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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 – Lower-Middle Paleolithic Transition from the Levantine Perspective

Journal of World Prehistory 29, 1-78 (2016).

ARIEL MALINSKY-BULLER – The Muddle In the Middle Pleistocene: The Lower-Middle Paleolithic Transition from the Levantine Perspective

The terms Lower Palaeolithic and Middle Palaeolithic represent research constructs within which cultural evolution and prehistoric hominin behaviours can be studied, with the transition usually understood as marking a watershed in our

evolution: an adaptation with a million-year record of success that gives way to something new. The interpretation of the Lower Palaeolithic Acheulian technocomplex is usually understood as a period of cultural stasis that extends over much of Africa and Eurasia, principally associated with *Homo erectus*. Those innovations that can be observed occur widely separated from one another in space and time. Yet a closer and more detailed examination of the Middle Pleistocene records from East Africa, southern Africa, Europe and the Levant reveals significant variation in cultural repertoires. A kind of paradox emerges, in which an Old World Lower Palaeolithic, apparently lacking an overall dynamic of distinctive and directed change in terms of cumulative variation over time, nevertheless culminates in a transition which sees the universal appearance of the Middle Palaeolithic. The two main hypotheses that have been advanced to explain the global transition, which happens essentially synchronously, appear mutually exclusive and contradictory. One view is that altered climatic-environmental constraints enabled and encouraged an 'Out-of-Africa' dispersal (or dispersals) of a new type of genus *Homo*. This cultural replacement model has been challenged more recently by the alternative hypothesis of accumulating but unrelated and temporally non-linked regional, and in fact potentially autochthonous, processes. The Levant, by virtue of its position bridging Africa and Eurasia (thus being the region into which any out-of-Africa groups would have had first to disperse into), must be seen as a critical region for assessing the relative merits of these competing hypotheses. This paper deals with the Lower–Middle Paleolithic boundary in the Levant within a long temporal perspective. The Middle Pleistocene record in the Levant enables us to examine the amplitude of variation within each techno-complex, as well as to question whether there are diachronic changes in the amplitude of techno-typological variations as well as changes in the manner by which they appear in the record. The results carry significant implications for understandings of demographic and societal processes during the Lower–Middle Paleolithic transition in the Levant.

[https://www.academia.edu/24217418/The Muddle in the Middle Pleistocene The Lower Middle Paleolithic Transition from the Levantine Perspective](https://www.academia.edu/24217418/The_Muddle_in_the_Middle_Pleistocene_The_Lower_Middle_Paleolithic_Transition_from_the_Levantine_Perspective)

PSYARXIV PREPRINTS – Do chimpanzee pant-hoots have semantic content?

PETAR GABRIĆ – Do chimpanzee pant-hoots have semantic content? A comment on Leroux et al. (*Animal Behaviour* 179:41–50, 2021)

I read with great interest the study by Leroux et al. [(2021) *Anim Behav* 179, 41–50] who investigated the nature of pant-hoot–food-call combinations in a community of wild chimpanzees (*Pan troglodytes schweinfurthii*) at the Budongo Conservation Field Station, Budongo Forest, Uganda. The authors propose, among others, that they reveal the first evidence that wild chimpanzees are able “to combine meaning-bearing units into larger structures” – i.e., that they are capable of semantic compositionality and, by extension, syntax. Their analysis represents an important addition to a growing body of research and discussions on communicational combinatoriality in wild primates and specifically apes, and, by extension, extinct hominins. Incidentally, I have recently published a paper in *Animal Cognition* in which I also suggested, based on a reanalysis of existing data, that wild chimpanzees can display semantic compositionality and syntax, i.e., are able to combine meaningful units [Gabrić (2021) *Anim Cogn*, online ahead of print]. In the present commentary, I argue that Leroux et al.'s (2021) interpretation of the data is ungrounded given that (1) unlike for food calls, there is currently very little if any indication in the scientific literature that pant-hoots have semantic content, i.e., are meaningful, (2) Leroux et al. (2021) did not investigate their a priori assumption that the observed pant-hoots are in fact meaningful/semantic, (3) they did not report on recipients' behaviors in association with neither the individual nor combined calls, and (4) they did not compare the callers' behaviours in association with the individual calls vs. combined calls. Since pant-hoots feature prominently in the chimpanzee vocal repertoire and the debate on their eventual meaningfulness/semanticity is still wide open, this represents a fine opportunity to revisit this issue in the context of Leroux et al.'s (2021) study. Their paper further raises several other less significant questions. Notwithstanding, their paper brings important novel insights into communicational combinatoriality in wild chimpanzees and supports the notion of using linguistic methods in wild animal communication research.

<https://psyarxiv.com/emn76>

CONFERENCE ALERT – Registration for the EHBEA 2022 Conference Is Now Open

EHBEA's 16th Annual Conference will be held at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany between 19-22 April 2022.

The conference will be fully online

Members can register for the conference by visiting the EHBEA Events page here:

<https://click.update.cambridge.org/?qs=19d6ed9403d0df50abd06fb658476f5556e6bdc7075cd827f1a738aec59609d9df1385dc1850e64f1897d1aec2f9a586defef7ccaaf03d0b6>.

Once you have registered for the conference, a further email from the organising committee will be sent containing a unique password to access the conference website and upload materials.

