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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, 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.

### PUBLICATION ALERTS – MARTIN EDWARDES – Linguistics, Anthropological

Martin Edwardes (2018). Linguistics, Anthropological. In Hilary Callan (ed.), The International Encyclopedia of Anthropology. John Wiley & Sons: Oxford, UK. <https://onlinelibrary.wiley.com/doi/book/10.1002/9781118924396>.

If you are interested in a copy, contact me.

### SCIENCE NEWS – The bird voice box is one of a kind in the animal kingdom

The melodious call of many birds comes from a mysterious organ buried deep within their chests: a one-of-a-kind voice box called a syrinx. Now, scientists have concluded that this voice box evolved only once, and that it represents a rare example of a true evolutionary novelty.

[https://www.sciencemag.org/news/2018/10/bird-voice-box-one-kind-animal-kingdom?utm\\_campaign=news\\_daily\\_2018-10-08&et rid=17774313&et cid=2416592](https://www.sciencemag.org/news/2018/10/bird-voice-box-one-kind-animal-kingdom?utm_campaign=news_daily_2018-10-08&et rid=17774313&et cid=2416592)

### SCIENCE NEWS – The average person can recognize 5000 faces

Think of all the faces you know. As you flick through your mental Rolodex, your friends, family, and co-workers probably come first—along with celebrities—followed by the faces of the nameless strangers you encounter during your daily routine. But how many faces can the human Rolodex store?

[https://www.sciencemag.org/news/2018/10/average-person-can-recognize-5000-faces?utm\\_campaign=news\\_daily\\_2018-10-10&et rid=17774313&et cid=2421030](https://www.sciencemag.org/news/2018/10/average-person-can-recognize-5000-faces?utm_campaign=news_daily_2018-10-10&et rid=17774313&et cid=2421030)

### SCIENCE NEWS – Plants evolved scents, colors to say ‘eat me’ to lemurs, primates

Plants can’t walk, so they depend on hungry animals to eat their fruits and disperse their seeds either by spitting or pooping them out in new locations.

[https://www.sciencemag.org/news/2018/10/plants-evolved-scents-colors-say-eat-me-lemurs-primates?utm\\_campaign=news\\_daily\\_2018-10-10&et rid=17774313&et cid=2421030](https://www.sciencemag.org/news/2018/10/plants-evolved-scents-colors-say-eat-me-lemurs-primates?utm_campaign=news_daily_2018-10-10&et rid=17774313&et cid=2421030)

### SOCIETY FOR SCIENCE – A 90,000-year-old bone knife hints special tools appeared early in Africa

The discovery of a bone knife in a Moroccan cave points to the ancient emergence of specialized toolmaking in the region.

<http://click.societyforscience-email.com/?qs=9732fdd91b68a74b8b3d633c6c1a8457a09817f97c404c3ef13c292a1e346bd5f4a9f89da893cb3453cb21b81c4e8c584635319eec4be1a9>

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### **SOCIETY FOR SCIENCE – How your brain is like a film editor**

A brain structure called the hippocampus may slice our continuous existence into discrete chunks that can be stored as memories.

<http://click.societyforscience-email.com/?qs=3e4a842a7c8564fef37a312afb3b6f85c015a0aebb13835395dcaed228747ffb7254ff518eed870c728f4606f641949b63c51fb45940f244>

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### **SOCIETY FOR SCIENCE – How your brain is like a film editor**

A brain structure called the hippocampus may slice our continuous existence into discrete chunks that can be stored as memories.

<http://click.societyforscience-email.com/?qs=51917232861d4cc65476834c52a4ca28be6cd43e99d5ed2a59b2702f821875fd2c0d59b3fa7e4558eafdbb898bdef5b52461b3931c36df3b>

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### **SCIAM NEWS – Why the Mind–Body Problem Can't Have a Single, Objective Solution**

We cannot escape our subjectivity when we try to solve the riddle of ourselves.

