

## CONTENTS

<b>NOTICES</b> .....	<b>2</b>
PUBLICATION ALERTS.....	2
ACADEMIA.EDU – Tool Use and Manufacture in the Last Common Ancestor of Pan and Homo .....	2
CAMPBELL ROLIAN & SUSANA CARVALHO – Tool Use and Manufacture in the Last Common Ancestor of Pan and Homo.....	2
ACADEMIA.EDU – The Origins of Human Modernity .....	3
ROBERT G. BEDNARIK – The Origins of Human Modernity.....	3
CALL FOR CONTENT – 2022 Current Anthropology Visual Anthropology Competition .....	3
LECTURE ALERT – Evolution and Social Systems .....	3
<b>NEWS</b> .....	<b>4</b>
BREAKING SCIENCE – Dutch Neanderthal’s Face Revealed .....	4
BREAKING SCIENCE – 23,000-Year-Old Human Footprints Discovered in New Mexico.....	4
NATURE BRIEFING – Human footprints are oldest in the Americas.....	4
SAPIENS – Five Human Species You May Not Know About .....	4
SCIENCE DAILY – Those earrings are so last year – but the reason you're wearing them is ancient.....	4
SCIENCE DAILY – Early Homo sapiens groups in Europe faced subarctic climates .....	4
SCIENCE DAILY – Human learning can be duplicated in solid matter.....	5
SCIENCE DAILY – Earliest evidence of human activity found in the Americas .....	5
SCIENCE DAILY – Mapping words to colors.....	5
SCIENCE DAILY – Decoding birds’ brain signals into syllables of song.....	5
SCIENCE DAILY – Desert teamwork explains global pattern of co-operation in birds.....	5
SCIENCE DAILY – When it comes to communication skills, maybe we’re born with it? .....	5
SCIENCE NEWS – Milk fueled Bronze Age expansion of ‘eastern cowboys’ into Europe .....	5
SCIENCE NEWS – ‘Jumping gene’ may have erased tails in apes—and boosted our risk of birth defects.....	5
SCIENCE NEWS – World’s oldest known beads found in Morocco .....	5
SOCIETY FOR SCIENCE – Some birds learn to recognize calls while still in their eggs.....	6
SOCIETY FOR SCIENCE – Stone Age people used bone scrapers to make leather and pelts .....	6
THE CONVERSATION – Fossil footprints prove humans populated Americas millennia earlier .....	6
<b>PUBLICATIONS</b> .....	<b>6</b>
Current Anthropology .....	6
<b>PAPERS</b> .....	<b>6</b>
EVANGELOS TSAKALOS et al – Early Cypriot Prehistory: On the Traces of the Last Hunters and Gatherers on the Island—Preliminary Results of Luminescence Dating .....	6
Frontiers in Psychology .....	6
<b>PAPERS</b> .....	<b>6</b>
LARI VAINIO & MARTTI VAINIO – Sound-Action Symbolism .....	6
ANTONIO BENÍTEZ-BURRACO, DANIELA PÖRTL & CHRISTOPH JUNG – Did Dog Domestication Contribute to Language Evolution? .....	6
Mind & Language .....	7
<b>PAPERS</b> .....	<b>7</b>
BART GEURTS – First saying, then believing: The pragmatic roots of folk psychology .....	7
ALEX DAVIES – A (contingent) content–parthood analysis of indirect speech reports .....	7
LUCA GASPARRI – A pluralistic theory of wordhood.....	7
Nature .....	7
<b>ARTICLES</b> .....	<b>7</b>
EWEN CALLAWAY – Ancient footprints could be oldest traces of humans in the Americas .....	7
Nature Communications .....	7
<b>PAPERS</b> .....	<b>7</b>
MARTIN SURBECK et al with CHRISTOPHE BOESCH & CATHERINE CROCKFORD – Attractiveness of female sexual signaling predicts differences in female grouping patterns between bonobos and chimpanzees .....	7
Nature Human Behaviour.....	8
<b>PAPERS</b> .....	<b>8</b>

ZHIQIANG SHA et al – The genetic architecture of structural left–right asymmetry of the human brain.....	8
Nature Scientific Reports.....	8
<b>PAPERS</b> .....	8
PAOLA FUENTES-CLARAMONTE et al with WOLFRAM HINZEN – Auditory hallucinations activate language and verbal short-term memory, but not auditory, brain regions .....	8
RICHARD POLICHT et al – Hunting dogs bark differently when they encounter different animal species .....	8
PeerJ .....	8
<b>PAPERS</b> .....	8
BRITTANY FLORKIEWICZ & MATTHEW CAMPBELL – Chimpanzee facial gestures and the implications for the evolution of language.....	8
PLoS Biology.....	9
<b>PAPERS</b> .....	9
DARIL E. BROWN II et al with TIMOTHY Q. GENTNER – Local field potentials in a pre-motor region predict learned vocal sequences.....	9
PLoS One.....	9
<b>PAPERS</b> .....	9
ANIETIE ANDY – Understanding user communication around loneliness on online forums .....	9
STEIN T. HOLDEN & MESFIN TILAHUN – Preferences, trust, and performance in youth business groups.....	9
HUIJIONG YAN et al – Unsupervised cross-lingual model transfer for named entity recognition with contextualized word representations.....	10
Science.....	10
<b>ARTICLES</b> .....	10
LIZZIE WADE – Human footprints near ice age lake suggest surprisingly early arrival in the Americas .....	10
<b>PAPERS</b> .....	10
MATTHEW R. BENNETT et al – Evidence of humans in North America during the Last Glacial Maximum .....	10
Science Advances.....	10
<b>PAPERS</b> .....	10
PABLO CAPILLA-LASHERAS et al – Altruistic bet-hedging and the evolution of cooperation in a Kalahari bird .....	10
SARAH PEDERZANI et al with JEAN-JACQUES HUBLIN – Subarctic climate for the earliest Homo sapiens in Europe .....	10
EL MEHDI SEHASSEH et al with JEAN-JACQUES HUBLIN – Early Middle Stone Age personal ornaments from Bizmoune Cave, Essaouira, Morocco .....	11
Trends in Cognitive Sciences .....	11
<b>PAPERS</b> .....	11
ORIEL FELDMANHALL & MATTHEW R. NASSAR – The computational challenge of social learning .....	11
<b>SUBSCRIBE to the EAORC Bulletin</b> .....	11
<b>UNSUBSCRIBE from the EAORC Bulletin</b> .....	11
<b>PRODUCED BY AND FOR THE EAORC EMAIL GROUP</b> .....	11

