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.

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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.

SCIENCENEWS.ORG — Humans don’t get enough sleep. Just ask other primates.
Short, REM-heavy sleep bouts separate humans from other primates, scientists find. Sleeping on the ground may have a lot to do with it. 
https://mail.yahoo.com/#mail

SCIAM NEWS — How Baby Birds Learn to Duet
Recordings of songbird duets reveal baby birds learn conversational turn-taking like we do: gradually, and from adults. 

SCIENCE DAILY — Adult chimpanzees play more than adult lowland gorillas in captivity
Play is more frequent in captive adult chimpanzees than in captive adult lowland gorillas, according to a new study. 
https://www.sciencedaily.com/releases/2018/03/180307141414.htm

SCIENCE DAILY — Animals shield their families from a harsh world
Animals living in volatile habitats can gain major evolutionary benefits by shielding their families from the changing environment, new research suggests. Biologists investigated an overlooked reason for widespread cooperation amongst animals. The team showed that when the environment is prone to fluctuate unexpectedly, staying at home to help raise relatives can be much better than going solo. 
https://www.sciencedaily.com/releases/2018/03/180307141409.htm

SCIENCE DAILY — We’re not addicted to smartphones, we’re addicted to social interaction
Mobile-device habits may not be anti-social, but rather hyper-social -- stemming from a healthy human need to socialize. This is the finding of a new review of the dysfunctional use of smart technology, which concludes that the most addictive smartphone functions all share a common theme: they tap into the human desire to connect with other people. 
https://www.sciencedaily.com/releases/2018/03/180307141337.htm

PUBLICATIONS
American Journal of Physical Anthropology
PAPERS
THOMAS A. TERLEPH, S. MALAIUVITNOND & U. H. REICHARD — An analysis of white-handed gibbon male song reveals speech-like phrases
Our goal was to document song phrases of the white-handed gibbon (Hylobates lar), an Asian ape that produces elaborate songs, often in well-coordinated male/female duets. We focused on the male coda, which is produced during vocal turn-taking with one’s mate, and particularly its phrases containing rapid spectral and temporal variation, to investigate if modulation rates resemble those of lip-smacking in other nonhuman primates and human speech rhythm. We produced recordings from a large population of wild gibbons. Using terminology consistent with that used to describe vocalizations in other singing species, we analyzed coda phrases, overall coda properties, coda distinctiveness across individuals, and flexibility of phrase production within song bouts. Our song phrase-level analysis showed that male codas differed between individuals and increase in complexity within song bouts by the addition of the only two male-specific phrases of the species’ repertoire. These phrases differ from all others of the species and from vocalizations typical of the larger, nonhuman great apes, in that they contain rapid within-phrase modulation. Their modulation rates (6.82 and 7.34 Hz) are similar to that of lip-smacking in other nonhuman primates and speech in humans and, like human speech, are produced exclusively during exhalation. One phrase type (trills) contains multiple notes per exhalation, another characteristic similar to speech but not most primate vocalizations. 

Current Biology
PAPERS
MARK LIPSON et mul with PONTUS SKOGLUND, STEPHEN J. OPPENHEIMER & DAVID REICH — Population Turnover In Remote Oceania Shortly after Initial Settlement
Ancient DNA from Vanuatu and Tonga dating to about 2,900–2,600 years ago (before present, BP) has revealed that the “First Remote Oceanians” associated with the Lapita archaeological culture were directly descended from the population that, beginning around 5000 BP, spread Austronesian languages from Taiwan to the Philippines, western Melanesia, and
eventually Remote Oceania. Thus, ancestors of the First Remote Oceania must have passed by the Papuan-ancestry populations they encountered in New Guinea, the Bismarck Archipelago, and the Solomon Islands with minimal admixture [1]. However, all present-day populations in Near and Remote Oceania harbor >25% Papuan ancestry, implying that additional eastward migration must have occurred. We generated genome-wide data for 14 ancient individuals from Efate and Epi Islands in Vanuatu from 2900–150 BP, as well as 185 present-day individuals from 18 islands. We find that people of almost entirely Papuan ancestry arrived in Vanuatu by around 2300 BP, most likely reflecting migrations a few hundred years earlier at the end of the Lapita period, when there is also evidence of changes in skeletal morphology and cessation of long-distance trade between Near and Remote Oceania [2, 3]. Papuan ancestry was subsequently diluted through admixture but remains at least 80%–90% in most islands. Through a fine-grained analysis of ancestry profiles, we show that the Papuan ancestry in Vanuatu derives from the Bismarck Archipelago rather than the geographically closer Solomon Islands. However, the Papuan ancestry in Polynesia—the most remote Pacific islands—derives from different sources, documenting a third stream of migration from Near to Remote Oceania.