[https://blogs.scientificamerican.com/cross-check/why-the-mind-body-problem-cant-have-a-single-objective-solution/?utm\\_source=newsletter&utm\\_medium=email&utm\\_campaign=mind&utm\\_content=link&utm\\_term=2018-10-10\\_top-stories](https://blogs.scientificamerican.com/cross-check/why-the-mind-body-problem-cant-have-a-single-objective-solution/?utm_source=newsletter&utm_medium=email&utm_campaign=mind&utm_content=link&utm_term=2018-10-10_top-stories)

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### **SCI-NEWS.COM – Neuroscientists Identify Brain Areas Responsible for Choice Overload**

Scientists have long known that we are overwhelmed by too many choices. Now, Caltech Professor Colin Camerer and co-authors have discovered what's happening inside our brains. "In many modern economies consumers have a dizzying variety of choices, even for simple goods like bottled water," Professor Camerer and colleagues said.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/oekssRi6h8w/choice-overload-brain-06478.html?utm\\_source=feedburner&utm\\_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/oekssRi6h8w/choice-overload-brain-06478.html?utm_source=feedburner&utm_medium=email)

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### **SCI-NEWS.COM – Humans Inherited Viral Defenses from Neanderthals**

Neanderthal DNA introgressed in modern humans helped them adapt against RNA viruses, according to new research published in the journal Cell. Current thinking is that modern humans began moving out of Africa and into Eurasia about 70,000 years ago. When they arrived, they met up with Neanderthals who, along with their own ancestors, had been adapting to that geographic area for hundreds of thousands of years.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/loLSWfwxrSY/viral-defenses-neanderthals-06490.html?utm\\_source=feedburner&utm\\_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/loLSWfwxrSY/viral-defenses-neanderthals-06490.html?utm_source=feedburner&utm_medium=email)

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### **SCI-NEWS.COM – People Know 5,000 Faces on Average, Study Says**

Over our species history, humans have typically lived in small groups of under a hundred individuals. But a new study, published in the journal Royal Society Proceedings B, suggests our facial recognition abilities equip us to deal with the thousands of faces.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/0MCmbmvt8pg/human-facial-recognition-06493.html?utm\\_source=feedburner&utm\\_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/0MCmbmvt8pg/human-facial-recognition-06493.html?utm_source=feedburner&utm_medium=email)

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### **SCIENCE DAILY – Even when presented with facts and evidence, many choose not to believe them**

In an era of fact-checking and 'alternative facts,' many people simply choose not to believe research findings and other established facts, according to a new article.

<https://www.sciencedaily.com/releases/2018/10/181009114939.htm>

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### **SCIENCE DAILY – Humans may have colonized Madagascar later than previously thought**

New archaeological evidence from southwest Madagascar reveals that modern humans colonized the island thousands of years later than previously thought, according to a new study.

<https://www.sciencedaily.com/releases/2018/10/181010141739.htm>

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### **SCIENCE DAILY – Infants capable of complex babble may grow into stronger readers**

Infants' early speech production may predict their later literacy, according to a new study.

<https://www.sciencedaily.com/releases/2018/10/181010141736.htm>

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## SCIENCE DAILY – Wild chimpanzees share food with their friends

Why share food with non-family members when there is no immediate gain? An international team of researchers conducted observations of natural food sharing behavior of the chimpanzees of the Tai National Park, Ivory Coast. They found that chimpanzees who possess large, desirable food items, like meat, honey or large fruit share food with their friends, and that neither high dominance status nor harassment by beggars influenced possessors' decisions to share.

<https://www.sciencedaily.com/releases/2018/10/181010093606.htm>

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## SCIENCE DAILY – Never forget a face? Research suggests people know an average of 5,000 faces

A research team tested study participants on how many faces they could recall from their personal lives and the media, as well as the number of famous faces they recognized.

<https://www.sciencedaily.com/releases/2018/10/181009210730.htm>

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## SCIENCE DAILY – Freeloaders beware: Incentives to foster cooperation are just around the corner

In our society, there are always a certain percentage of people who adopt a freeloader attitude. They let other members of society do all the work and do not do their part. In a new study researchers show that it is possible to incentivize members of society to cooperate by providing them fixed bonuses and, thus, prevent freeloader behavior from becoming prevalent.

<https://www.sciencedaily.com/releases/2018/10/181009135949.htm>

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## SCIENCE DAILY – Clues that suggest people are lying may be deceptive, study shows

The verbal and physical signs of lying are harder to detect than people believe, a study suggests.