---

## NOTICES

### PUBLICATION ALERTS

If you have had a paper or book published, or you see something which would be of interest to the group, do please send me a publication alert so that I can include it in the newsletter. Many thanks to those who have already sent in alerts.

If there is a journal you feel I should be tracking on a regular basis, do let me know.

And if you have any other ideas for extending the “EAORC experience”, please contact me.

---

### ACADEMIA.EDU – Tool Use and Manufacture in the Last Common Ancestor of Pan and Homo

*In Martin N. Muller (Ed.), Chimpanzees and Human Evolution. Harvard University Press: Cambridge, MA, USA, 602-644 (2018)*

#### **CAMPBELL ROLIAN & SUSANA CARVALHO – Tool Use and Manufacture in the Last Common Ancestor of Pan and Homo**

In this chapter, we will address two questions pertaining to tool use and manufacture in the LCA. Was the LCA able to use and / or manufacture tools? And if so, what type of tools likely composed the tool kit of this Miocene ape, and in which ecological contexts was it more likely to use tools to solve problems? To answer these questions, we will explore four complementary lines of evidence: (1) comparative tool use in extant apes and other primates, (2) comparative anatomy and biomechanics of primate hands, (3) comparative cognition in hominoids, and (4) evidence from the fossil and archaeological records of early hominins. It is not our intent to provide exhaustive reviews of each line of evidence, but rather to leverage current knowledge in each, especially with regards to the genus Pan, to paint the most likely picture of what tool use and manufacture in the LCA would have looked like.

[https://www.academia.edu/37574786/Tool\\_Use\\_and\\_Manufacture\\_in\\_the\\_Last\\_Common\\_Ancestor\\_of\\_Pan\\_and\\_Homo](https://www.academia.edu/37574786/Tool_Use_and_Manufacture_in_the_Last_Common_Ancestor_of_Pan_and_Homo)

---

## ACADEMIA.EDU – The Origins of Human Modernity

*In Humanities 1, 1-53 (2012),*

### **ROBERT G. BEDNARIK – The Origins of Human Modernity**

This paper addresses the development of the human species during a relatively short period in its evolutionary history, the last forty millennia of the Pleistocene. The hitherto dominant hypotheses of “modern” human origins, the replacement and various other “out of Africa” models, have recently been refuted by the findings of several disciplines, and by a more comprehensive review of the archaeological evidence. The complexity of the subject is reconsidered in the light of several relevant frames of reference, such as those provided by niche construction and gene-culture co-evolutionary theories, and particularly by the domestication hypothesis. The current cultural, genetic and paleoanthropological evidence is reviewed, as well as other germane factors, such as the role of neurodegenerative pathologies, the neotenzionization of humans in their most recent evolutionary history, and the question of cultural selection-based self-domestication. This comprehensive reassessment leads to a paradigmatic shift in the way recent human evolution needs to be viewed. This article explains fully how humans became what they are today.

[https://www.academia.edu/9285472/The\\_Origins\\_of\\_Human\\_Modernity](https://www.academia.edu/9285472/The_Origins_of_Human_Modernity)

---

## CALL FOR CONTENT – 2022 Current Anthropology Visual Anthropology Competition

The Editors have extended the deadline for the 2022 Current Anthropology Visual Anthropology Competition.

Please submit at least five and no more than ten photographs, along with a 1000-word description of the theme of your collection. Submissions can illustrate any topic of anthropological interest and should be compelling visually and intellectually.

The winner will be selected by CA’s editorial board, and the photographs will be featured on the cover of each issue for 2022. The winner will be asked to write a short introductory essay to be published in CA’s February 2022 issue.

### **NEW DEADLINE**

Deadline for submission is December 1, 2021. Entries can be submitted through the CA Editorial Manager (

<https://t.e2ma.net/click/d6kk8i/hxwqbb/xlmnenb> ).

For questions regarding this competition, please contact the editorial office at [curranth@press.uchicago.edu](mailto:curranth@press.uchicago.edu)

---

## LECTURE ALERT – Evolution and Social Systems

The Center for the Dynamics of Social Complexity is happy to announce a series of free webinars for Fall 2021 on Evolution and Social Systems. This series is a continuation of the past semester seminars: DySoC/NIMBioS Webinar Series on Cultural Evolution ( [http://www.dysoc.org/ces\\_webinars](http://www.dysoc.org/ces_webinars) ) and DySoC/NIMBioS Webinar Series on Human Origins and Cultural Evolution ( [http://www.dysoc.org/dom\\_webinars](http://www.dysoc.org/dom_webinars) ).