http://www.cell.com/current-biology/fulltext/S0960-9822(18)30236-7

THOMAS POMBERGER et al – Precise Motor Control Enables Rapid Flexibility in Vocal Behavior of Marmoset Monkeys

Investigating the evolution of human speech is difficult and controversial because human speech surpasses nonhuman primate vocal communication in scope and flexibility. Monkey vocalizations have been assumed to be largely innate, highly affective, and stereotyped for over 50 years. Recently, this perception has dramatically changed. Current studies have revealed distinct learning mechanisms during vocal development and vocal flexibility, allowing monkeys to cognitively control when, where, and what to vocalize. However, specific call features (e.g., duration, frequency) remain surprisingly robust and stable in adult monkeys, resulting in rather stereotyped and discrete call patterns. Additionally, monkeys seem to be unable to modulate their acoustic call structure under reinforced conditions beyond natural constraints. Behavioral experiments have shown that monkeys can stop sequences of calls immediately after acoustic perturbation but cannot interrupt ongoing vocalizations, suggesting that calls consist of single impartible pulses. Using acoustic perturbation triggered by the vocal behavior itself and quantitative measures of resulting vocal adjustments, we show that marmoset monkeys are capable of producing calls with durations beyond the natural boundaries of their repertoire by interrupting ongoing vocalizations rapidly after perturbation onset. Our results indicate that marmosets are capable of interrupting vocalizations only at periodic time points throughout calls, further supported by the occurrence of periodically segmented phres. These ideas overturn decades-old concepts on primate vocal pattern generation, indicating that vocalizations do not consist of one discrete call pattern but are built of many sequentially uttered units, like human speech.

http://www.cell.com/current-biology/fulltext/S0960-9822(18)30103-9

Evolutionary Anthropology

BERNARD WOOD – The complex history of human origins research in South Africa


Nature

ARTICLES

CHARLES EFFERSON & ERNST FEHR – Simple moral code supports cooperation

The evolution of cooperation hinges on the benefits of cooperation being shared among those who cooperate. In a paper in Nature, Santos et al. investigate the evolution of cooperation using computer-based modelling analyses, and they identify a rule for moral judgements that provides an especially powerful system to drive cooperation.

https://www.nature.com/articles/d41586-018-02621-x?WT.ec_id=NATURE-20180309&spMailingID=56151484&spUserID=MjA1NTkxNTc2NAS2&spJobID=1361248578&spReportId=MTM2MTI0ODU3OA52

PAPERS

PATRICK KENNEDY et al – Altruism In a volatile world

The evolution of altruism—costly self-sacrifice in the service of others—has puzzled biologists since The Origin of Species. For half a century, attempts to understand altruism have developed around the concept that altruists may help relatives to have extra offspring in order to spread shared genes. This theory—known as inclusive fitness—is founded on a simple inequality termed Hamilton’s rule. However, explanations of altruism have typically not considered the stochasticity of natural environments, which will not necessarily favour genotypes that produce the greatest average reproductive success. Moreover, empirical data across many taxa reveal associations between altruism and environmental stochasticity, a pattern not predicted by standard interpretations of Hamilton’s rule. Here we derive Hamilton’s rule with explicit stochasticity, leading to new predictions about the evolution of altruism. We show that altruists can increase the long-term success of their genotype by reducing the temporal variability in the number of offspring produced by their relatives. Consequently, costly
Altruism can evolve even if it has a net negative effect on the average reproductive success of related recipients. The selective pressure on volatility-suppressing altruism is proportional to the coefficient of variation in population fitness, and is therefore diminished by its own success. Our results formalize the hitherto elusive link between bet-hedging and altruism, and reveal missing fitness effects in the evolution of animal societies.