<https://www.sciencedaily.com/releases/2018/10/181012092941.htm>

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## SCIENCE DAILY – How parenting affects antisocial behaviors in children

In a recent study of the parental caregiving environment, researchers found that within identical twin pairs, the child who experienced harsher behavior and less parental warmth was at a greater risk for developing antisocial behaviors.

<https://www.sciencedaily.com/releases/2018/10/181011173131.htm>

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## NATURE BRIEFING – Major publishers sue ResearchGate

Elsevier and the American Chemical Society have launched legal proceedings in the United States against ResearchGate for copyright infringement. The publishers filed a similar suit in October last year in Germany, where the academic-networking website is based. By the following month, ResearchGate had disabled public access to 1.7 million articles on its site. ResearchGate hasn't commented on either lawsuit.

<https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=13e13c58c9&e=1db4b9a19b>

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## NATURE BRIEFING – The average person recognizes 5,000 faces

Researchers quizzed people on images of famous faces to extrapolate that humans seem to recall about about 5,000 faces, on average. Even the most face-blind among the participants knew about 1,000 faces.

<https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=d410f664e3&e=1db4b9a19b>

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## PUBLICATIONS

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### Current Biology

#### ARTICLES

#### JOSEPH HENRICH – Human Cooperation: The Hunter-Gatherer Puzzle

In tracing the roots of human cooperation, researchers have gleaned insights from the sociality of contemporary hunter-gatherers. A new study among the Hadza, one of the few surviving foraging populations, challenges popular approaches to cooperation while suggesting a central role for cultural transmission.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(18\)31050-9?dgcid=raven\\_jbs\\_etoc\\_email](https://www.cell.com/current-biology/fulltext/S0960-9822(18)31050-9?dgcid=raven_jbs_etoc_email)

#### GENÍS PRAT-ORTEGA & JAIME DE LA ROCHA – Selective Attention: A Plausible Mechanism Underlying Confirmation Bias

Our perception is strongly influenced by our experience of past stimuli and choices. A new study suggests that our attention is selectively deployed to those aspects of the sensory evidence which are consistent with our previous decisions, thus introducing a confirmation bias.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(18\)31069-8?dgcid=raven\\_jbs\\_etoc\\_email](https://www.cell.com/current-biology/fulltext/S0960-9822(18)31069-8?dgcid=raven_jbs_etoc_email)

## PAPERS

### **KRISTOPHER M. SMITH et al – Hunter-Gatherers Maintain Assortativity in Cooperation despite High Levels of Residential Change and Mixing**

Widespread cooperation is a defining feature of human societies from hunter-gatherer bands to nation states [1, 2], but explaining its evolution remains a challenge. Although positive assortment of cooperators is recognized as a basic requirement for the evolution of cooperation, the mechanisms governing assortment are debated. Moreover, the social structure of modern hunter-gatherers, characterized by high mobility, residential mixing, and low genetic relatedness [3], undermines assortment and adds to the puzzle of how cooperation evolved. Here, we analyze four years of data (2010, 2013, 2014, 2016) tracking residence and levels of cooperation elicited from a public goods game in Hadza hunter-gatherers of Tanzania. Data were collected from 56 camps, comprising 383 unique individuals, 137 of whom we have data for two or more years. Despite significant residential mixing, we observe a robust pattern of assortment that is necessary for cooperation to evolve; in every year, Hadza camps exhibit high between-camp and low within-camp variation in cooperation. We find little evidence that cooperative behavior within individuals is stable over time or that similarity in cooperation between dyads predicts their future cohabitation. Both sets of findings are inconsistent with models that assume stable cooperative and selfish types, including partner choice models. Consistent with social norms, culture, and reciprocity theories, the strongest predictor of an individual's level of cooperation is the mean cooperation of their current campmates. These findings underscore the adaptive nature of human cooperation—particularly its responsiveness to social contexts—as a feature that is important in generating the assortment necessary for cooperation to evolve.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(18\)30994-1?dgcid=raven\\_jbs\\_etoc\\_email](https://www.cell.com/current-biology/fulltext/S0960-9822(18)30994-1?dgcid=raven_jbs_etoc_email)