Organizers: Thomas Currie (University of Exeter, Penryn Campus, Cornwall ) and Sergey Gavrilets (Ecology & Evolutionary Biology and Mathematics, DySoC, University of Tennessee)

Co-organizer: Peter J. Richerson (University of California, Davis)

Human social systems are extraordinarily complex and diverse. Around the world are organized into different societies that are structured and by a variety of different institutions, social norms, beliefs, languages, and other aspect of culture. Understanding how societies function and why societies are the way they are, are topics of interest to a wide variety of different academic disciplines. Evolutionary thinking can help bring together the insights from different disciplines and approaches, and can play an important role in understanding the similarities and differences between human societies and those of other species, the ways that different environmental contexts present different challenges that societies have adapted to, how and why culture and societies change over time, and how different cultural histories have shaped the world we live in today. In this interdisciplinary seminar series we present talks from a variety of researchers, including anthropologists, archaeologists, behavioural ecologists, economists, psychologists, and sustainability scientists. As many of the talks will illustrate, this work is not only of academic interest but is increasingly important in addressing some of the biggest social and ecological challenges we face in the world today.

Register: Zoom Webinar Registration ( [https://tennessee.zoom.us/webinar/register/WN\\_ZziydXYCSvKrCZmqx\\_eSig](https://tennessee.zoom.us/webinar/register/WN_ZziydXYCSvKrCZmqx_eSig) )

### **2021 Fall Schedule (eastern time)**

Sep 28, 11:45 a.m. EDT Simon Levin (Princeton University): Public goods and environmental challenges: Learning from evolution

Oct 5, 11:45 a.m. EDT Nathan Nunn (Harvard University): Cultural Mismatch

Oct 12, 11:45 a.m. EDT Kristen Hawkes (University of Utah): Sexual selection, carnivory, and life history evolution in the human radiation

Oct 19, 11:45 a.m. EDT Giulia Andrighetto (Institute of Cognitive Sciences and Technologies (ISTC) at CNR, Malardalen University, Vasteras, Sweden): Norm change and cooperation under collective risk in a long-term experiment

Oct 26, 11:45 a.m. EDT Anne Pisor (Washington State University): Long-distance social connections, collective-action problems, and climate-change adaptation

Nov 2, 11:45 a.m. EDT Timothy Njagi (Egerton University, Kenya): A comparative perspective on the evolution and sustainability of pastoralist production systems

Nov 9, 11:45 a.m. EST Monique Borgerhoff Mulder (MPI-EVA Leipzig, UC Davis, Santa Fe Institute): How Many Wives? Tracing the Interdisciplinary Career of the Polygyny Threshold Model

Nov 16, 11:45 a.m. EST Stefani Crabtree (Utah State University & Santa Fe Institute): Modern Lessons of applying Socio-Environmental Modeling to the Archaeological Record

Nov 23, 11:45 a.m. EST Matthijs van Veelen (University of Amsterdam, Netherlands): The evolution of morality and the role of commitment

Nov 30, 11:45 a.m. EST Heidi Colleran (Max Planck Institute for Evolutionary Anthropology): The impossibility of "natural fertility" in human cultural systems

Dec 7, TBA EST Naoko Matsumoto (Research Institute for the Dynamics of Civilizations, Okayama University): What's so special about the Jomon?

More details here: [http://www.dysoc.org/ess\\_webinars](http://www.dysoc.org/ess_webinars)

The seminar series is funded by grants from the John Templeton Foundation and the European Research Council.

---

## NEWS

---

### BREAKING SCIENCE – Dutch Neanderthal's Face Revealed

Adrie and Alfons Kennis, two paleo-artists from the Kennis & Kennis Reconstructions, have used facial approximation techniques and the latest findings about Neanderthals to show how 'Krijn' — a young Neanderthal man with a conspicuous lump (the result of a small tumor) over his right eyebrow — might have once looked.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/uhAeZ4ISJUM/neanderthal-krijn-face-10082.html?utm\\_source=feedburner&utm\\_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/uhAeZ4ISJUM/neanderthal-krijn-face-10082.html?utm_source=feedburner&utm_medium=email)

---

### BREAKING SCIENCE – 23,000-Year-Old Human Footprints Discovered in New Mexico

In a study of exposed outcrops of Lake Otero in New Mexico, the United States, archaeologists have discovered numerous human footprints dating to about 23,000 to 21,000 years ago. The discovery confirms the presence of humans in North America during the Last Glacial Maximum, adding evidence to the antiquity of human colonization of the Americas.

[http://feedproxy.google.com/~r/BreakingScienceNews/~3/VRCH6986GDQ/americas-oldest-known-human-footprints-10100.html?utm\\_source=feedburner&utm\\_medium=email](http://feedproxy.google.com/~r/BreakingScienceNews/~3/VRCH6986GDQ/americas-oldest-known-human-footprints-10100.html?utm_source=feedburner&utm_medium=email)

---

### NATURE BRIEFING – Human footprints are oldest in the Americas

Human footprints from an ancient lakeshore in what is now New Mexico seem to be between 21,000 and 23,000 years old. If the dating is accurate, the prints represent the earliest unequivocal evidence of human occupation anywhere in the Americas. The footprints contribute to ongoing debate about whether human settlers from Siberia skirted down the Pacific coast of the Americas or waited until ice-age glaciers retreated from inland routes.

<https://www.nature.com/articles/d41586-021-02597-1>

---

### SAPIENS – Five Human Species You May Not Know About

Homo sapiens is currently the only member of the genus Homo alive. There's only one species of human—but it wasn't always so.

<https://www.sapiens.org/column/field-trips/ancient-human-species/>

---

### SCIENCE DAILY – Those earrings are so last year – but the reason you're wearing them is ancient

Shell beads found in a cave in Morocco are at least 142,000 years old. The archaeologists who found them say they're the earliest known evidence of a widespread form of human communication.

