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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.

SCIENCE NEWS – Granny killer whales pass along wisdom—and extra fish—to their grandchildren

Many human grandmothers love to spoil their grandchildren with attention and treats, and for good reason: Studies have shown that having a living grandmother increases a child’s chance of survival. Now, new research shows the same may be true for killer whales. By providing young animals with some freshly caught salmon now and then—or perhaps with knowledge on where to find it—grannies increase their grand-offspring’s chance of survival.

https://www.sciencemag.org/news/2019/12/granny-killer-whales-pass-along-wisdom-and-extra-fish-their-grandchildren?utm_campaign=news_daily_2019-12-09&et rid=17774313&et cid=3116598

SCIENCE NEWS – World’s oldest hunting scene shows half-human, half-animal figures

Some 44,000 years ago, an artist climbed high onto a cave ledge on an Indonesian island, paintbrush in hand. Perhaps inspired by spiritual visions, the artist sketched a dynamic scene featuring tiny, animal-headed hunters armed with spears cornering formidable wild hogs and small buffaloes. In a new study, researchers argue that the scene’s visionary storytelling—which they claim represents the oldest known figurative art made by modern humans—shows that people already had imaginations much like our own at the time of the cave painting, and likely much earlier.

https://www.sciencemag.org/news/2019/12/world-s-oldest-hunting-scene-shows-half-human-half-animal-figures-and-sophisticated?utm_campaign=news_daily_2019-12-11&et rid=17774313&et cid=3119883

SOCIETY FOR SCIENCE – A nearly 44,000-year-old hunting scene is the oldest known storytelling art

Cave art in Indonesia dating to at least 43,900 years ago is the earliest known storytelling art, and shows otherworldly human-animal hunters.

<http://click.societyforscience-email.com/?qs=b550e1b892fea14b474607473f20ec162499e12e0ff8d9510460e1451aa5450d5092cc27d0ae6cf075999fd8b22aacc8364f38c1de92fe>

SCIAM NEWS – Rethinking the Infamous Milgram Experiment in Authoritarian Times

It’s usually cited as showing that people will follow dubious orders under social pressure—but a more important lesson may be that some people will refuse.

https://blogs.scientificamerican.com/observations/rethinking-the-infamous-milgram-experiment-in-authoritarian-times/?utm_source=newsletter&utm_medium=email&utm_campaign=mind&utm_content=link&utm_term=2019-12-11_featured-this-week

BREAKING SCIENCE – Dogs Understand Spoken Words Better than We Thought

Dogs are able to listen to different people saying the same word and recognize it as the same word, ignoring the differences between speakers, and can discriminate between unfamiliar people by the sound of their voice alone, according to a new study published in the journal *Biology Letters*.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/E94EKMHK2o8/dogs-spoken-words-07884.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – Killer Whale Grandmothers Improve Chances of Survival for Their Grandoffspring

Postmenopausal female killer whale (*Orcinus orca*) have a big beneficial impact on the survival chances of their grandoffspring, a University of York-led study has found. Published in the *Proceedings of the National Academy of Sciences*, the findings can help explain why killer whales have evolved the longest postreproductive life span of all non-human animals.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/UAzTdm6vyBA/killer-whale-grandmothers-07891.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – 43,900-Year-Old Cave Painting Portrays Part-Human, Part-Animal Beings

Archaeologists excavating the limestone cave of Leang Bulu' Sipong 4 on the Indonesian island of Sulawesi have discovered a painting that is approximately 43,900 years old and which portrays a group of 'therianthropes' — abstract beings that combine qualities of both people and animals — hunting wild pigs and small buffalo-like animals with spears or ropes.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/4n4lWypJ1nl/cave-painting-therianthropes-07902.html?utm_source=feedburner&utm_medium=email

BREAKING SCIENCE – Study Provides New Insight into Human Altruistic Behavior

Altruism blossoms in neighborhoods populated with highly educated people working in high-status jobs, according to new research. Altruism is a universal human trait, but little is known about its within-population variation.

http://feedproxy.google.com/~r/BreakingScienceNews/~3/wn1sH2rDNQM/human-altruistic-behavior-07909.html?utm_source=feedburner&utm_medium=email

SCIENCE DAILY – Killer whale grandmothers boost survival of calves

New research finds that killer whale grandmothers who were no longer able to reproduce had the biggest beneficial impact on the survival chances of their grand-offspring. This may be because grandmothers without calves of their own are free to focus time and resources on the latest generation, the researchers suggest.