### **BHARATH CHANDRA TALLURI et al – Confirmation Bias through Selective Overweighting of Choice-Consistent Evidence**

People's assessments of the state of the world often deviate systematically from the information available to them. Such biases can originate from people's own decisions: committing to a categorical proposition, or a course of action, biases subsequent judgment and decision-making. This phenomenon, called confirmation bias, has been explained as suppression of post-decisional dissonance. Here, we provide insights into the underlying mechanism. It is commonly held that decisions result from the accumulation of samples of evidence informing about the state of the world. We hypothesized that choices bias the accumulation process by selectively altering the weighting (gain) of subsequent evidence, akin to selective attention. We developed a novel psychophysical task to test this idea. Participants viewed two successive random dot motion stimuli and made two motion-direction judgments: a categorical discrimination after the first stimulus and a continuous estimation of the overall direction across both stimuli after the second stimulus. Participants' sensitivity for the second stimulus was selectively enhanced when that stimulus was consistent with the initial choice (compared to both, first stimuli and choice-inconsistent second stimuli). A model entailing choice-dependent selective gain modulation explained this effect better than several alternative mechanisms. Choice-dependent gain modulation was also established in another task entailing averaging of numerical values instead of motion directions. We conclude that intermittent choices direct selective attention during the evaluation of subsequent evidence, possibly due to decision-related feedback in the brain. Our results point to a recurrent interplay between decision-making and selective attention.

[https://www.cell.com/current-biology/fulltext/S0960-9822\(18\)30982-5?dgcid=raven\\_jbs\\_etoc\\_email](https://www.cell.com/current-biology/fulltext/S0960-9822(18)30982-5?dgcid=raven_jbs_etoc_email)

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## Evolutionary Anthropology

### PAPERS

### **LUCY TIBBLE & SUSANA CARVALHO – Rethinking the evolution of property and possession: A review and methodological proposition**

Property is a key feature of modern human society; however, identifying the origin of this multifaceted behavior poses a formidable challenge. Here, we explore the methodologies for researching the origin of property. We discuss how an interdisciplinary approach can shed light on how our human ancestors shifted behaviorally from possessing an object to having exclusive property control over it. Possession occurs when social group members only respect an individual's claim to have exclusive access to an object when the individual has physical control over the object. Property occurs when an individual can claim exclusive access to an object, without challenge, regardless of whether the object is in their physical control or not. Researchers across different disciplines have asked what, if anything, distinguishes human property behavior from the behavior of other animals? Further, when and how did this behavior evolve in our lineage? Due to the considerable methodological challenges posed by researching this topic, few studies have been able to directly address these questions. In this review, we explore the challenges involved in defining property and possession and suggest a two-step approach to interdisciplinary definitions. Next, we evaluate four core approaches to the study of property behavior: evolutionary game theory, ethology, comparative cognition, and developmental psychology. Finally, we propose an empirical study, using an ethological approach to test the presence of property and possessive behavior in a natural setting, using our closest living relative, the chimpanzee (*Pan troglodytes*). Overall, we argue that this field of research is at a turning point, where the novel integration of various methods may provide an explanation to the origin of property.

<https://onlinelibrary.wiley.com/doi/10.1002/evan.21748>

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## Frontiers in Neuroscience

### PAPERS

#### **ISABELLE BROCAS & JUAN D. CARRILLO – A Neuroeconomic Theory of Mental Time Travel**

We propose a theoretical model that places attention at the center of mental time travel (MTT) ability. This theory predicts that attention promotes a memory-based process that encodes memories of unexpected events, facilitates accurate recollection of information of such events during MTT, and optimizes subsequent decision-making. This process coexists with a habitual process that governs all other events and treats them equally. Our theory demonstrates that the memory-based process is useful when the environment features novel experiences that are likely to be relevant in future decision-making, hence worth remembering accurately. By contrast, the habitual process is optimal in environments that either do not change significantly, or have a small chance of being repeated in the future. This may explain why the ability to mentally travel in time has developed differently in humans than in other species. Implications are discussed in the context of decision-making.