<https://www.sciencedaily.com/releases/2021/09/210922143305.htm>

---

### SCIENCE DAILY – Early Homo sapiens groups in Europe faced subarctic climates

Using oxygen stable isotope analysis of tooth enamel from animals butchered by humans at the site of Bacho Kiro Cave, Bulgaria, researchers show that human groups belonging to an early wave of dispersal of our species into Europe were faced with very cold climatic conditions while they occupied the cave between about 46,000 and 43,000 years ago. Archaeological

remains at Bacho Kiro Cave currently represent the oldest known remnants of Upper Palaeolithic Homo sapiens in Europe, and thus open a unique window into the time when our species started to move out of the Levant and establish itself across the mid latitudes of Eurasia as part of an archaeological phenomenon called the Initial Upper Palaeolithic.

<https://www.sciencedaily.com/releases/2021/09/210922143250.htm>

---

### SCIENCE DAILY – Human learning can be duplicated in solid matter

Researchers have found that learning -- a universal feature of intelligence in living beings -- can be mimicked in synthetic matter, a discovery that in turn could inspire new algorithms for artificial intelligence (AI).

<https://www.sciencedaily.com/releases/2021/09/210922121828.htm>

---

### SCIENCE DAILY – Earliest evidence of human activity found in the Americas

Footprints at White Sands National Park in New Mexico confirm human presence over at least two millennia, with the oldest tracks dating back 23,000 years.

<https://www.sciencedaily.com/releases/2021/09/210923161340.htm>

---

### SCIENCE DAILY – Mapping words to colors

While the range of colors your eyes may perceive extends beyond the words language provides, languages around the globe are remarkably similar in how they partition the space of colors into a vocabulary. Yet differences exist. In a study examining 130 diverse languages around the world, researchers developed an algorithm to infer the communicative needs that different linguistic communities place on colors.

<https://www.sciencedaily.com/releases/2021/09/210923153349.htm>

---

### SCIENCE DAILY – Decoding birds' brain signals into syllables of song

Researchers can predict what syllables a bird will sing -- and when it will sing them -- by reading electrical signals in its brain, reports a new study. The work is an early step toward building vocal prostheses for humans who have lost the ability to speak.

<https://www.sciencedaily.com/releases/2021/09/210923153306.htm>

---

### SCIENCE DAILY – Desert teamwork explains global pattern of co-operation in birds

A new study from the Kalahari Desert finds that teamwork allows birds to cope with brutally unpredictable environments.

<https://www.sciencedaily.com/releases/2021/09/210922143308.htm>

---

### SCIENCE DAILY – When it comes to communication skills, maybe we're born with it?

A neuroscientist and speech pathologist led a study that uncovered how neural networks in infants influence their language learning skills in early childhood.

<https://www.sciencedaily.com/releases/2021/09/210924182533.htm>

---

### SCIENCE NEWS – Milk fueled Bronze Age expansion of 'eastern cowboys' into Europe

Ancient proteins show the Yamnaya dairy revolution took just 300 years

<https://www.science.org/content/article/milk-fueled-bronze-age-expansion-eastern-cowboys-europe>

---

### SCIENCE NEWS – 'Jumping gene' may have erased tails in apes—and boosted our risk of birth defects

Mammals from mice to monkeys have tails. But humans and our cousins the great apes lack them. Now, researchers may have unearthed a simple genetic change that led to our abbreviated back end: an itinerant piece of DNA that leapt into a new chromosomal home and changed how great apes make a key developmental protein. The finding also suggests the genetic shift came with a less visible and more dangerous effect: a higher risk of birth defects involving the developing spinal cord.

<https://www.science.org/content/article/jumping-gene-may-have-erased-tails-humans-and-other-apes-and-boosted-our-risk-birth-defects>

---

### SCIENCE NEWS – World's oldest known beads found in Morocco

The human penchant for bling is ancient—and a new study suggests it may go back as far as 142,000 years. That's when hunter-gatherers in what is now Morocco collected tiny seashells, bored them with holes, and strung them up to adorn their hair, bodies, or clothing. The look must have been bedazzling, because the same type of perforated shells spread quickly throughout northern Africa and into the Middle East. The beads—the world's oldest if new dates hold up—suggest modern humans were engaged in fully symbolic behavior 10,000 to 20,000 years earlier than previously known.

<https://www.science.org/content/article/world-s-oldest-known-beads-found-morocco>

---

## SOCIETY FOR SCIENCE – Some birds learn to recognize calls while still in their eggs

Prenatal sound perception may be more widespread than previously thought.

<http://click.societyforscience-email.com/?qs=8f33dbe72300ac63de65b45c0e75b9bf794071602a2afbe2f42160945bed1ddf181478f83446cdfb56cc413d80e4c8798ab2007631ce41a0>

---

## SOCIETY FOR SCIENCE – Stone Age people used bone scrapers to make leather and pelts

African cave finds include remains of skinned creatures and hide scrapers made from animal ribs.

<http://click.societyforscience-email.com/?qs=10a33cee7e877b9efe3355f04a8cce4b01b40e294431280bdba78cf4996a4c70ca977fdb5bab0a03e390c57c8fa94b4041cbf32ac3a17f74231f22a6755f698>

---

## THE CONVERSATION – Fossil footprints prove humans populated Americas millennia earlier

The New Mexico findings could rewrite the history of human migration to the Americas.