<https://www.sciencedaily.com/releases/2019/12/191209161339.htm>

SCIENCE DAILY – Me, me, me! How narcissism changes throughout life

New research conducted the longest study on narcissism to date, revealing how it changes over time.

<https://www.sciencedaily.com/releases/2019/12/191210111655.htm>

SCIENCE DAILY – How humans learned to dance: From the chimpanzee conga line

Two chimpanzees housed in a zoo in the US have sparked the question about how human dance evolved after being observed performing a duo dance-like behavior, similar to a human conga line.

<https://www.sciencedaily.com/releases/2019/12/191212104644.htm>

SCIENCE DAILY – Speech could be older than we thought

The theory of the 'descended larynx' has stated that before speech can emerge, the larynx must be in a low position to produce differentiated vowels. Researcher show the production of differentiated vocalizations is not a question of anatomical variants but of control of articulators. This work leads us to think that speech could have emerged before the 200,000 years ago.

<https://www.sciencedaily.com/releases/2019/12/191212095850.htm>

SCIENCE DAILY – Researchers reconstruct spoken words as processed in nonhuman primate brains

Using a brain-computer interface, a team of researchers has reconstructed English words from the brain activity of rhesus macaques that listened as the words were spoken.

<https://www.sciencedaily.com/releases/2019/12/191213115412.htm>

SCIENCE DAILY – Human teeth used as jewellery in Turkey 8,500 years ago

At a prehistoric archaeological site in Turkey, researchers have discovered two 8,500-year-old human teeth, which had been used as pendants in a necklace or bracelet. Researchers have never documented this practice before in the prehistoric Near

East, and the rarity of the find suggests that the human teeth were imbued with profound symbolic meaning for the people who wore them.

<https://www.sciencedaily.com/releases/2019/12/191213115408.htm>

NATURE BRIEFING – Is this cave painting humanity's oldest story?

A 44,000-year-old cave painting seeming to depict a pig and buffalo hunt is the world's oldest recorded story, according to archaeologists. Found on the Indonesian island of Sulawesi, the 4.5-metre panel features reddish-brown forms that seem to depict human-like figures hunting local animal species. Rock art in Europe that dates back to 14,000 to 21,000 years ago was thought to be the world's oldest clearly narrative artworks, but the Sulawesi art pre-dates this.

<https://nature.us17.list-manage.com/track/click?u=2c6057c528fdc6f73fa196d9d&id=d9310dea53&e=1db4b9a19b>

ACADEMIA.EDU – The Evolution of Language: From Signals to Symbols to System

In D. Kimbrough Oller and Ulrike Griebel (eds.) Evolution of Communication Systems: A Comparative Approach.

CHRIS SINHA – The Evolution of Language: From Signals to Symbols to System

Human natural languages are communicative systems, and the primary use of language is to communicate. The precise nature of the relationship between the communicative functions and the systemic properties of natural languages may be disputed, but what cannot be disputed is that language is a vehicle for human communication. How different are natural languages, and their users, from other natural communication systems, and other species? Studies of nonhuman communication systems have revealed not only the ubiquity of communication in the animal world but also unsuspected complexity in some naturally occurring systems of nonhuman communication. A now classic example is the communication system of the vervet monkeys studied by Cheney and Seyfarth (1981). These monkeys employ a system of warning calls in which each of three call types codes for the presence of a particular predator (snake, eagle, leopard). Animals hearing a call respond with behavior that is appropriate to the danger posed by the predator: hearing an eagle call, they descend from a tree; hearing a snake call, they stand and scan the ground; hearing a leopard call, they climb up in a tree.

[https://www.academia.edu/5485533/The Evolution of Language From Signals to Symbols to System?email_work_card=view-paper](https://www.academia.edu/5485533/The_Evolution_of_Language_From_Signals_to_Symbols_to_System?email_work_card=view-paper)

SAPIENS – Is Artificial Intelligence Magic?