[https://www.frontiersin.org/articles/10.3389/fnins.2018.00658/full?utm\\_source=F-AAE&utm\\_medium=EMLF&utm\\_campaign=MRK\\_790530\\_55\\_Neurosci\\_20181009\\_arts\\_A](https://www.frontiersin.org/articles/10.3389/fnins.2018.00658/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_790530_55_Neurosci_20181009_arts_A)

#### **ANDREA SCALABRINI, CLARA MUCCI & GEORG NORTHOFF – Is Our Self Related to Personality? A Neuropsychodynamic Model**

The concept and the assessment of personality have been extensively discussed in psychoanalysis and in clinical psychology over the years. Nowadays there is large consensus in considering the constructs of the self and relatedness as central criteria to assess the personality and its disturbances. However, the relation between the psychological organization of personality, the construct of the self, and its neuronal correlates remain unclear. Based on the recent empirical data on the neural correlates of the self (and others), on the importance of early relational and attachment experiences, and on the relation with the brain's spontaneous/resting state activity (rest-self overlap/containment), we propose here a multilayered model of the self with: (i) relational alignment; (ii) self-constitution; (iii) self-manifestation; and (iv) self-expansion. Importantly, these different layers of the self can be characterized by different neuronal correlates—this results in different neuronally grounded configurations or organizations of personality. These layers correspond to different levels of personality organization, such as psychotic (as related to the layer of self-constitution), borderline (as related to the layer of self-manifestation) and neurotic (as related to the layer of self-expansion). Taken together, we provide here for the first time a neurobiologically and clinically grounded model of personality organization, which carries major psychodynamic and neuroscientific implications. The study of the spontaneous activity of the brain, intrinsically related to the self (rest-self overlap/containment) and the interaction with stimuli (rest-stimulus interaction) may represent a further advance in understanding how our default state plays a crucial role in navigating through the internal world and the external reality.

[https://www.frontiersin.org/articles/10.3389/fnhum.2018.00346/full?utm\\_source=F-AAE&utm\\_medium=EMLF&utm\\_campaign=MRK\\_790530\\_55\\_Neurosci\\_20181009\\_arts\\_A](https://www.frontiersin.org/articles/10.3389/fnhum.2018.00346/full?utm_source=F-AAE&utm_medium=EMLF&utm_campaign=MRK_790530_55_Neurosci_20181009_arts_A)

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## Nature Scientific Reports

### PAPERS

#### **SHARON E. KESSLER et al – Social Structure Facilitated the Evolution of Care-giving as a Strategy for Disease Control in the Human Lineage**

Humans are the only species to have evolved cooperative care-giving as a strategy for disease control. A synthesis of evidence from the fossil record, paleogenomics, human ecology, and disease transmission models, suggests that care-giving for the diseased evolved as part of the unique suite of cognitive and socio-cultural specializations that are attributed to the genus Homo. Here we demonstrate that the evolution of hominin social structure enabled the evolution of care-giving for the diseased. Using agent-based modeling, we simulate the evolution of care-giving in hominin networks derived from a basal primate social system and the three leading hypotheses of ancestral human social organization, each of which would have had to deal with the elevated disease spread associated with care-giving. We show that (1) care-giving is an evolutionarily stable strategy in kin-based cooperatively breeding groups, (2) care-giving can become established in small, low density groups, similar to communities that existed before the increases in community size and density that are associated with the advent of agriculture in the Neolithic, and (3) once established, care-giving became a successful method of disease control across social systems, even as community sizes and densities increased. We conclude that care-giving enabled hominins to suppress disease spread as social complexity, and thus socially-transmitted disease risk, increased.

<https://www.nature.com/articles/s41598-018-31568-2>

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## New Scientist

### ARTICLES

#### **CATHERINE BRAHIC – The ghosts within**

Prehistoric humans were sexual adventurers, mating with Neanderthals and Denisovans, but DNA studies reveal dalliances with populations we never knew existed.

[https://www.newscientist.com/article/mg24031992-600-traces-of-mystery-ancient-humans-found-lurking-in-our-genomes/?utm\\_medium=NLC](https://www.newscientist.com/article/mg24031992-600-traces-of-mystery-ancient-humans-found-lurking-in-our-genomes/?utm_medium=NLC)

## **GINA PERRY – Humans aren't always corrupted by power after all**

The Stanford prison experiment was the classic demonstration of how power can bring out the worst in us. But now it seems it was more about showbiz than science.

[https://www.newscientist.com/article/mg24031990-200-delivered-from-evil-humans-arent-always-corrupted-by-power-after-all/?utm\\_medium=NLC](https://www.newscientist.com/article/mg24031990-200-delivered-from-evil-humans-arent-always-corrupted-by-power-after-all/?utm_medium=NLC)

## **ALICE KLEIN – We subconsciously treat naysayers as leaders**

Openly negative and critical people are often elected leaders, perhaps because we perceive their disregard for social niceties as a sign of power and independence.