For more information about the conference, please visit the EHBEA 2022 Conference website:

<https://click.update.cambridge.org/?qs=19d6ed9403d0df50a138ae7a3d56dd730a9967c1715ec4bd4565c2306358498354d1d5933080326866a3e834406b748217e7700abb2cfd65>.

Contact & Assistance

Our membership team is happy to support you with any queries you may have about conference registration.

Please contact:

UK: +44 (0) 1223 326085

Or email: memberservices@cambridge.org

EMPLOYMENT/ROLE ALERT – Cogent Arts & Humanities is seeking a new Senior Editor

We are seeking to appoint a new Senior Editor who will take charge of linguistics submissions, which publish in the popular Literature, Linguistics and Criticism section of the Cogent Arts & Humanities. Could this be you?

Interested in Applying?

<https://click.email.taylorandfrancis.com/?qs=dc8c61f0870b01eaca56ea924ab2d9e28edf8c928a9ea039654b1be0b5c84bc63b7578417f60587234c3a34ac78c08ec60aac34968f6e6a9>

Deadline: 25th April 2022

NEWS

BREAKING SCIENCE – Newly Proposed Experiment Could Confirm that Information is Fifth State of Matter

Dr. Melvin Vopson, a physicist with the School of Mathematics and Physics at the University of Portsmouth, has already published research suggesting that information has physical mass and that all elementary particles store information about themselves. Now, the researcher has designed an experiment — which if proved correct — means he will have discovered that information is the fifth form of matter, alongside solid, liquid, gas and plasma.

<http://www.sci-news.com/physics/information-fifth-state-matter-10638.html>

SCIENCE DAILY – Ape 'vocabularies' shaped by social mingling — like in humans

Social mingling shapes and transforms the 'vocabularies' of apes, just like in humans, according to new research.

<https://www.sciencedaily.com/releases/2022/03/220321132149.htm>

SCIENCE DAILY – Ancient ancestors evolved to be strong and snappy

Researchers show that the earliest jaws in the fossil record were caught in a trade-off between maximizing their strength and their speed.

<https://www.sciencedaily.com/releases/2022/03/220318161437.htm>

SCIENCE DAILY – The colored skeletons of Çatalhöyük, Turkey, from 9,000 years ago

An international team provides new insights about how the inhabitants of the 'oldest city in the world' in Çatalhöyük (Turkey) buried their dead. Their bones were partially painted, excavated several times and reburied. The findings provide insight into the burial rituals of a fascinating society that lived 9000 years ago.

<https://www.sciencedaily.com/releases/2022/03/220318110255.htm>

SCIENCE DAILY – Early English lessons have lasting effects

An earlier study had raised doubts about the effectiveness of learning English in the first grade. Now, researchers have observed that it improves language performance over an extended period of time.

<https://www.sciencedaily.com/releases/2022/03/220318104921.htm>

SCIENCE DAILY – Male dolphins whistle to maintain key social relationships

Allied male bottlenose dolphins maintain weaker yet vital social relationships with whistle exchanges, researchers have found.

<https://www.sciencedaily.com/releases/2022/03/220324122518.htm>

SCIENCE DAILY – Distant regions of the human brain are wired together by surprisingly few connections

Understanding how the brain functions, particularly how information is processed during different activities, is difficult without knowing how many axons are in the brain and how many connect different functional regions. A new study shows that despite the functional importance of connections between far-reaching regions of the brain, the actual number of these connections is low.

<https://www.sciencedaily.com/releases/2022/03/220324154137.htm>

SCIENCE DAILY – Popular male dolphins produce more offspring

The reproductive success of male dolphins is not determined by strength or age, but via social bonds with other males. The better integrated males are in their social network, the more offspring they produce, a new study has shown using long-term behavioral and genetic data.

<https://www.sciencedaily.com/releases/2022/03/220324122506.htm>

SCIENCE NEWS – Dolphins whistle to keep in touch with distant friends

The male Indo-Pacific bottlenose dolphins of Australia's Shark Bay are notorious for their ganglike behaviors. They form complex alliances to patrol large home ranges and corral fertile females for mating. Scientists have studied these mammals since the 1980s, intrigued by the tight, cooperative bonds between unrelated males—a type of social organization considered rare in the animal kingdom. Now, researchers report this male bonding has a big evolutionary payoff: Dolphins with the strongest buddy bonds father more offspring.

<https://www.science.org/content/article/dolphins-whistle-keep-touch-distant-friends>

PUBLICATIONS

Animal Behaviour

PAPERS

DERRY TAYLOR et al with ZANNA CLAY & KLAUS ZUBERBÜHLER – Vocal functional flexibility: what it is and why it matters

Human speech is marked by a signal–function decoupling, the capacity to produce sounds that can fulfil a variety of functions, in contrast to nonverbal vocalizations such as laughter, cries and screams, which are functionally more rigid. It has been argued that this decoupling provides an essential foundation for the emergence of language, in both ontogeny and phylogeny. Although language has a deep evolutionary history, whether this capacity for vocal functional flexibility also exists in the vocal systems of nonhuman animals has been much overlooked. Reasons are multiple. Here, we propose to diagnose the problems that have thus far hindered progress on understanding the evolutionary basis of functional flexibility, an issue which can shed broader light on the evolution of language. In particular, we aim to clarify what vocal functional flexibility is, why it matters, why we believe it should be investigated in nonhuman animals and how this could be best achieved.