What does the anthropology of magic reveal about how people create and use AI?

<https://sapiens.us11.list-manage.com/track/click?u=80f6cf678900daf984bf763b7&id=9866dfe87b&e=dc0eff6180>

SAPIENS – Neanderthals: Body of Evidence

Our interactive graphic tours the Neanderthal body, pinpointing clues about ancient life gleaned from ancient bones.

<https://sapiens.us11.list-manage.com/track/click?u=80f6cf678900daf984bf763b7&id=8286f8ec93&e=dc0eff6180>

OTHER NEWS – BBC WEBSITE – Grandmother killer whales boost survival of calves

Grandmother killer whales boost the survival rates of their grandchildren, a new study has said. The survival rates were even higher if the grandmother had already gone through the menopause.

<https://www.bbc.co.uk/news/science-environment-50693177>

PUBLICATIONS

American Journal of Physical Anthropology

PAPERS

SEAN M. LEE et al – Wild bonobo and chimpanzee females exhibit broadly similar patterns of behavioral maturation but some evidence for divergence

Primates exhibit variation in rates of growth and development. Variation in female growth and development across ape species appears to be explained by the Ecological Risk Aversion Hypothesis (ERAH). Indeed, existing data on variation in somatic growth and reproductive maturation between humans' closest living ape relatives, bonobos and chimpanzees, appear to be consistent with this hypothesis. However, existing data on behavioral maturation between the two species appear to contradict this hypothesis. We present novel behavioral data on infant and juvenile females from wild populations of both species in order to further evaluate predictions of the ERAH as it relates to the speed of behavioral maturation.

We did not find species differences in the proportion of time that females spent in contact with their mothers or engaged in eating, suckling, social play, or social grooming. Female bonobos spent more time riding on their mothers than did female chimpanzees. Female bonobos spent more time at distances greater than 5 m from their mothers during the ages of 3–8 years, but females did not differ during the ages of 0–3 years.

Discussion

<https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.23935?campaign=woletoc>

Evolutionary Anthropology

ARTICLES

CESAR FORTES-LIMA, EZEKIA MTETWA & CARINA SCHLEBUSCH – Unraveling African diversity from a cross-disciplinary perspective

The study of deep and more recent human history in Africa requires a cross-disciplinary perspective. To better understand the origin of our species and the complex human diversity of current-day populations from this continent, paleoanthropologists, archeologists, historical linguistics, anthropologists, and geneticists participated in the “Africa, the cradle of human diversity” international conference during May 22–25, 2019 (<https://africathecradleofhumandiversity.com>), at Uppsala University, Sweden. Leading researchers presented and discussed new results and multidisciplinary approaches to address long-standing questions about human evolutionary history and population dynamics in Africa and beyond. The conference covered an extensive time range in human evolution, starting with the evolution of early humans in Africa to the complex cultural and genetic diversity of modern-day African populations.

<https://onlinelibrary.wiley.com/doi/full/10.1002/evan.21801?campaign=woletoc>

PAPERS

MICHELLE C. LANGLEY, ANTONIO BENÍTEZ-BURRACO & VERA KEMPE – Playing with language, creating complexity: Has play contributed to the evolution of complex language?

We argue that enhanced play may have contributed to the emergence of complex language systems in modern humans (*Homo sapiens*). To support this idea, we first discuss evidence for an expansion of playing behavior connected to the extended childhood of modern human children, and the potential of this period for the transmission of complex cultural traits, including language. We then link two of the most important functions of play—exploration and innovation—to the potential for cumulative cultural evolution in general and for the emergence of complex language in particular. If correct, the shorter childhood of Neanderthals—involving restrictions on time to experiment and innovate—may have restricted their language (and other symbolic) system/s. Consequently, fully investigating the role that play may have had in the transmission of language and the development of symbolic cultures in both modern humans and Neanderthals provides a new avenue of research for Paleolithic archaeology and related disciplines.