https://www.nature.com/articles/nature25963?WT.ec_id=NATURE-20180309&spMailingID=56151484&spUserID=MjA1NTkxNTc2NAS2&spJobID=1361248578&spReportId=MTM2MTI0ODU3OA

**IÑIGO OLALDE et mul with DAVID REICH – The Beaker phenomenon and the genomic transformation of northwest Europe**

From around 2750 to 2500 BC, Bell Beaker pottery became widespread across western and central Europe, before it disappeared between 2200 and 1800 BC. The forces that propelled its expansion are a matter of long-standing debate, and there is support for both cultural diffusion and migration having a role in this process. Here we present genome-wide data from 400 Neolithic, Copper Age and Bronze Age Europeans, including 226 individuals associated with Beaker-complex artefacts. We detected limited genetic affinity between Beaker-complex-associated individuals from Iberia and central Europe, and thus exclude migration as an important mechanism of spread between these two regions. However, migration had a key role in the further dissemination of the Beaker complex. We document this phenomenon most clearly in Britain, where the spread of the Beaker complex introduced high levels of steppe-related ancestry and was associated with the replacement of approximately 90% of Britain’s gene pool within a few hundred years, continuing the east-to-west expansion that had brought steppe-related ancestry into central and northern Europe over the previous centuries.

https://www.nature.com/articles/nature25738?WT.ec_id=NATURE-20180309&spMailingID=56151484&spUserID=MjA1NTkxNTc2NAS2&spJobID=1361248578&spReportId=MTM2MTI0ODU3OA

**IAIN MATHIESON et mul with DAVID REICH – The genomic history of southeastern Europe**

Farming was first introduced to Europe in the mid-seventh millennium BC, and was associated with migrants from Anatolia who settled in the southeast before spreading throughout Europe. Here, to understand the dynamics of this process, we analysed genome-wide ancient DNA data from 225 individuals who lived in southeastern Europe and surrounding regions between 12000 and 5000 BC. We document a west–east cline of ancestry in indigenous hunter-gatherers and, in eastern Europe, the early stages in the formation of Bronze Age steppe ancestry. We show that the first farmers of northern and western Europe dispersed through southeastern Europe with limited hunter-gatherer admixture, but that some early groups in the southeast mixed extensively with hunter-gatherers without the sex-biased admixture that prevailed later in the north and west. We also show that southeastern Europe continued to be a nexus between east and west after the arrival of farmers, with intermittent genetic contact with steppe populations occurring up to 2,000 years earlier than the migrations from the steppe that ultimately replaced much of the population of northern Europe.

https://www.nature.com/articles/nature25778?WT.ec_id=NATURE-20180309&spMailingID=56151484&spUserID=MjA1NTkxNTc2NAS2&spJobID=1361248578&spReportId=MTM2MTI0ODU3OA

**FERNANDO P. SANTOS, FRANCISCO C. SANTOS & JORGE M. PACHECO – Social norm complexity and past reputations in the evolution of cooperation**