<https://theconversationuk.cmail19.com/t/r-l-trzulut-khhiliah-b/>

---

## PUBLICATIONS

### Current Anthropology

#### PAPERS

#### **EVANGELOS TSAKALOS et al – Early Cypriot Prehistory: On the Traces of the Last Hunters and Gatherers on the Island—Preliminary Results of Luminescence Dating**

Archaeological investigations at the Late Epipaleolithic/Pre-Neolithic campsite of Roudias, Cyprus, have revealed that this location was repeatedly visited by hunter-gatherer groups during the beginning of the Holocene. Despite the placement of the deeper lithic assemblages of the site within the Late Epipaleolithic tradition, the main obstacle of the site has been its lack of absolute ages. Previous attempts to date bone samples recovered from the site using radiocarbon were unsuccessful since the samples did not contain enough collagen to return reliable dates. The absolute chronology of the site within early Cypriot developments—Late Pleistocene or Early Holocene—has been eagerly awaited by researchers who try to document the arrival of the first human groups to the island. This study places the campsite of Roudias in its temporal setting using optically stimulated luminescence dating. Absolute ages (ranging from  $7.2 \pm 1.3$  to  $12.8 \pm 1.6$  ka) provide evidence for the duration of the occupation of the Roudias site from the Late Epipaleolithic (or even earlier) to the Late Aceramic Neolithic, but more importantly, they push back the time of the first colonization of Cyprus and the onset of seagoing practices in the southeastern Mediterranean.

<https://www.journals.uchicago.edu/doi/abs/10.1086/716100>

---

### Frontiers in Psychology

#### PAPERS

#### **LARI VAINIO & MARTTI VAINIO – Sound-Action Symbolism**

Recent evidence has shown linkages between actions and segmental elements of speech. For instance, close-front vowels are sound symbolically associated with the precision grip, and front vowels are associated with forward-directed limb movements. The current review article presents a variety of such sound-action effects and proposes that they compose a category of sound symbolism that is based on grounding a conceptual knowledge of a referent in articulatory and manual action representations. In addition, the article proposes that even some widely known sound symbolism phenomena such as the sound-magnitude symbolism can be partially based on similar sensorimotor grounding. It is also discussed that meaning of suprasegmental speech elements in many instances is similarly grounded in body actions. Sound symbolism, prosody, and body gestures might originate from the same embodied mechanisms that enable a vivid and iconic expression of a meaning of a referent to the recipient.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.718700/full>

#### **ANTONIO BENÍTEZ-BURRACO, DANIELA PÖRTL & CHRISTOPH JUNG – Did Dog Domestication Contribute to Language Evolution?**

Different factors seemingly account for the emergence of present-day languages in our species. Human self-domestication has been recently invoked as one important force favoring language complexity mostly via a cultural mechanism. Because our self-domestication ultimately resulted from selection for less aggressive behavior and increased prosocial behavior, any evolutionary or cultural change impacting on aggression levels is expected to have fostered this process. Here, we hypothesize about a parallel domestication of humans and dogs, and more specifically, about a positive effect of our interaction with dogs on human self-domestication, and ultimately, on aspects of language evolution, through the mechanisms involved in the control of aggression. We review evidence of diverse sort (ethological mostly, but also archeological, genetic, and physiological) supporting such an effect and propose some ways of testing our hypothesis.

<https://www.frontiersin.org/articles/10.3389/fpsyg.2021.695116/full>

---

## Mind & Language

### PAPERS

#### **BART GEURTS – First saying, then believing: The pragmatic roots of folk psychology**

Linguistic research has revealed several pathways of language change that may guide our understanding of the evolution of mental-state attribution. In particular, it turns out that, in many languages, quotative verbs have been exapted for attributing a variety of mental states, including beliefs and intentions. In such languages, the literal translation of, “Betty said: ‘There will be war’”, may be used not only to quote Betty's words, but also to convey that she thought or intended there to be war. This paper presents a model of the pragmatic shifts underlying this pathway, and proposes an evolutionary trajectory from quotation to the public practice of attributing beliefs and intentions, and thence to implicit belief/intention attribution.

<https://onlinelibrary.wiley.com/doi/full/10.1111/mila.12345>

#### **ALEX DAVIES – A (contingent) content–parthood analysis of indirect speech reports**

This article presents a semantic analysis of indirect speech reports. The analysis aims to explain a combination of two phenomena. First, there are true utterances of sentences of the form  $\alpha$  said that  $\phi$  which are used to report an utterance  $u$  of a sentence wherein  $\phi$ 's content is not  $u$ 's content. This implies that in uttering a single sentence, one can say several things. Second, when the complements of these reports (and indeed, these reports themselves) are placed in conjunctions, the conjunctions are typically infelicitous. I argue that this combination of phenomena can be explained if speech reports report (perhaps contingent) parts of the contents of the sentences reported.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12357>

#### **LUCA GASPARRI – A pluralistic theory of wordhood**

What are words and how should we individuate them? There are two main answers on the philosophical market. For some, words are bundles of structural–functional features defining a unique performance profile. For others, words are noneternal continuants individuated by their causal-historical ancestry. These conceptions offer competing views of the nature of words, and it seems natural to assume that at most one of them can capture the essence of wordhood. This paper makes a case for pluralism about wordhood: The view that there is a plurality of acceptable conceptions of the nature of words, none of which is uniquely entitled to inform us as to what wordhood consists in.

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mila.12297>

---

## Nature

### ARTICLES

#### **EWEN CALLAWAY – Ancient footprints could be oldest traces of humans in the Americas**

Children left tracks in New Mexico around 22,500 years ago — thousands of years before most scientists thought humans settled in North America.