[https://www.newscientist.com/article/mg24031993-800-naysayers-rise-to-the-top-because-we-naturally-treat-them-as-leaders/?utm\\_medium=NLC](https://www.newscientist.com/article/mg24031993-800-naysayers-rise-to-the-top-because-we-naturally-treat-them-as-leaders/?utm_medium=NLC)

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## **PLoS Biology**

### **PAPERS**

#### **MICHAEL F. DAHLSTROM & DIETRAM A. SCHEUFELE – (Escaping) the paradox of scientific storytelling**

Compelling stories about science can motivate people to engage and respond to relevant problems facing society. While science plays a unique role in society, providing the best available evidence for policy choices, understanding the world, and informing citizens' daily lives, it does not hold any intrinsic advantage in creating captivating stories for mass audiences. Instead, science must compete with other storytellers, many of whom are not bound to scientific evidence. This presents a paradox—how can science preserve its credibility as curator of knowledge while engaging audiences with a communication format that is agnostic to truth?

{I think they are doing a disservice to the capacity for truth in story-telling. As anyone who has read Grimm's Fairy Tales will know, what is a fiction on one level is factual on another level, a warning on another level, and a social commentary on another level. The problem is not that stories are agnostic to truth, it is that you need a key to understand the truth in a story; but then, with the lexis, semantics and metaphor which are inherent in the method, you need a key to understand the truth in science, too.}

<https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.2006720>

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## **PLoS One**

### **PAPERS**

#### **FLORA VANLANGENDONCK, ROEL M. WILLEMS & PETER HAGOORT – Taking common ground into account: Specifying the role of the mentalizing network in communicative language production**

Several studies have shown that communicative language production as compared to non-communicative language production recruits parts of the mentalizing or theory of mind network, yet the exact role of this network in communication remains underspecified. In this study, we therefore aimed to test under what conditions the mentalizing network contributes to communicative language production. We were especially interested in distinguishing between situations in which speakers have to consider which information they do or do not share with their addressee (common vs. privileged ground information). We therefore manipulated whether speakers had to distinguish between common and privileged ground in order to communicate efficiently with the listener, in addition to comparing language production in a communicative and a non-communicative context. Participants performed a referential communicative game in the MRI-scanner as well as a similar, non-communicative task. We found that the medial prefrontal cortex, a core region of the mentalizing network, is especially sensitive to communicative contexts in which speakers have to take their addressee's needs into account in order to communicate efficiently. In addition, we found neural differences between the communicative and the non-communicative settings before speakers started to plan their utterances, suggesting that they continuously update common ground in a communicative context.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0202943>

#### **ALBERT H. VAN DER VEER et al – Where am I in virtual reality?**

It is currently not well understood whether people experience themselves to be located in one or more specific part(s) of their body. Virtual reality (VR) is increasingly used as a tool to study aspects of bodily perception and self-consciousness, due to its strong experimental control and ease in manipulating multi-sensory aspects of bodily experience. To investigate where people self-locate in their body within virtual reality, we asked participants to point directly at themselves with a virtual pointer, in a VR headset. In previous work employing a physical pointer, participants mainly located themselves in the upper face and upper torso. In this study, using a VR headset, participants mainly located themselves in the upper face. In an additional body template task where participants pointed at themselves on a picture of a simple body outline, participants pointed most often to the upper torso, followed by the (upper) face. These results raise the question as to whether head-mounted virtual reality might alter where people locate themselves making them more "head-centred".