<https://onlinelibrary.wiley.com/doi/full/10.1002/evan.21810?campaign=wolearlyview>

SALLY HOARE – The possible role of predator–prey dynamics as an influence on early hominin use of burned landscapes

Foraging in burned areas has been suggested to represent the earliest stage in the use and control of fire by early hominins. Recently burned areas offer immediate foraging benefits including increased search efficiency for high-ranked food items and decreased hunting opportunities for ambush predators. As such, they provide a triple-bonus (reduced risk from ambush, ease of terrestrial travel and higher foraging returns) for some primates. However, previous studies have not yet accounted for other types of predators e.g., coursing (endurance predators that can pursue prey over long distances) which were sympatric with hominins and may also have exploited these environments. Behavioral ecology studies on the use of burned landscapes by extant carnivores demonstrate that while some ambush predators avoid recently burned areas, coursing predators do take advantage of their immediate hunting opportunities. Research examining habitat selection by animals under the simultaneous threat of multiple predator species with different modes of hunting, and the diversity of Plio-Pleistocene carnivore guild is suggestive of two possible evolutionary scenarios in which hominins could either have selected or avoided burned areas (3–2 mya), based on whether ambush or coursing predators were perceived as presenting the greatest risk.

<https://onlinelibrary.wiley.com/doi/full/10.1002/evan.21807?campaign=woletoc>

BONAVENTURA MAJOLO – Warfare in an evolutionary perspective

The importance of warfare for human evolution is hotly debated in anthropology. Some authors hypothesize that warfare emerged at least 200,000–100,000 years BP, was frequent, and significantly shaped human social evolution. Other authors claim that warfare is a recent phenomenon, linked to the emergence of agriculture, and mostly explained by cultural rather than evolutionary forces. Here I highlight and critically evaluate six controversial points on the evolutionary bases of warfare. I argue that cultural and evolutionary explanations on the emergence of warfare are not alternative but analyze biological diversity at two distinct levels. An evolved propensity to act aggressively toward outgroup individuals may emerge irrespective of whether warfare appeared early/late during human evolution. Finally, I argue that lethal violence and aggression toward outgroup individuals are two linked but distinct phenomena, and that war and peace are complementary and should not always be treated as two mutually exclusive behavioral responses.

<https://onlinelibrary.wiley.com/doi/full/10.1002/evan.21806?campaign=woletoc>

Nature

ARTICLES

LAURA SPINNEY – When did societies become modern? ‘Big history’ dashes popular idea of Axial Age

Humanity’s supposed singular transition to modernity in the first millennium BC was much messier than previously thought, finds sweeping study of historical data.

<https://www.nature.com/articles/d41586-019-03785-w>

PAPERS

MAXIME AUBERT et al – Earliest hunting scene in prehistoric art

Humans seem to have an adaptive predisposition for inventing, telling and consuming stories. Prehistoric cave art provides the most direct insight that we have into the earliest storytelling, in the form of narrative compositions or ‘scenes’ that feature clear figurative depictions of sets of figures in spatial proximity to each other, and from which one can infer actions taking place among the figures. The Upper Palaeolithic cave art of Europe hosts the oldest previously known images of humans and animals interacting in recognizable scenes, and of therianthropes—abstract beings that combine qualities of both people and animals, and which arguably communicated narrative fiction of some kind (folklore, religious myths, spiritual beliefs and so on). In this record of creative expression (spanning from about 40 thousand years ago (ka) until the beginning of the Holocene epoch at around 10 ka), scenes in cave art are generally rare and chronologically late (dating to about 21–14 ka), and clear representations of therianthropes are uncommon—the oldest such image is a carved figurine from Germany of a human with a feline head (dated to about 40–39 ka). Here we describe an elaborate rock art panel from the limestone cave of Leang Bulu’ Sipong (Sulawesi, Indonesia) that portrays several figures that appear to represent therianthropes hunting wild pigs and dwarf bovids; this painting has been dated to at least 43.9 ka on the basis of uranium-series analysis of overlying speleothems. This hunting scene is—to our knowledge—currently the oldest pictorial record of storytelling and the earliest figurative artwork in the world.

