuman primate vocalizations are amenable to modification through experience is relevant for understanding the substrate from which human speech evolved. We examined the vocal behaviour of Guinea baboons, *Papio papio*, ranging in the Niokolo Koba National Park in Senegal. Guinea baboons live in a multi-level society, with units nested within parties nested within gangs. We investigated whether the acoustic structure of grunts of 27 male baboons of two gangs varied with party/gang membership and genetic relatedness. Males in this species are philopatric, resulting in increased male relatedness within gangs and parties. Grunts of males that were members of the same social levels were more similar than those of males in different social levels (N = 351 dyads for comparison within and between gangs, and N = 169 dyads within and between parties), but the effect sizes were small. Yet, acoustic similarity did not correlate with genetic relatedness, suggesting that higher amounts of social interactions rather than genetic relatedness promote the observed vocal convergence. We consider this convergence a result of sensory–motor integration and suggest this to be an implicit form of vocal learning shared with humans, in contrast to the goal-directed and intentional explicit form of vocal learning unique to human speech acquisition.

<https://royalsocietypublishing.org/doi/full/10.1098/rspb.2020.2531>

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