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0204358>

### **PILAR CHIAPPA, SUNEETA SINGH & FRANCISCO PELLICER – The degree of altriciality and performance in a cognitive task show correlated evolution**

Previous comparative research on the evolution of cognition has tested what we call the “altricial intelligence hypothesis”. This posits that a relationship between evolutionary changes in the altricial period length and cognition exists across animal species. However, the evidence available thus far either comes from indirect measurements of cognition or has not been conclusive. We performed a phylogenetic analysis of published data from various sources on 31 homeothermic species to test for an evolutionary association between the degree of altriciality and a direct measure of self-control. For each species, the degree of altriciality was determined based on the residual altricial period (i.e., the time from birth to fledging in birds and to weaning in mammals) on lifespan. The percentage of success in the cylinder task was the measure of self-control. Our results showed that the degree of altriciality covaried positively with the measure of self-control. Based on the results of this study, we sustain that evolutionary changes in the length of the altricial period are associated with evolutionary changes in the cognitive system used by homeotherms to perform the cylinder task.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0205128>

### **ILEANA GRAMA & FRANK WIJNEN – Learning and generalizing non-adjacent dependencies in 18-month-olds: A mechanism for language acquisition?**

The ability to track non-adjacent dependencies (the relationship between  $a_i$  and  $b_i$  in an  $a_iXb_i$  string) has been hypothesized to support detection of morpho-syntactic dependencies in natural languages (‘The princess is reluctantly kissing the frog’). But tracking such dependencies in natural languages entails being able to generalize dependencies to novel contexts (‘The general is angrily berating his troops’), and also tracking co-occurrence patterns between functional morphemes like *is* and *ing* (a class of elements that often lack perceptual salience). We use the Headturn Preference Procedure to investigate (i) whether infants are capable of generalizing dependencies to novel contexts, and (ii) whether they can track dependencies between perceptually non-salient elements in an artificial grammar  $aXb$ . Results suggest that 18-month-olds extract abstract knowledge of  $a\_b$  dependencies between non-salient  $a$  and  $b$  elements and use this knowledge to subsequently re-familiarize themselves with specific  $a_i\_b_i$  combinations. However, they show no evidence of generalizing  $a_i\_b_i$  dependencies to novel  $a_iYb_i$  strings.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0204481>

### **TOYOMI MATSUNO & KAZUO FUJITA – Body inversion effect in monkeys**

Humans visually process human body images depending on the configuration of the parts. However, little is known about whether this function is evolutionarily shared with nonhuman animals. In this study, we examined the body posture discrimination performance of capuchin monkeys, a highly social platyrrhine primate, in comparison to humans. We demonstrate that, like humans, monkeys exhibit a body inversion effect: body posture discrimination is impaired by inversion, which disrupts the configural relationships of body parts. The inversion effect in monkeys was observed when human body images were used, but not when the body parts were replaced with cubic and cylindrical figures, the positions of the parts were scrambled, or only part of a body was presented. Results in human participants showed similar patterns, though they also showed the inversion effect when the cubic/cylindrical body images were used. These results provide the first evidence for configural processing of body forms in monkeys and suggest that the visual attunement to social signals mediated by body postures is conserved through the evolution of primate vision.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0204353>

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## **PNAS**

### **PAPERS**

#### **EVAN P. KINGSLEY et al – Identity and novelty in the avian syrinx**

In its most basic conception, a novelty is simply something new. However, when many previously proposed evolutionary novelties have been illuminated by genetic, developmental, and fossil data, they have refined and narrowed our concept of biological “newness.” For example, they show that these novelties can occur at one or multiple levels of biological organization. Here, we review the identity of structures in the avian vocal organ, the syrinx, and bring together developmental data on airway patterning, structural data from across tetrapods, and mathematical modeling to assess what is novel. In contrast with laryngeal cartilages that support vocal folds in other vertebrates, we find no evidence that individual cartilage rings anchoring vocal folds in the syrinx have homology with any specific elements in outgroups. Further, unlike all other vertebrate vocal organs, the syrinx is not derived from a known valve precursor, and its origin involves a transition from an evolutionary “spandrel” in the respiratory tract, the site where the trachea meets the bronchi, to a target for novel selective regimes. We find that the syrinx falls into an unusual category of novel structures: those having significant functional overlap with the structures they replace. The syrinx, along with other evolutionary novelties in sensory and signaling modalities, may more commonly involve structural changes that contribute to or modify an existing function rather than those that enable new functions.