<https://www.nature.com/articles/s41586-019-1806-y>

FRIDO WELKER et al – Enamel proteome shows that Gigantopithecus was an early diverging pongine

Gigantopithecus blacki was a giant hominid that inhabited densely forested environments of Southeast Asia during the Pleistocene epoch. Its evolutionary relationships to other great ape species, and the divergence of these species during the Middle and Late Miocene epoch (16–5.3 million years ago), remain unclear. Hypotheses regarding the relationships between *Gigantopithecus* and extinct and extant hominids are wide ranging but difficult to substantiate because of its highly derived dentognathic morphology, the absence of cranial and post-cranial remains, and the lack of independent molecular validation. We retrieved dental enamel proteome sequences from a 1.9-million-year-old *G. blacki* molar found in Chuifeng Cave, China. The thermal age of these protein sequences is approximately five times greater than that of any previously published mammalian proteome or genome. We demonstrate that *Gigantopithecus* is a sister clade to orangutans (genus *Pongo*) with a common ancestor about 12–10 million years ago, implying that the divergence of *Gigantopithecus* from *Pongo* forms part of the Miocene radiation of great apes. In addition, we hypothesize that the expression of alpha-2-HS-glycoprotein, which has not been previously observed in enamel proteomes, had a role in the biomineralization of the thick enamel crowns that characterize the large molars in *Gigantopithecus*. The survival of an Early Pleistocene dental enamel proteome in the subtropics further expands the scope of palaeoproteomic analysis into geographical areas and time periods previously considered incompatible with the preservation of substantial amounts of genetic information.

<https://www.nature.com/articles/s41586-019-1728-8>

Nature Communications

PAPERS

LANG CHEN et al – The visual word form area (VWFA) is part of both language and attention circuitry

While predominant models of visual word form area (VWFA) function argue for its specific role in decoding written language, other accounts propose a more general role of VWFA in complex visual processing. However, a comprehensive examination of structural and functional VWFA circuits and their relationship to behavior has been missing. Here, using high-resolution multimodal imaging data from a large Human Connectome Project cohort (N = 313), we demonstrate robust patterns of VWFA connectivity with both canonical language and attentional networks. Brain-behavior relationships revealed a striking pattern of double dissociation: structural connectivity of VWFA with lateral temporal language network predicted language, but not visuo-spatial attention abilities, while VWFA connectivity with dorsal fronto-parietal attention network predicted visuo-spatial attention, but not language abilities. Our findings support a multiplex model of VWFA function characterized by distinct circuits for integrating language and attention, and point to connectivity-constrained cognition as a key principle of human brain organization.

<https://www.nature.com/articles/s41467-019-13634-z>

New Scientist

ARTICLES

GRAHAM LAWTON – Evolution – why you probably don't get it

Few scientific concepts are as misunderstood as evolution. We break down the prevailing myths.

<https://newscientist.us3.list-manage.com/track/click?u=6710b48697068ec8e08d69abf&id=099734abdf&e=c07cfd7395>

CATHERINE DE LANGE – The self – who do you think you are?

Most of us are convinced that we're coherent individuals, but our sense of self may be an illusion.

PeerJ

PAPERS

JULIO MERCADER et al – Soil and plant phytoliths from the Acacia-Commiphora mosaics at Oldupai Gorge (Tanzania)

This article studies soil and plant phytoliths from the Eastern Serengeti Plains, specifically the Acacia-Commiphora mosaics from Oldupai Gorge, Tanzania, as present-day analogue for the environment that was contemporaneous with the emergence of the genus Homo. We investigate whether phytolith assemblages from recent soil surfaces reflect plant community structure and composition with fidelity. The materials included 35 topsoil samples and 29 plant species (20 genera, 15 families). Phytoliths were extracted from both soil and botanical samples. Quantification aimed at discovering relationships amongst the soil and plant phytoliths relative distributions through Chi-square independence tests, establishing the statistical significance of the relationship between categorical variables within the two populations. Soil assemblages form a spectrum, or cohort of co-occurring phytolith classes, that will allow identifying environments similar to those in the Acacia-Commiphora ecozone in the fossil record.