<https://www.sciencedirect.com/science/article/pii/S0003347222000264>

ALICE BOUCHARD & KLAUS ZUBERBÜHLER – Male chimpanzees communicate to mediate competition and cooperation during feeding

An ongoing debate in animal behaviour research is whether food calls function to cooperatively inform others or provide the caller with competitive advantages. When feeding, chimpanzees, *Pan troglodytes*, produce two types of call: context-specific, close-range 'rough grunts' and context-general, long-range 'pant hoots'. We investigated this dual signalling behaviour by wild male chimpanzees that were either actively joining others or passively being joined in food trees, considering the effects of the audience composition and the type of food encountered. For arriving individuals, we found that pant hoot production was best explained by the absence of socially important individuals (i.e. social bond partners and/or high-ranking males), suggesting that callers were cooperatively informing them about food availability, probably to strengthen social relationships. In contrast, rough grunts were mostly produced by low-ranking individuals, suggesting they were part of competitive interactions to avoid aggression. For individuals already in a tree, we found that both rough grunt and pant hoot production were most common in low-ranking individuals reacting to the arrival of high-ranking males and there was no significant effect of the presence, or absence, of social bond partners. We discuss these patterns and conclude that, when chimpanzees enter a food tree, their vocal behaviour functions to mediate both cooperative and competitive interactions.

<https://www.sciencedirect.com/science/article/pii/S0003347222000094>

Anthropological Review

PAPERS

PETAR GABRIĆ – Impact of Infectious Disease on Humans and Our Origins

On May 16, 2020, the Center for Academic Research and Training in Anthropogeny organized the symposium "Impact of Infectious Disease on Humans and Our Origins". The symposium aimed to gather experts on infectious diseases in one place and discuss the interrelationship between different pathogens and humans in an evolutionary context. The talks discussed topics including SARS-CoV-2, dengue and Zika, the notion of human-specific diseases, streptococci, microbiome in the human reproductive tract, *Salmonella enterica*, malaria, and human immunological memory.

<https://czasopisma.uni.lodz.pl/ar/article/view/12927>

Behavioral and Brain Sciences

PAPERS

BJORN MERKER, KENNETH WILLIFORD & DAVID RUDRAUF – The Integrated Information theory of consciousness: A case of mistaken identity

Giulio Tononi's integrated information theory (IIT) proposes explaining consciousness by directly identifying it with integrated information. We examine the construct validity of IIT's measure of consciousness, phi (Φ), by analyzing its formal properties, its relation to key aspects of consciousness, and its co-variation with relevant empirical circumstances. Our analysis shows that IIT's identification of consciousness with the causal efficacy with which differentiated networks accomplish global information transfer (which is what Φ in fact measures) is mistaken. This misidentification has the consequence of requiring the attribution of consciousness to a range of natural systems and artifacts that include, but are not limited to, large-scale

electrical power grids, gene-regulation networks, some electronic circuit boards, and social networks. Instead of treating this consequence of the theory as a disconfirmation, IIT embraces it. By regarding these systems as bearers of consciousness ex hypothesi, IIT is led toward the orbit of panpsychist ideation. This departure from science as we know it can be avoided by recognizing the functional misattribution at the heart of IIT's identity claim. We show, for example, what function is actually performed, at least in the human case, by the cortical combination of differentiation with integration that IIT identifies with consciousness. Finally, we examine what lessons may be drawn from IIT's failure to provide a credible account of consciousness for progress in the very active field of research concerned with exploring the phenomenon from formal and neural points of view.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/integrated-information-theory-of-consciousness-a-case-of-mistaken-identity/54A2FF12685631EC90DFCC4AA24639FB>

COMMENTARIES

BORIS KOTCHOUBEY – Meta-criteria to formulate criteria of consciousness

Any neurobiological model claiming explanation of a complex human phenomenon should start with an explicit definition of the explanandum. If a classical intensional definition is impossible, we can use a descriptive definition by listing necessary criteria (e.g., of consciousness). This commentary suggests four meta-criteria that different proposed criteria of consciousness should fulfill: phenomenological consensus, empirical evidence, domain specificity, and non-circularity.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/metacriteria-to-formulate-criteria-of-consciousness/6F3E9BA143D21DB63D1310F3664D59FD>

ROMAIN BRETTE – Does the present moment depend on the moments not lived?

Integrated information theory postulates that a conscious experience depends on a repertoire of hypothetical experiences (the axiom of information). This makes consciousness depend on the context that constrains the set of possibilities and on the scenarios imagined by the external observer, and not only on the system itself.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/does-the-present-moment-depend-on-the-moments-not-lived/492BC9484641ECB0271E928CFE5658BA>

MARCELLO MASSIMINI et al – Measures of differentiation and integration: One step closer to consciousness

Interpreting empirical measures of integration and differentiation as indices of cortical performance and memory consolidation during wakefulness rather than consciousness per se is inconsistent with the literature. Recent studies show that these theory-inspired measures can dissociate from such processes and reliably index the brain's capacity for experience. We consider this as a positive trend in consciousness research.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/measures-of-differentiation-and-integration-one-step-closer-to-consciousness/5C8A66DFE9A63D83F2903455094F028>

ANTONIO ZADRA & DANIEL J. LEVITIN – The disintegrated theory of consciousness: Sleep, waking, and meta-awareness

The study of sleep and wakefulness can inform debates about the nature of consciousness. We argue that sleep and wakefulness fall along a multidimensional continuum and that inconsistencies and paradoxes with the accounts put forth by Merker et al. and Tononi can be understood in terms of a pervasive false dichotomy between these two states.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/disintegrated-theory-of-consciousness-sleep-waking-and-metaawareness/8F0ADFD40F465AE4F21CA55B902392BA>