<https://www.nature.com/articles/d41586-021-02597-1>

---

## Nature Communications

### PAPERS

#### **MARTIN SURBECK et al with CHRISTOPHE BOESCH & CATHERINE CROCKFORD – Attractiveness of female sexual signaling predicts differences in female grouping patterns between bonobos and chimpanzees**

Here we show that sexual signaling affects patterns of female spatial association differently in chimpanzees and bonobos, indicating its relevance in shaping the respective social systems. Generally, spatial association between females often mirrors patterns and strength of social relationships and cooperation within groups. While testing for proposed differences in female-female associations underlying female coalition formation in the species of the genus *Pan*, we find only limited evidence for a higher female-female gregariousness in bonobos. While bonobo females exhibited a slightly higher average number of females in their parties, there is neither a species difference in the time females spent alone, nor in the number of female party members in the absence of sexually attractive females. We find that the more frequent presence of maximally tumescent females in bonobos is associated with a significantly stronger increase in the number of female party members, independent of variation in a behavioural proxy for food abundance. This indicates the need to look beyond ecology when explaining species differences in female sociality as it refutes the idea that the higher gregariousness among bonobo females is driven by ecological factors alone and highlights that the temporal distribution of female sexual receptivity is an important factor to consider when studying mammalian sociality.

<https://www.nature.com/articles/s42003-021-02641-w>

---

## Nature Human Behaviour

### PAPERS

#### **ZHIQIANG SHA et al – The genetic architecture of structural left–right asymmetry of the human brain**

Left–right hemispheric asymmetry is an important aspect of healthy brain organization for many functions including language, and it can be altered in cognitive and psychiatric disorders. No mechanism has yet been identified for establishing the human brain’s left–right axis. We performed multivariate genome-wide association scanning of cortical regional surface area and thickness asymmetries, and subcortical volume asymmetries, using data from 32,256 participants from the UK Biobank. There were 21 significant loci associated with different aspects of brain asymmetry, with functional enrichment involving microtubule-related genes and embryonic brain expression. These findings are consistent with a known role of the cytoskeleton in left–right axis determination in other organs of invertebrates and frogs. Genetic variants associated with brain asymmetry overlapped with those associated with autism, educational attainment and schizophrenia. Comparably large datasets will likely be required in future studies, to replicate and further clarify the associations of microtubule-related genes with variation in brain asymmetry, behavioural and psychiatric traits.

<https://www.nature.com/articles/s41562-021-01069-w>

---

## Nature Scientific Reports

### PAPERS

#### **PAOLA FUENTES-CLARAMONTE et al with WOLFRAM HINZEN – Auditory hallucinations activate language and verbal short-term memory, but not auditory, brain regions**

Auditory verbal hallucinations (AVH, ‘hearing voices’) are an important symptom of schizophrenia but their biological basis is not well understood. One longstanding approach proposes that they are perceptual in nature, specifically that they reflect spontaneous abnormal neuronal activity in the auditory cortex, perhaps with additional ‘top down’ cognitive influences. Functional imaging studies employing the symptom capture technique—where activity when patients experience AVH is compared to times when they do not—have had mixed findings as to whether the auditory cortex is activated. Here, using a novel variant of the symptom capture technique, we show that the experience of AVH does not induce auditory cortex activation, even while real speech does, something that effectively rules out all theories that propose a perceptual component to AVH. Instead, we find that the experience of AVH activates language regions and/or regions that are engaged during verbal short-term memory.

<https://www.nature.com/articles/s41598-021-98269-1>

#### **RICHARD POLICHT et al – Hunting dogs bark differently when they encounter different animal species**

Previous studies have shown that vocalizations of dogs can provide information to human companions. While acoustic signals of dogs have been intensively studied during the last decade, barking during hunting activities remains unstudied. The experiences of hunters indicate that owners can recognize what animal species has been found based on the bark of their dog. Such a phenomenon has never been tested before. We tested such an ability by comparing barks that were produced when dogs encountered four different animal species: wild boar, red fox, rabbit and fowl. Classification results of a discrimination analysis showed, that based on barks of dachshunds and terriers, it is possible to categorize towards which animal species barks were produced. The most distinctive barks were produced during encounters with the most dangerous of these animals, the wild boar. On the contrary, barks evoked by red fox encounters were classified similarly as those towards other smaller and non-dangerous animals like rabbits and fowl. Although the red fox represents a potentially dangerous species, the barking provoked was not classified with a much higher result than barking at animals that pose no threat. This might indicate that the key parameter could be the body size of the animal the dog meets. We further tested whether the degree of threat from the species of animal the dog encounters is reflected in the structure of the acoustic parameters based on the valence-arousal model. We found that barks produced in contact with a wild boar showed significantly lower frequency parameters and longest duration compared to other barks. According to these results, it seems that the variability of barking depending on the species of animal a dog encounters is an expression of the dog’s inner state rather than functionally reference information.

<https://www.nature.com/articles/s41598-021-97002-2>

---

## PeerJ

### PAPERS

#### **BRITTANY FLORKIEWICZ & MATTHEW CAMPBELL – Chimpanzee facial gestures and the implications for the evolution of language**

Great ape manual gestures are described as communicative, flexible, intentional, and goal-oriented. These gestures are thought to be an evolutionary pre-cursor to human language. Conversely, facial expressions are thought to be inflexible, automatic, and derived from emotion. However, great apes can make a wide range of movements with their faces, and they may possess the control needed to gesture with their faces as well as their hands. We examined whether chimpanzee facial expressions possess the four important gesture properties and how they compare to manual gestures. To do this, we quantified variables that have been previously described through largely qualitative means. Chimpanzee facial expressions met all four gesture criteria and performed remarkably similar to manual gestures. Facial gestures have implications for the

evolution of language. If other mammals also show facial gestures, then the gestural origins of language may be much older than the human/great ape lineage.