<http://www.pnas.org/content/115/41/10209?etoc=>

### **TANYA R. JONKER et al – Neural reactivation in parietal cortex enhances memory for episodically linked information**

Remembering is a complex process that involves recalling specific details, such as who you were with when you celebrated your last birthday, as well as contextual information, such as the place where you celebrated. It is well established that the act of remembering enhances long-term retention of the retrieved information, but the neural and cognitive mechanisms that drive memory enhancement are not yet understood. One possibility is that the process of remembering results in reactivation of the broader episodic context. Consistent with this idea, in two experiments, we found that multiple retrieval attempts enhanced long-term retention of both the retrieved object and the nontarget object that shared scene context, compared with a restudy control. Using representational similarity analysis of fMRI data in experiment 2, we found that retrieval resulted in greater neural reactivation of both the target objects and contextually linked objects compared with restudy. Furthermore, this reactivation occurred in a network of medial and lateral parietal lobe regions that have been linked to episodic recollection. The results demonstrate that retrieving a memory can enhance retention of information that is linked in the broader event context and the hippocampus and a posterior medial network of parietal cortical areas (also known as the Default Network) play complementary roles in supporting the reactivation of episodically linked information during retrieval.

<http://www.pnas.org/content/early/2018/10/02/1800006115?etoc=>

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## Proceedings of the Royal Society B

### PAPERS

### **NOEMIE LAMON et al with KLAUS ZUBERBÜHLER – Wild chimpanzees select tool material based on efficiency and knowledge**

Some animals have basic culture, but to date there is not much evidence that cultural traits evolve as part of a cumulative process as seen in humans. This may be due to limits in animal physical cognition, such as an inability to compare the efficiency of a novel behavioural innovation with an already existing tradition. We investigated this possibility with a study on a natural tool innovation in wild chimpanzees: moss-sponging, which recently emerged in some individuals to extract mineral-rich liquids at a natural clay-pit. The behaviour probably arose as a variant of leaf-sponging, a tool technique seen in all studied chimpanzee communities. We found that moss-sponges not only absorbed more liquid but were manufactured and used more rapidly than leaf-sponges, suggesting a functional improvement. To investigate whether chimpanzees understood the advantage of moss- over leaf-sponges, we experimentally offered small amounts of rainwater in an artificial cavity of a portable log, together with both sponge materials, moss and leaves. We found that established moss-spongers (having used both leaves and moss to make sponges) preferred moss to prepare a sponge to access the rainwater, whereas leaf-spongers (never observed using moss) preferred leaves. Survey data finally demonstrated that moss was common in forest areas near clay-pits but nearly absent in other forest areas, suggesting that natural moss-sponging was at least partly constrained by ecology. Together, these results suggest that chimpanzees perceive functional improvements in tool quality, a crucial prerequisite for cumulative culture.

<http://rspb.royalsocietypublishing.org/content/285/1888/20181715?etoc>

### **L. SAMUNI et al with CATHERINE CROCKFORD – Social bonds facilitate cooperative resource sharing in wild chimpanzees**

Why share when access to benefits is uncertain is crucial to our understanding of the evolution of humans' extensive cooperation. Here, we investigated some of the different human sharing hypotheses and potential neuroendocrine mechanisms, in one of our closest living relatives, chimpanzees. The strongest predictor of sharing across food types was the presence of enduring and mutually preferred grooming partners, more than harassment, direct signalling, or trade. Moreover, urinary oxytocin levels were higher after the sharing of both individually and jointly acquired resources compared with controls. We conclude that the emotional connection inherent in social bonds was a key factor determining sharing patterns, with the oxytocinergic system potentially facilitating long-term cooperative exchanges. Testing for the role of social bonds in increasing predictability of sharing behaviour, a feature frequently overlooked, may help us to identify the evolutionary drivers of resource sharing and mechanisms that sustain delayed reciprocity between non-kin.

<http://rspb.royalsocietypublishing.org/content/285/1888/20181643?etoc>

### **R. JENKINS, A. J. DOWSETT & A. M. BURTON – How many faces do people know?**

Over our species history, humans have typically lived in small groups of under a hundred individuals. However, our face recognition abilities appear to equip us to recognize very many individuals, perhaps thousands. Modern society provides access to huge numbers of faces, but no one has established how many faces people actually know. Here, we describe a method for estimating this number. By combining separate measures of recall and recognition, we show that people know about 5000 faces on average and that individual differences are large. Our findings offer a possible explanation for large variation in identification performance. They also provide constraints on understanding the qualitative differences between perception of familiar and unfamiliar faces—a distinction that underlies all current theories of face recognition.

<http://rspb.royalsocietypublishing.org/content/285/1888/20181319?etoc>

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