GIUSEPPE RIVA – Is the neuroscientist's grandmother in the notebook? Integrated information and reference frames in the search for consciousness

This commentary suggests that the physical substrate of integrated information is dependent on the reference frame used to observe it. Furthermore, it uses a thought experiment – can a neuroscientist, locked in a closed room and connected through Zoom with his grandmother to demonstrate that the consciousness of his grannie is NOT in the PC? – to underline the problems that neglecting reference frames may cause to consciousness research.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/is-the-neuroscientists-grandmother-in-the-notebook-integrated-information-and-reference-frames-in-the-search-for-consciousness/2134048F5E48E207304B31C1A76B1435>

JEROME A. FELDMAN – Computation, perception, and mind

Advances in behavioral and brain sciences have engendered wide ranging efforts to help understand consciousness. The target article suggests that abstract computational models (such as integrated information theory [IIT]) are ill-advised. This commentary broadens the discussion to include mysteries of subjective experience that are inconsistent with current neuroscience. It also discusses progress being made through demystifying specific cases and pursuing evolutionary considerations.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/computation-perception-and-mind/DD1729D1C076945C3FCB157C0A320BA0>

HUGH DESMOND & PHILIPPE HUNEMAN – The integrated information theory of agency

We propose that measures of information integration can be more straightforwardly interpreted as measures of agency rather than of consciousness. This may be useful to the goals of consciousness research, given how agency and consciousness are “duals” in many (although not all) respects.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/integrated-information-theory-of-agency/F5AADC25A576F117E2E8D21B232BFC9E>

JONATHAN DELAFIELD-BUTT & COLWYN TREVARTHEN – Consciousness generates agent action

Consciousness directs the actions of the agent for its own purposive gains. It re-organises a stimulus-response linear causality to deliver generative, creative agent action that evaluates the subsequent experience prospectively. This inversion of causality affords special properties of control that are not accounted for in integrated information theory (IIT), which is predicated on a linear, deterministic cause-effect model. IIT remains an incomplete, abstract, and disembodied theory without explanation of the psychobiology of consciousness that serves the vital agency the organism.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/consciousness-generates-agent-action/88DC367C1706AA3AE44799998CDAEB01>

GIULIO TONONI et al with CHRISTOF KOCH – IIT, half masked and half disfigured

The target article misrepresents the foundations of integrated information theory (IIT) and ignores many essential publications. It, thus, falls to this lead commentary to outline the axioms and postulates of IIT and correct major misconceptions. The commentary also explains why IIT starts from phenomenology and why it predicts that only select physical substrates can support consciousness. Finally, it highlights that IIT's account of experience – a cause-effect structure quantified by integrated information – has nothing to do with “information transfer.”

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/iit-half-masked-and-half-disfigured/3147037BBA4FDD9F6D48697FD2C5DEEA>

PAUL VERSCHURE – Escaping from the IIT Munchausen method: Re-establishing the scientific method in the study of consciousness

Integrated information theory (IIT) is an example of “ironic science” and obstructs the scientific study of consciousness. By confusing the ontological status of a method to quantify network complexity with that of a theory of consciousness, IIT has to square the circle and spirals toward its panpsychism conclusion. I analyze the consequences of this fallacy and suggest how the study of consciousness can be brought back into the realm of rational, empirical science.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/escaping-from-the-iit-munchausen-method-reestablishing-the-scientific-method-in-the-study-of-consciousness/0D44841DF22B2570BE59C7F16585A9C5>

MARSHALL DEVOR, MARY KOUKOU I & MARK BARON – Searching in the wrong place: Might consciousness reside in the brainstem?

Doubtless, the conscious brain integrates masses of information. But declaring that consciousness simply “emerges” when enough has accumulated, doesn't really explain how first person experience is implemented by neurons. Moreover, empirical observations challenge integrated information theory's (IIT) reliance on thalamo-cortical interactions as the information integrator. More likely, the cortex streams processed information to a still-enigmatic consciousness generator, one perhaps located in the brainstem.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/searching-in-the-wrong-place-might-consciousness-reside-in-the-brainstem/AF15D556A09342D40BB439279F0D9CA4>

MICHAEL S. A. GRAZIANO – Consciousness is already solved: The continued debate is not about science

A logical explanation of consciousness has been known for decades. The brain must construct a specific set of information about conscious feeling (theory-of-mind information), causing people to believe, think, and claim to have consciousness. Theories that propose an actual, intangible feeling are non-explanatory. They add a magical red herring while leaving unexplained the objective phenomena: the believing, thinking, and claiming.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/consciousness-is-already-solved-the-continued-debate-is-not-about-science/51D039806A67EDF4ECDFA879DD8724CF>

THOMAS SCHMIDT & MELANIE BIAFORA – Explaining the gradient: Requirements for theories of visual awareness

We propose that any theory of visual awareness must explain the gradient of different awareness measures over experimental conditions, especially when those measures form double dissociations among each other. Theories meeting this requirement must be specific to the measured facets of awareness, such as motion, contrast, or color. Integrated information theory (IIT) lacks such specificity because it is an underconstrained theory with unspecific predictions.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/explaining-the-gradient-requirements-for-theories-of-visual-awareness/B7F6290118ABDC4AFF718D3F09C3915F>

CYRIEL M. A. PENNARTZ – What is exactly the problem with panpsychism?