Indirect reciprocity is the most elaborate and cognitively demanding of all known cooperation mechanisms, and is the most specifically human because it involves reputation and status. By helping someone, individuals may increase their reputation, which may change the predisposition of others to help them in future. The revision of an individual’s reputation depends on specific social norms that establish what characterizes a good or bad action and thus provide a basis for morality. Norms based on indirect reciprocity are often sufficiently complex that an individual’s ability to follow subjective rules becomes important, even in models that disregard the past reputations of individuals, and reduce reputations to either ‘good’ or ‘bad’ and actions to binary decisions. Here we include past reputations in such a model and identify the key pattern in the associated norms that promotes cooperation. Of the norms that comply with this pattern, the one that leads to maximal cooperation (greater than 90 per cent) with minimum complexity does not discriminate on the basis of past reputation; the relative performance of this norm is particularly evident when we consider a ‘complexity cost’ in the decision process. This combination of high cooperation and low complexity suggests that simple moral principles can elicit cooperation even in complex environments.

https://www.nature.com/articles/nature25763?WT.ec_id=NATURE-20180309&spMailingID=56151484&spUserID=MjA1NTkxNTc2NAS2&spJobID=1361248578&spReportId=MTM2MTI0ODU3OA
**Nature Communications**

**PAPERS**

**FRANCISCO PEREIRA et al with NANCY KANWISHER** – Toward a universal decoder of linguistic meaning from brain activation

 Prior work decoding linguistic meaning from imaging data has been largely limited to concrete nouns, using similar stimuli for training and testing, from a relatively small number of semantic categories. Here we present a new approach for building a brain decoding system in which words and sentences are represented as vectors in a semantic space constructed from massive text corpora. By efficiently sampling this space to select training stimuli shown to subjects, we maximize the ability to generalize to new meanings from limited imaging data. To validate this approach, we train the system on imaging data of individual concepts, and show it can decode semantic vector representations from imaging data of sentences about a wide variety of both concrete and abstract topics from two separate datasets. These decoded representations are sufficiently detailed to distinguish even semantically similar sentences, and to capture the similarity structure of meaning relationships between sentences.

https://www.nature.com/articles/s41467-018-03068-4?WT.ec_id=NCOMMS-20180307&spMailingID=56137234&spUserID=MTA5NjM3MTAyODYxS0&spJobID=1361074209&spReportId=MTM2MTA3NDIwOQS2

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**Nature Human Behaviour**

**PAPERS**

**ALEXANDRA WOOLGAR et al** – Fluid intelligence is supported by the multiple-demand system not the language system

 A set of frontoparietal brain regions—the multiple-demand (MD) system—has been linked to fluid intelligence in brain imaging and in studies of patients with brain damage. For example, the amount of damage to frontal or parietal, but not temporal, cortices predicts fluid intelligence deficit5. However, frontal and parietal lobes are structurally and functionally heterogeneous. They contain domain-general regions that respond across diverse tasks, but also specialized regions that respond selectively during language processing. Since language may be critical for complex thought, intelligence loss following damage to the frontoparietal cortex could have important contributions from damage to language-selective regions. To evaluate the relative contributions of MD versus language-selective regions, we employed large functional magnetic resonance imaging datasets to construct probabilistic maps of the two systems. We used these maps to weigh the volume of lesion (in each of 80 patients) falling within each system. MD-weighted, but not language-weighted, lesion volumes predicted fluid intelligence deficit (with the opposite pattern observed for verbal fluency), indicating that fluid intelligence is specifically tied to the MD system, and undermining claims that language is at the core of complex thought.

https://www.nature.com/articles/s41562-017-0282-3?WT.ec_id=NATHUMBEHAV-201803&spMailingID=56121515&spUserID=MjQ1ODIzOTc2NTA1S0&spJobID=1360780312&spReportId=MTM2MDc4MDMxMgS2

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**Nature Scientific Reports**

**PAPERS**

**CHARLES W. HELM et al with CURTIS W. MAREAN** – A New Pleistocene Hominin Tracksite from the Cape South Coast, South Africa