<https://peerj.com/articles/12237/>

---

## PLoS Biology

### PAPERS

#### **DARIL E. BROWN II et al with TIMOTHY Q. GENTNER – Local field potentials in a pre-motor region predict learned vocal sequences**

Neuronal activity within the premotor region HVC is tightly synchronized to, and crucial for, the articulate production of learned song in birds. Characterizations of this neural activity detail patterns of sequential bursting in small, carefully identified subsets of neurons in the HVC population. The dynamics of HVC are well described by these characterizations, but have not been verified beyond this scale of measurement. There is a rich history of using local field potentials (LFP) to extract information about behavior that extends beyond the contribution of individual cells. These signals have the advantage of being stable over longer periods of time, and they have been used to study and decode human speech and other complex motor behaviors. Here we characterize LFP signals presumptively from the HVC of freely behaving male zebra finches during song production to determine if population activity may yield similar insights into the mechanisms underlying complex motor-vocal behavior. Following an initial observation that structured changes in the LFP were distinct to all vocalizations during song, we show that it is possible to extract time-varying features from multiple frequency bands to decode the identity of specific vocalization elements (syllables) and to predict their temporal onsets within the motif. This demonstrates the utility of LFP for studying vocal behavior in songbirds. Surprisingly, the time frequency structure of HVC LFP is qualitatively similar to well-established oscillations found in both human and non-human mammalian motor areas. This physiological similarity, despite distinct anatomical structures, may give insight into common computational principles for learning and/or generating complex motor-vocal behaviors.

<https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1008100>

---

## PLoS One

### PAPERS

#### **ANINETIE ANDY – Understanding user communication around loneliness on online forums**

Increasingly, individuals experiencing loneliness are seeking support on online forums—some of which focus specifically on discussions around loneliness (loneliness forums); loneliness may influence how these individuals communicate in other online forums not focused on loneliness (non-loneliness forums). In order to provide effective and appropriate online interventions around loneliness, it is important to understand how users who publish posts in a loneliness forum communicate in the loneliness forum and non-loneliness forums they belong to. In this paper, using language features, the following analyses are conducted: (1) Posts published on an online loneliness forum on Reddit, /r/Lonely are compared to posts (published by the same users and around the same time period) on two Reddit online forums i.e. an advice seeking forum, /r/AskReddit and a forum focused on discussions around depression (depression forum), /r/depression. (2) Interventions related to loneliness may vary depending on if an individual is lonely and depressed or lonely but not depressed; language use differences in posts published in /r/Lonely by the following set of users are identified: (a) users who post in both /r/Lonely and a depression forum and (b) users who post in /r/Lonely but not in the depression forum. The findings from this work gain new insights, for example: (i) /r/Lonely users tend to seek advice/ask questions related to relationships in the advice seeking forum, /r/AskReddit and (ii) users who are members of the loneliness forum but not the depression forum tend to publish posts (on the loneliness forum) on topic themes related to work/job, however, those who are members of the loneliness and depression forums tend to use more words associated with anger, negation, death, and post on topic themes related to affection relative to relationships in their loneliness forum posts. Some of the findings from this work also align with prior work e.g. users who express loneliness in online forums tend to make more reference to self. These findings aid in gaining insights into how users communicate on these forums and their support needs, thereby informing loneliness interventions.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0257791>

---

#### **STEIN T. HOLDEN & MESFIN TILAHUN – Preferences, trust, and performance in youth business groups**

We study how social preferences and norms of reciprocity are related to generalized (outgroup) and particularized (ingroup) trust among members of youth business groups in northern Ethiopia. The Ethiopian government promotes youth employment among land-poor rural youth by allocating them rehabilitated communal lands for the formation of sustainable businesses. The typical sustainable production activities that the groups can invest in include apiculture, forestry, horticulture, and livestock production. Our study used incentivized experiments to elicit social preferences, trust, and trustworthiness. We use data from 2427 group members in 246 functioning business groups collected in 2019. Altruistic and egalitarian preferences were associated with stronger norms to reciprocate, higher outgroup and ingroup trustworthiness and trust while spiteful and selfish preferences had opposite effects. The social preferences had both direct and indirect effects (through the norm to reciprocate) on trustworthiness and trust. Ingroup trust was positively correlated with a number of group performance indicators.

## **HUIJIONG YAN et al – Unsupervised cross-lingual model transfer for named entity recognition with contextualized word representations**

Named entity recognition (NER) is one fundamental task in the natural language processing (NLP) community. Supervised neural network models based on contextualized word representations can achieve highly-competitive performance, which requires a large-scale manually-annotated corpus for training. While for the resource-scarce languages, the construction of such as corpus is always expensive and time-consuming. Thus, unsupervised cross-lingual transfer is one good solution to address the problem. In this work, we investigate the unsupervised cross-lingual NER with model transfer based on contextualized word representations, which greatly advances the cross-lingual NER performance. We study several model transfer settings of the unsupervised cross-lingual NER, including (1) different types of the pretrained transformer-based language models as input, (2) the exploration strategies of the multilingual contextualized word representations, and (3) multi-source adaption. In particular, we propose an adapter-based word representation method combining with parameter generation network (PGN) better to capture the relationship between the source and target languages. We conduct experiments on a benchmark ConLL dataset involving four languages to simulate the cross-lingual setting. Results show that we can obtain highly-competitive performance by cross-lingual model transfer. In particular, our proposed adapter-based PGN model can lead to significant improvements for cross-lingual NER.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0257230>

---

## Science

### ARTICLES

#### **LIZZIE WADE – Human footprints near ice age lake suggest surprisingly early arrival in the Americas**

Between 23,000 and 21,000 years ago, people squished through the mud along a lakeshore in what is now New Mexico, alone and in small groups, leaving behind their footprints. Or at least that's the conclusion of a new paper that Oregon State University, Corvallis, archaeologist Loren Davis calls "potentially groundbreaking." If the dates are right, the discovery would be the strongest evidence yet that people reached the Americas during the middle of the last ice age, thousands of years earlier than many archaeologists thought.