Merker et al.'s critique calls for a deeper analysis of panpsychism. In principle, the concept of integrated information can be applied to photodiodes and subatomic particles, but I suggest the main obstacle is the lack of any evidence to confirm the presence of consciousness. Also MRW's perspectivalist theory illustrates the difficulties in synthesizing a full-fledged theory of consciousness.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/what-is-exactly-the-problem-with-panpsychism/3CBDA0523227B101FBDE99B5B782D9D8>

SARAH L. EAGLEMAN et al with DAVID M. EAGLEMAN – A call for comparing theories of consciousness and data sharing

Merker, Williford, and Rudrauf make several arguments against the integrated information theory of consciousness; whereas some have merit, their conclusion that the theory should be discarded is premature. Coming years promise advances in the empirical study of consciousness, and only after theories are independently tested with shared data can they be ruled in or out. We propose future research directions.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/call-for-comparing-theories-of-consciousness-and-data-sharing/066E2B9A77CFF55CFBEEBF4E331AC029>

ANDREW M. HAUN – IIT is ideally positioned to explain perceptual phenomena

The target article's critique of the integrated information theory (IIT) of consciousness is misguided on several fronts, which I hope are addressed in other comments, but here I focus on the connection (or supposed lack thereof) between IIT and rigorous phenomenology, and IIT's connection to the psychophysics of perception.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/iit-is-ideally-positioned-to-explain-perceptual-phenomena/8C941C5AED009B7E5F19C84E74B8772A>

WALTER VEIT – Consciousness, complexity, and evolution

The idea that consciousness and complexity are closely related has been a major driver of the popularity of integrated information theory (IIT) of consciousness, despite its major formal, phenomenological, and neuroscientific shortcomings. Here, I argue that we can recover this intuition by replacing its biologically neutral notion of complexity with an evolutionary one that I shall dub "pathological complexity."

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/consciousness-complexity-and-evolution/C51162DC3F782D78FD633C56B3B0FBF2>

MOSHE GUR – Anatomical, physiological, and psychophysical data show that the nature of conscious perception is incompatible with the integrated information theory (IIT)

The integrated information theory (IIT) equates levels of consciousness with the amount of information integrated over the elements that constitute a system. Conscious visual perception provides two observations that contradict the IIT. First, objects are accurately perceived when presented for <<100 ms during which time no neural integration is possible. Second, an object is seen as an integrated whole and, concurrently, all constituent elements are evident. Because integration destroys information about details, IIT cannot account for perceptual detail preservation.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/anatomical-physiological-and-psychophysical-data-show-that-the-nature-of-conscious-perception-is-incompatible-with-the-integrated-information-theory-iit/CF088CE6DE7B6E56F1F5F2AFAA0F6BDB>

LARISSA ALBANTAKIS – To be or to know? Information in the pristine present

To be true of every experience, the axioms of Integrated information theory (IIT) are necessarily basic properties and should not be "over-psychologized." Information, for example, merely asserts that experience is specific, not generic. It does not require "access." The information a system specifies about itself in its current state is revealed by its unfolded cause-effect structure and quantified by its integrated information.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/to-be-or-to-know-information-in-the-pristine-present/FC49C01076AC06019A5F30486E5DF159>

EZEQUIEL MORSELLA et al – Encapsulation and subjectivity from the standpoint of viewpoint theory

The groundbreaking, viewpoint theory of Merker et al. explains several properties of the conscious field, including why the observer cannot directly apprehend itself. We propose that viewpoint theory might also provide a progressive, constitutive marker of consciousness and shed light on why most of the contents of consciousness are encapsulated.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/encapsulation-and-subjectivity-from-the-standpoint-of-viewpoint-theory/337592FE662C867E5071BED27AF1939B>

MAX VELMANS – Functional theories can describe many features of conscious phenomenology but cannot account for its existence

Merker, Williford, and Rudrauf argue persuasively that integrated information is not identical to or sufficient for consciousness, and that projective geometries more closely formalize the spatial features of conscious phenomenology. However, these too are not identical to or sufficient for consciousness. Although such third-person specifiable functional theories can describe the many forms of consciousness, they cannot account for its existence.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/functional-theories-can-describe-many-features-of-conscious-phenomenology-but-cannot-account-for-its-existence/EB1F11B2872D3D01ADC32D6250184264>

W. TECUMSEH FITCH – Why evolve consciousness? Neural credit and blame allocation as a core function of consciousness

I concur with Merker and colleague's critiques, suggesting that hypotheses about the evolutionary function of consciousness can help address them. Brains are parallel systems that function to compute possible actions and predict outcomes. I hypothesize that a core function of consciousness per se is the global feedback of information about those actions actually executed, supporting local learning via neuronal updating.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/why-evolve-consciousness-neural-credit-and-blame-allocation-as-a-core-function-of-consciousness/BD8B91E927B48046306241241260A8D8>

NICCOLÒ NEGRO – Axioms and postulates: Finding the right match through logical inference

Merker et al. argue that integrated information theory (IIT) is not a theory of consciousness because the IIT formalism does not match phenomenology. I argue that the authors ultimately fail to articulate the problem of the inference of the postulates from the axioms. I suggest a different version of this problem, and argue that this can help rethink IIT's potential for consciousness science.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/axioms-and-postulates-finding-the-right-match-through-logical-inference/D51F685FAA35933F0F7CA66804357B3C>

AUTHORS' RESPONSE

BJORN MERKER, KENNETH WILLIFORD & DAVID RUDRAUF – The integrated information theory of consciousness: Unmasked and identified

In our response to a truly diverse set of commentaries, we first summarize the principal topical themes around which they cluster, then address two “outlier” positions (the problem of consciousness has been solved vs. is intractable). Next, we address ways in which commentaries by non-integrated information theory (IIT) authors engage with the specifics of our IIT critique, turning finally to the four commentaries by IIT authors.