<https://peerj.com/articles/8211/>

PLoS One

PAPERS

DAVID M. SIDHU, PENNY M. PEXMAN & JEAN SAINT-AUBIN – Is un stylo sharper than une épée? Investigating the interaction of sound symbolism and grammatical gender in English and French speakers

While the arbitrariness of language has long been considered one of its defining features, there is growing evidence that non-arbitrariness also plays an important role. Here we investigated two sources of non-arbitrariness: systematicity (via grammatical gender) and iconicity (via shape sound symbolism). We manipulated these two elements orthogonally, allowing us to examine the effect of each. In Experiment 1, we found that French speakers associated nonwords containing feminine (masculine) endings with round (sharp) shapes. French speakers also associated nonwords containing round-sounding (sharp-sounding) phonemes with round (sharp) shapes. This was repeated using auditory presentation with both an English-speaking (Experiment 2a) and French-speaking (Experiment 2b) sample. As predicted, the English speakers showed no effects of grammatical gender, while the French speakers did. These results demonstrate that speakers of a language with grammatical gender associate different properties to words belonging to different genders. The results also show that sound symbolism can emerge in stimuli with existing associated information (i.e., endings indicative of grammatical gender, and the association that they evoke). Finally, while previous studies have looked at effects of arbitrary and non-arbitrary mappings contained in a single stimulus, this is the first study to demonstrate that different kinds of non-arbitrary mappings can have an effect when appearing in the same stimulus. Together these results add to our understanding of the importance of non-arbitrariness in language.

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0225623>

PNAS

PAPERS

STUART NATTRASS et al – Postreproductive killer whale grandmothers improve the survival of their grandoffspring

Understanding why females of some mammalian species cease ovulation prior to the end of life is a long-standing interdisciplinary and evolutionary challenge. In humans and some species of toothed whales, females can live for decades after stopping reproduction. This unusual life history trait is thought to have evolved, in part, due to the inclusive fitness benefits that postreproductive females gain by helping kin. In humans, grandmothers gain inclusive fitness benefits by increasing their number of surviving grandoffspring, referred to as the grandmother effect. Among toothed whales, the grandmother effect has not been rigorously tested. Here, we test for the grandmother effect in killer whales, by quantifying grandoffspring survival with living or recently deceased reproductive and postreproductive grandmothers, and show that postreproductive grandmothers provide significant survival benefits to their grandoffspring above that provided by reproductive grandmothers. This provides evidence of the grandmother effect in a nonhuman menopausal species. By stopping reproduction, grandmothers avoid reproductive conflict with their daughters, and offer increased benefits to their grandoffspring. The benefits postreproductive grandmothers provide to their grandoffspring are shown to be most important in difficult times where the salmon abundance is low to moderate. The postreproductive grandmother effect we report, together with the known costs of late-life reproduction in killer whales, can help explain the long postreproductive life spans of resident killer whales.

<https://www.pnas.org/content/early/2019/12/03/1903844116.abstract?etoc>

Science

ARTICLES

MICHAEL PRICE – Cave painting suggests ancient origin of modern mind

Some 44,000 years ago, an artist climbed high onto a cave ledge on an Indonesian island, paintbrush in hand. Perhaps inspired by spiritual visions, the artist sketched a dynamic scene featuring tiny, animal-headed hunters armed with spears

cornering formidable wild hogs and small buffaloes. In a new study, researchers argue that the scene's visionary storytelling—which they claim represents the oldest known figurative art made by modern humans—shows that people already had imaginations much like our own at the time of the cave painting, and likely much earlier.

<https://science.sciencemag.org/content/366/6471/1299>

Science Advances

PAPERS

LOUIS-JEAN BOË et al – Which way to the dawn of speech?: reanalyzing half a century of debates and data in light of speech science

Recent articles on primate articulatory abilities are revolutionary regarding speech emergence, a crucial aspect of language evolution, by revealing a human-like system of proto-vowels in nonhuman primates and implicitly throughout our hominid ancestry. This article presents both a schematic history and the state of the art in primate vocalization research and its importance for speech emergence. Recent speech research advances allow more incisive comparison of phylogeny and ontogeny and also an illuminating reinterpretation of vintage primate vocalization data. This review produces three major findings. First, even among primates, laryngeal descent is not uniquely human. Second, laryngeal descent is not required to produce contrasting formant patterns in vocalizations. Third, living nonhuman primates produce vocalizations with contrasting formant patterns. Thus, evidence now overwhelmingly refutes the long-standing laryngeal descent theory, which pushes back “the dawn of speech” beyond ~200 ka ago to over ~20 ma ago, a difference of two orders of magnitude.

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