<https://www.science.org/content/article/human-footprints-near-ice-age-lake-suggest-surprisingly-early-arrival-americas>

### PAPERS

#### **MATTHEW R. BENNETT et al – Evidence of humans in North America during the Last Glacial Maximum**

Archaeologists and researchers in allied fields have long sought to understand human colonization of North America. Questions remain about when and how people migrated, where they originated, and how their arrival affected the established fauna and landscape. Here, we present evidence from excavated surfaces in White Sands National Park (New Mexico, United States), where multiple in situ human footprints are stratigraphically constrained and bracketed by seed layers that yield calibrated radiocarbon ages between ~23 and 21 thousand years ago. These findings confirm the presence of humans in North America during the Last Glacial Maximum, adding evidence to the antiquity of human colonization of the Americas and providing a temporal range extension for the coexistence of early inhabitants and Pleistocene megafauna.

<https://www.science.org/doi/10.1126/science.abg7586>

---

## Science Advances

### PAPERS

#### **PABLO CAPILLA-LASHERAS et al – Altruistic bet-hedging and the evolution of cooperation in a Kalahari bird**

Altruism is globally associated with unpredictable environments, but we do not understand why. New theory has highlighted that unpredictable environments could favor the evolution of altruism if altruistic acts reduce environmentally induced variance in the reproductive success of relatives ("altruistic bet-hedging"). Here, we show that altruism does indeed reduce environmentally induced reproductive variance in a wild cooperative bird. Our decade-long field study reveals that altruistic helping actually has no overall effect on the mean reproductive success of relatives but instead reduces their reproductive variance. This remarkable pattern arises because helpers improve reproductive performance in dry conditions but reduce it in wet conditions. Helpers thereby specifically reduce rainfall-induced reproductive variance, the very mechanism required for altruistic bet-hedging to explain the enigmatic global association between avian altruism and unpredictable rainfall.

<https://www.science.org/doi/full/10.1126/sciadv.abe8980>

#### **SARAH PEDERZANI et al with JEAN-JACQUES HUBLIN – Subarctic climate for the earliest Homo sapiens in Europe**

The expansion of Homo sapiens across Eurasia marked a major milestone in human evolution that would eventually lead to our species being found across every continent. Current models propose that these expansions occurred only during episodes of warm climate, based on age correlations between archaeological and climatic records. Here, we obtain direct evidence for the temperatures faced by some of these humans through the oxygen isotope analysis of faunal remains from Bacho Kiro Cave, Bulgaria, the earliest clear record of H. sapiens in Europe. The results indicate that humans ~45,000 years ago experienced subarctic climates with far colder climatic conditions than previously suggested. This demonstrates that the

early presence of *H. sapiens* in Europe was not contingent on warm climates. Our results necessitate the revision of key models of human expansion and highlight the need for a less deterministic role of climate in the study of our evolutionary history.

<https://www.science.org/doi/full/10.1126/sciadv.abi4642>

---

**EL MEHDI SEHASSEH et al with JEAN-JACQUES HUBLIN – Early Middle Stone Age personal ornaments from Bizmoune Cave, Essaouira, Morocco**

Ornaments such as beads are among the earliest signs of symbolic behavior among human ancestors. Their appearance signals important developments in both cognition and social relations. This paper describes and presents contextual information for 33 shell beads from Bizmoune Cave (southwest Morocco). Many of the beads come as deposits dating to  $\geq 142$  thousand years, making them the oldest shell beads yet recovered. They extend the dates for the first appearance of this behavior into the late Middle Pleistocene. The ages and ubiquity of beads in Middle Stone Age (MSA) sites in North Africa provide further evidence of the potential importance of these artifacts as signals of identity. The early and continued use of *Tritia gibbosula* and other material culture traits also suggest a remarkable degree of cultural continuity among early MSA *Homo sapiens* groups across North Africa.

<https://www.science.org/doi/full/10.1126/sciadv.abi8620>

---

## Trends in Cognitive Sciences

### PAPERS

**ORIEL FELDMANHALL & MATTHEW R. NASSAR – The computational challenge of social learning**

Sophisticated social learning models should account for dynamic social rewards, unobservable internal states, unwieldy state–action spaces, and the fact that one person’s actions critically influence another’s internal state.

The complex reward structure of the social world and the uncertainty endemic to social contexts poses a challenge for modeling. For example, during social interactions, the actions of one person influence the internal states of another. These social dependencies make it difficult to formalize social learning problems in a mathematically tractable way. While it is tempting to dispense with these complexities, they are a defining feature of social life. Because the structure of social interactions challenges the simplifying assumptions often made in models, they make an ideal testbed for computational models of cognition. By adopting a framework that embeds existing social knowledge into the model, we can go beyond explaining behaviors in laboratory tasks to explaining those observed in the wild.

[https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613\(21\)00229-1](https://www.cell.com/trends/cognitive-sciences/fulltext/S1364-6613(21)00229-1)

---

## SUBSCRIBE to the EAORC Bulletin

If you would like to subscribe to this free weekly newsletter, please contact [martin.edwardes@btopenworld.com](mailto:martin.edwardes@btopenworld.com).

---

## UNSUBSCRIBE from the EAORC Bulletin

Send an email to [martin.edwardes@btopenworld.com](mailto:martin.edwardes@btopenworld.com) with the subject "EAORC unsubscribe".

---

## PRODUCED BY AND FOR THE EAORC EMAIL GROUP

EAORC is a fee-free academic internet news service and has no commercial sponsorship or other commercial interests.

EAORC website information is at <http://martinedwardes.me.uk/eaorc/>

If you have received this bulletin, and are unhappy about receiving it, please contact [martin.edwardes@btopenworld.com](mailto:martin.edwardes@btopenworld.com).