<https://www.cambridge.org/core/journals/behavioral-and-brain-sciences/article/abs/integrated-information-theory-of-consciousness-unmasked-and-identified/D2F7F3BCD5802E9E01401D43026A6DDE>

Current Biology

PAPERS

EMMA CHERESKIN et al with STEPHANIE L. KING – Allied male dolphins use vocal exchanges to “bond at a distance”

Vocal interactions are intrinsic features of social groups and can play a pivotal role in social bonding. Dunbar's social bonding hypothesis posits that vocal exchanges evolved to “groom at a distance” when social groups became too large or complex for individuals to devote time to physical bonding activities. Tests of this hypothesis in non-human primates, however, suggest that vocal exchanges occur between more strongly bonded individuals that engage in higher grooming rates and thus do not provide evidence for replacement of physical bonding. Here, we combine data on social bond strength, whistle exchange frequency, and affiliative contact behavior rates to test this hypothesis in wild male Indo-Pacific bottlenose dolphins, who form multi-level alliances that cooperate over access to females. We show that, although whistle exchanges are more likely to occur within the core alliance, they occur more frequently between those males that share weaker social bonds, i.e., between core allies that spend less time together, while the opposite occurs for affiliative physical contact behavior. This suggests that vocal exchanges function as a low-cost mechanism for male dolphins that spend less time in close proximity and engage in fewer affiliative contact behaviors to reinforce and maintain their valuable alliance relationships. Our findings provide new evidence outside of the primate lineage that vocal exchanges serve a bonding function and reveal that, as the social bonding hypothesis originally suggested, vocal exchanges can function as a replacement of physical bonding activities for individuals to maintain their important social relationships.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(22\)00241-X](https://www.cell.com/current-biology/fulltext/S0960-9822(22)00241-X)

LIVIA GERBER et al with STEPHANIE L. KING – Social integration influences fitness in allied male dolphins

Understanding determinants of differential reproductive success is at the core of evolutionary biology because of its connection to fitness. Early work has linked variation in reproductive success to differences in age, rank, or size, as well as habitat characteristics. More recently, studies in group-living taxa have revealed that social relationships also have measurable effects on fitness. The influence of social bonds on fitness is particularly interesting in males who compete over reproductive opportunities. In Shark Bay, Western Australia, groups of 4-14 unrelated male bottlenose dolphins cooperate in

second-order alliances to compete with rival alliances over access to females. Nested within second-order alliances, pairs or trios of males, which can vary in composition, form first-order alliances to herd estrus females. Using 30 years of behavioral data, we examined how individual social factors, such as first-order alliance stability, social connectivity, and variation in social bond strength within second-order alliances, affect male fitness. Analyzing the reproductive careers of 85 males belonging to 10 second-order alliances, we found that the number of paternities a male achieved was positively correlated with his cumulative social bond strength but negatively correlated with his variation in bond strength. Thus, well-integrated males with more homogeneous social bonds to second-order allies obtained most paternities. Our findings provide novel insights into the fitness benefits of polyadic cooperation among unrelated males and highlight the adaptive value of social bonds in this context.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(22\)00422-5](https://www.cell.com/current-biology/fulltext/S0960-9822(22)00422-5)

Mind & Language

PAPERS

ADRIENNE PRETTYMAN – What is diffuse attention?

This article defends a theory of diffuse attention and distinguishes it from focal attention. My view is motivated by evidence from psychology and neuroscience, which suggests that we can deploy visual selective attention in at least two ways: by focusing on a small number of items, or by diffusing attention over a group of items taken as a whole. I argue that diffuse attention is selective and can be object-based. It enables a subject to select an object to guide behavior, albeit in a different way than focusing does.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12365>

Nature Ecology & Evolution

ARTICLES

AMMIE K. KALAN – Social orangutans have varied vocal personalities

Taking advantage of natural variation present in six populations of wild orangutans, a new study correlates population density with multiple facets of individuals' vocal phenotype and demonstrates that sociality influences vocal plasticity in great apes.

<https://www.nature.com/articles/s41559-022-01718-x>

PAPERS

ADRIANO R. LAMEIRA et al – Sociality predicts orangutan vocal phenotype

In humans, individuals' social setting determines which and how language is acquired. Social seclusion experiments show that sociality also guides vocal development in songbirds and marmoset monkeys, but absence of similar great ape data has been interpreted as support to saltational notions for language origin, even if such laboratorial protocols are unethical with great apes. Here we characterize the repertoire entropy of orangutan individuals and show that in the wild, different degrees of sociality across populations are associated with different 'vocal personalities' in the form of distinct regimes of alarm call variants. In high-density populations, individuals are vocally more original and acoustically unpredictable but new call variants are short lived, whereas individuals in low-density populations are more conformative and acoustically consistent but also exhibit more complex call repertoires. Findings provide non-invasive evidence that sociality predicts vocal phenotype in a wild great ape. They prove false hypotheses that discredit great apes as having hardwired vocal development programmes and non-plastic vocal behaviour. Social settings mould vocal output in hominids besides humans.