 A Late Pleistocene hominin tracksite has been identified in coastal aeolianite rocks on the Cape south coast of South Africa, an area of great significance for the emergence of modern humans. The tracks are in the form of natural casts and occur on the ceiling and side walls of a ten-metre long cave. Preservation of tracks is of variable quality. Up to forty hominin tracks are evident. Up to thirty-five hominin tracks occur on a single bedding plane, with potential for the exposure of further tracks. Five tracks are apparent on a second hominin track-bearing bedding plane. A number of individuals made the tracks while moving down a dune surface. A geological investigation at the site and stratigraphic comparison to published geological studies from this area suggest that the tracks are ~90 ka in age. If this is the case, the shoreline at the time would have been approximately 2 km distant. This is the first reported hominin tracksite from this time period. It adds to the relatively sparse global record of early hominin tracks, and represents the largest and best preserved archive of Late Pleistocene hominin tracks found to date. The tracks were probably made by Homo sapiens.

https://www.nature.com/articles/s41598-018-22059-5

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**New Scientist**

**NEWS**

We've evolved to sleep less and that may be causing Alzheimer's

The 7 hours of sleep we typically get every night often doesn't feel like enough. Compared with our fellow primates, which spend around 12 hours of each day slumbering, humans barely get any shut-eye.

http://click.e.newscientist.com/?qs=0034d9771aac6d6f671747174e093e7d6730d846ceb023a9c18e58acc9d27cdf66c013d2010ac9853af7127b201894d5564b0f729076b6cee
GIADA CORDONI et al – Differences in play can illuminate differences in affiliation: A comparative study on chimpanzees and gorillas

Play behaviour reinforces social affiliation in several primate species, including humans. Via a comparative approach, we tested the hypothesis that play dynamics in a group of lowland gorillas (Gorilla gorilla gorilla) are different from those in a group of chimpanzees (Pan troglodytes) as a reflection of their difference in social affiliation and agonistic support. We selected one group of lowland gorillas and one of chimpanzees, hosted at the ZooParc de Beauval (France), managed in a similar way and living in similar enclosures. The same observers video-collected and analysed data on play behaviour in both groups, by applying identical methodological procedures. Data showed that adult play was less frequent in the group of gorillas compare to chimpanzees. Polyadic play, which involves more than two players and is characterised by the most uncertain outcome, was also less frequent in gorillas than chimpanzees. Play sessions were more unbalanced (more unidirectional patterns by one of the player towards the other) in chimpanzees than in gorillas but in the latter play escalated more frequently into serious aggression. Play asymmetry in the gorilla group increased as the number of players increased, which explains why gorillas limited their polyadic playful interactions. In conclusion, our findings on the study groups of apes can be a valuable starting point to expand the study of social play in the great apes to evaluate if inter-individual affiliative relationships really account for the differences in play distribution and dynamics.

http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0193096

JOHANNA E. VAN SCHAIK & SABINE HUNNIUS – Modulating mimicry: Exploring the roles of inhibitory control and social understanding in 5-year-olds’ behavioral mimicry

During adult interactions, behavioral mimicry, the implicit copying of an interaction partner’s postures and mannerisms, communicates liking and affiliation. While this social behavior likely develops during early childhood, it is unclear which factors contribute to its emergence. Here, the roles of inhibitory control and social understanding on 5-year-olds’ behavioral mimicry were investigated. Following a social manipulation in which one experimenter shared a sticker with the child and the other experimenter kept two stickers for herself, children watched a video in which these experimenters each told a story. During this story session, children in the experimental group (n = 28) observed the experimenters perform face and hand rubbing behaviors whereas the control group (n = 23) did not see these behaviors. Children’s inhibitory control was assessed using the day-night task and their social understanding was measured through a parental questionnaire. Surprisingly, group-level analyses revealed that the experimental group performed the behaviors significantly less than the control group (i.e. a negative mimicry effect) for both the sticker-sharer and sticker-keeper. Yet, the hypothesized effects of inhibitory control and social understanding were found. Inhibitory control predicted children’s selective mimicry of the sticker-keeper versus sticker-sharer and children’s overall mimicry was correlated with social understanding. These results provide the first indications to suggest that factors of social and cognitive development dynamically influence the emergence and specificity of behavioral mimicry during early childhood.

http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0194102

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