<https://www.nature.com/articles/s41559-022-01689-z>

Nature Human Behaviour

PAPERS

QI SU et al – Evolution of prosocial behaviours in multilayer populations

Human societies include diverse social relationships. Friends, family, business colleagues and online contacts can all contribute to one's social life. Individuals may behave differently in different domains, but success in one domain may engender success in another. Here, we study this problem using multilayer networks to model multiple domains of social interactions, in which individuals experience different environments and may express different behaviours. We provide a mathematical analysis and find that coupling between layers tends to promote prosocial behaviour. Even if prosociality is disfavoured in each layer alone, multilayer coupling can promote its proliferation in all layers simultaneously. We apply this analysis to six real-world multilayer networks, ranging from the socio-emotional and professional relationships in a Zambian community, to the online and offline relationships within an academic university. We discuss the implications of our results, which suggest that small modifications to interactions in one domain may catalyse prosociality in a different domain.

<https://www.nature.com/articles/s41562-021-01241-2>

BENJAMIN GAGL et al – Eye movements during text reading align with the rate of speech production

Across languages, the speech signal is characterized by a predominant modulation of the amplitude spectrum between about 4.3 and 5.5 Hz, reflecting the production and processing of linguistic information chunks (syllables and words) every ~200 ms.

Interestingly, ~200 ms is also the typical duration of eye fixations during reading. Prompted by this observation, we demonstrate that German readers sample written text at ~5 Hz. A subsequent meta-analysis of 142 studies from 14 languages replicates this result and shows that sampling frequencies vary across languages between 3.9 Hz and 5.2 Hz. This variation systematically depends on the complexity of the writing systems (character-based versus alphabetic systems and orthographic transparency). Finally, we empirically demonstrate a positive correlation between speech spectrum and eye movement sampling in low-skilled non-native readers, with tentative evidence from post hoc analysis suggesting the same relationship in low-skilled native readers. On the basis of this convergent evidence, we propose that during reading, our brain's linguistic processing systems imprint a preferred processing rate—that is, the rate of spoken language production and perception—onto the oculomotor system.

<https://www.nature.com/articles/s41562-021-01215-4>

YAQIONG XIAO et al – Neural responses to affective speech, including motherese, map onto clinical and social eye tracking profiles in toddlers with ASD

Affective speech, including motherese, captures an infant's attention and enhances social, language and emotional development. Decreased behavioural response to affective speech and reduced caregiver–child interactions are early signs of autism in infants. To understand this, we measured neural responses to mild affect speech, moderate affect speech and motherese using natural sleep functional magnetic resonance imaging and behavioural preference for motherese using eye tracking in typically developing toddlers and those with autism. By combining diverse neural–clinical data using similarity network fusion, we discovered four distinct clusters of toddlers. The autism cluster with the weakest superior temporal responses to affective speech and very poor social and language abilities had reduced behavioural preference for motherese, while the typically developing cluster with the strongest superior temporal response to affective speech showed the opposite effect. We conclude that significantly reduced behavioural preference for motherese in autism is related to impaired development of temporal cortical systems that normally respond to parental affective speech.

<https://www.nature.com/articles/s41562-021-01237-y>

Nature Scientific Reports

PAPERS

BÁLINT FORGÁCS et al with GYÖRGY GERGELY – Semantic systems are mentalistically activated for and by social partners

A recently discovered electrophysiological response, the social N400, suggests that we use our language system to track how social partners comprehend language. Listeners show an increased N400 response, when themselves not, only a communicative partner experiences a semantic incongruity. Does the N400 reflect purely semantic or mentalistic computations as well? Do we attribute language comprehension to communicative partners using our semantic systems? In five electrophysiological experiments we identified two subcomponents of the social N400. First, we manipulated the presence-absence of an Observer during object naming: the semantic memory system was activated by the presence of a social partner in addition to semantic predictions for the self. Next, we induced a false belief—and a consequent miscomprehension—in the Observer. Participants showed the social N400, over and above the social presence effect, to labels that were incongruent for the Observer, even though they were congruent for them. This effect appeared only if participants received explicit instructions to track the comprehension of the Observer. These findings suggest that the semantic systems of the brain are not merely sensitive to social information and contribute to the attribution of comprehension, but they appear to be mentalistic in nature.

<https://www.nature.com/articles/s41598-022-08306-w>

BIN YANG et al – Maternal caretaking behavior towards a dead juvenile in a wild, multi-level primate society

Maternal caretaking and transport of dead infants are widespread among nonhuman primates, having been reported in numerous species of monkeys and apes. By contrast, accounts of such behaviors toward dead juveniles are scarce. Here, we describe responses by the mother and other group members to the death of a juvenile in a wild, multi-level group of Sichuan snub-nosed monkeys (*Rhinopithecus roxellana*). Following the juvenile's fatal accident, his mother transported and cared for the corpse for four days. Immature monkeys belonging to the same one-male unit, and some individuals from other social units also showed interest in and tended the corpse. Comparisons of this case with those involving the deaths of infants and an adult female in the same population highlight possible effects of physiological, psychological and emotional factors in primate thanatological responses, and provide an additional perspective on the origin and evolution of compassionate acts.

<https://www.nature.com/articles/s41598-022-08660-9>

MARTINA TESTORI, CHARLOTTE K. HEMELRIJK & BIANCA BEERSMA – Gossip promotes cooperation only when it is pro-socially motivated

Humans are often shown to cooperate with one another. Most of the mechanisms that foster cooperation among humans rely on reputation, which itself relies on the acquisition of information about other people's behaviors. Gossip has been proposed as a cheap yet efficient tool to acquire information, and it has largely been proved to be an effective means to foster and maintain cooperation. However, empirical studies supporting this claim have ignored two aspects: (1) they often compared gossip to treatments in which no reputation was available, impeding a direct assessment of whether it is gossip

that promotes cooperation or rather the introduction of a reputation system; and (2) they focused on pro-social gossip (e.g., gossip aimed at helping the receiver), neglecting the impact of other types of gossip. We show here that, in contrast with the widespread notion that gossip promotes cooperation, gossip mostly depletes cooperation compared to first-hand information. If lying is fruitful for individuals or if a group's behavior is largely uncooperative, gossip leads to negative reputational information and decreased cooperation.

<https://www.nature.com/articles/s41598-022-08670-7>

New Scientist

NEWS

Octopus brains may have become complex the same way human brains did

The relatively high intelligence of octopuses may be due in part to high numbers of microRNAs that could let them generate more types of neurons.

<https://www.newscientist.com/article/2312467-octopus-brains-may-have-become-complex-the-same-way-human-brains-did/#ixzz7OTekj7ND>

ARTICLES

MORTEN H. CHRISTIANSEN & NICK CHATER – How language evolved: A new idea suggests it's all just a game

Our mastery of language presents many mysteries, not least where grammar comes from and how children learn to speak so effortlessly. Now researchers argue that it all makes sense if you think of language as a game of charades.

<https://www.newscientist.com/article/mg25333792-600-how-language-evolved-a-new-idea-suggests-its-all-just-a-game/#ixzz7OTfAVTTM>

PLoS Biology

PAPERS

BURKE Q. ROSEN & ERIC HALGREN – An estimation of the absolute number of axons indicates that human cortical areas are sparsely connected

This is an uncorrected proof

The tracts between cortical areas are conceived as playing a central role in cortical information processing, but their actual numbers have never been determined in humans. Here, we estimate the absolute number of axons linking cortical areas from a whole-cortex diffusion MRI (dMRI) connectome, calibrated using the histologically measured callosal fiber density. Median connectivity is estimated as approximately 6,200 axons between cortical areas within hemisphere and approximately 1,300 axons interhemispherically, with axons connecting functionally related areas surprisingly sparse. For example, we estimate that <5% of the axons in the trunk of the arcuate and superior longitudinal fasciculi connect Wernicke's and Broca's areas. These results suggest that detailed information is transmitted between cortical areas either via linkage of the dense local connections or via rare, extraordinarily privileged long-range connections.

<https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3001575>

PLoS One

PAPERS

NAAMA GOREN-INBAR et al – Kaizer Hill (Modi'in), a pre-pottery neolithic a quarry site – the terraced slopes

The research of the Kaizer Hill site (the Hilltop and its Terraces), recognized as a Pre Pottery Neolithic A (PPNA) quarry site, involved studies of the rock damage associated with the quarrying activities as well as of the recovered material remains, mostly chipped stone artifacts. We present here the results of our on-site explorations (excavations, surveys and surface-collections), focusing on the findings deriving from the Terraces. Diverse rock damage patterns were identified and described, portraying systematic rock mass-exploitation through quarrying fronts, natural rock joints and fissures enlargement, drilling and chiseling. There are multiple indications that the local bedrock (Bi'na Formation, Turonian) comprising flint and limestone was quarried under a systematic quality evaluation, leaving residual flint unsuitable for exploitation. Of interest to note that nearly all of the flint artifacts excavated and collected on the Terraces were made on raw material transported from the Hilltop (Mishash Formation, Campanian), knapped in-situ, on the quarried rock surfaces of the slopes. The flint tools bear witness to intensive use involving mainly boring and drilling. The dominant tool type is the flint axe for which a variety of waste products related to its production were found in-situ, enabling the reconstruction of axe reduction sequence. Similar axes and waste products were found in many PPN sites indicating that there was a common, widely-used scheme of making flint axes during the PPN. Interestingly, besides the flint waste, there were also limestone waste products typical of the last shaping and thinning stages of axe production, indicating that limestone axes were shaped technologically similar to the flint ones, contrary to what has been assumed before. Rare findings, such as obsidian pieces, originating from much further a-field indicate ties with other PPN communities, near and/or far. Overall, this study provides unique and novel insights on Levantine PPN lifeways.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0265727>

Trends in Cognitive Sciences

PAPERS

NICHOLAS EPLEY et al – Undersociality: miscalibrated social cognition can inhibit social connection

A person's well-being depends heavily on forming and maintaining positive relationships, but people can be reluctant to connect in ways that would create or strengthen relationships. Emerging research suggests that miscalibrated social cognition may create psychological barriers to connecting with others more often. Specifically, people may underestimate how positively others will respond to their own sociality across a variety of social actions, including engaging in conversation, expressing appreciation, and performing acts of kindness. We suggest that these miscalibrated expectations are created and maintained by at least three mechanisms: differential construal, uncertain responsiveness, and asymmetric learning. Underestimating the positive consequences of social engagement could make people less social than would be optimal for both their own and others' well-being.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(22\)00043-2](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(22)00043-2)

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