Liste erstellt am 2022-03-13

References

Aktuell

Koelle 2022

Katia Koelle, Michael A. Martin, Rustom Antia, Ben Lopman & Natalie E. Dean, *The changing epidemiology of SARS-CoV-2*. science **375** (2022), 1116–1121. DOI:10.1126/science.abm4915.

We have come a long way since the start of the COVID-19 pandemic—from hoarding toilet paper and wiping down groceries to sending our children back to school and vaccinating billions. Over this period, the global community of epidemiologists and evolutionary biologists has also come a long way in understanding the complex and changing dynamics of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus that causes COVID-19. In this Review, we retrace our steps through the questions that this community faced as the pandemic unfolded. We focus on the key roles that mathematical modeling and quantitative analyses of empirical data have played in allowing us to address these questions and ultimately to better understand and control the pandemic.

Rosella 2022

Laura C. Rosella, Ajay Agrawal, Joshua Gans, Avi Goldfarb, Sonia Sennik & Janice Stein, *Large-scale implementation of rapid antigen testing system for COVID-19 in workplaces*. Science Advances **8** (2022), eabm3608. DOI:10.1126/sciadv.abm3608.

The transmission of coronavirus disease 2019 (COVID-19) in workplaces has been a persistent issue throughout the pandemic. In response, a not-for-profit initiative emerged to mitigate COVID-19 workplace transmission in Canada. We report the process for establishing a workplace frequent rapid antigen test (RAT) program. The screening program identified 473 asymptomatic individuals who tested positive on the RAT and confirmed positive by a nasopharyngeal polymerase chain reaction (PCR) diagnostic test. One in 4300 RATs was presumptive positive but later tested PCR negative, and thus, false positives did not meaningfully disrupt workplace operations. Most employers rated the program highly and felt strongly that the program contributed to workplace and community safety. The findings describe a sustained and scalable implementation plan for establishing a frequent workplace testing program. High-frequency testing programs offer the potential to break chains of transmission and act as an extra layer of protection in a comprehensive public health response.

Altpaläolithikum

Efrati 2022

Bar Efrati, Ran Barkai, Stella Nunziante Cesaro & Flavia Venditti, *Function, life histories, and biographies of Lower Paleolithic patinated flint tools from Late Acheulian Revadim, Israel*. Scientific Reports **12** (2022), 2885. DOI:10.1038/s41598-022-06823-2.

SciRep12-02885-Supplement.pdf

Flint tools exhibiting modified patinated surfaces ("double patina", or post-patination flaked items) provide a glimpse into Paleolithic lithic recycling, stone economy, and human choices. Different life cycles of such items are visually evident by the presence of fresh new modified surfaces alongside old patinated ones (according to color and texture differences). New modifications testify to a gap in time between the previous life cycle of the patinated flaked item and its new one. The aim of the current study is to reconstruct the functional properties and life cycles of a sample of modified patinated flaked tools from Late Acheulian Revadim, Israel by applying use-wear and residue analyses. The Results of the functional study allow a better understanding of the practical reasoning behind the collection and recycling of old flint tools, while additional inputs from theoretical and methodological advancements assist in reconstructing their probable role in the worldviews of the site's inhabitants.

Anthropologie

Lipson 2022

Mark Lipson, Elizabeth A. Sawchuk, Jessica C. Thompson, David Reich & Mary E. Prendergast et al., *Ancient DNA and deep population structure in sub-Saharan African foragers*. nature **603** (2022), 290–296.

n603-0290-Supplement1.pdf, n603-0290-Supplement2.xlsx

Multiple lines of genetic and archaeological evidence suggest that there were major demographic changes in the terminal Late Pleistocene epoch and early Holocene epoch of sub-Saharan Africa1–4. Inferences about this period are challenging to make because demographic shifts in the past 5,000 years have obscured the structures of more ancient populations3,5. Here we present genome-wide ancient DNA data for six individuals from eastern and south-central Africa spanning the past approximately 18,000 years (doubling the time depth of sub-Saharan African ancient DNA), increase the data quality for 15 previously published ancient individuals and analyse these alongside data from 13 other published ancient individuals. The ancestry of the individuals in our study area can be modelled as a geographically structured mixture of three highly divergent source populations, probably reflecting Pleistocene interactions around 80–20 thousand years ago, including deeply diverged eastern and southern African lineages, plus a previously unappreciated ubiquitous distribution of ancestry that occurs in highest proportion today in central African rainforest hunter-gatherers. Once established, this structure remained highly stable, with limited long-range gene flow. These results provide a new line of genetic evidence in support of hypotheses that have emerged from archaeological analyses but remain contested, suggesting increasing regionalization at the end of the Pleistocene epoch.

Mark Lipson, Elizabeth A. Sawchuk, Jessica C. Thompson, Jonas Oppenheimer, Christian A. Tryon, Kathryn L. Ranhorn, Kathryn M. de Luna, Kendra A. Sirak, Iñigo Olalde, Stanley H. Ambrose, John W. Arthur, Kathryn J. W. Arthur, George Ayodo, Alex Bertacchi, Jessica I. Cerezo-Román, Brendan J. Culleton, Matthew C. Curtis, Jacob Davis, Agness O. Gidna, Annalys Hanson, Potiphar Kaliba, Maggie Katongo, Amandus Kwekason, Myra F. Laird, Jason Lewis, Audax Z. P. Mabulla, Fredrick Mapemba, Alan Morris, George Mudenda, Raphael Mwafulirwa, Daudi Mwangomba, Emmanuel Ndiema, Christine Ogola, Flora Schilt, Pamela R. Willoughby, David K. Wright, Andrew Zipkin, Ron Pinhasi, Douglas J. Kennett, Fredrick Kyalo Manthi, Nadin Rohland, Nick Patterson, David Reich & Mary E. Prendergast

Shah 2022

Anuj K. Shah & Michael LaForest, *Knowledge about others reduces one's own sense of anonymity*. nature **603** (2022), 297–301.

n603-0297-Supplement.docx

Social ties often seem symmetric, but they need not be1–5. For example, a person might know a stranger better than the stranger knows them. We explored whether people overlook these asymmetries and what consequences that might have for people's perceptions and actions. Here we show that when people know more about others, they think others know more about them. Across nine laboratory experiments, when participants learned more about a stranger, they felt as if the stranger also knew them better, and they acted as if the stranger was more attuned to their actions. As a result, participants were more honest around known strangers. We tested this further with a field experiment in New York City, in which we provided residents with mundane information about neighbourhood police officers. We found that the intervention shifted residents' perceptions of offic ers' knowledge of illegal activity, and it may even have reduced crime. It appears that our sense of anonymity depends not only on what people know about us but also on what we know about them.

Klima

Yang 2022

Ji-Woong Yang, Margaux Brandon, Amaëlle Landais, Stéphanie Duchamp-Alphonse, Thomas Blunier, Frédéric Prié & Thomas Extier, *Global biosphere primary productivity changes during the past eight glacial cycles*. science **375** (2022), 1145–1151.

s375-1145-Supplement.pdf

Global biosphere productivity is the largest uptake flux of atmospheric carbon dioxide (CO2), and it plays an important role in past and future carbon cycles. However, global estimation of biosphere productivity remains a challenge. Using the ancient air enclosed in polar ice cores, we present the first 800,000-year record of triple isotopic ratios of atmospheric oxygen, which reflects past global biosphere productivity. We observe that global biosphere productivity in the past eight glacial intervals was lower than that in the preindustrial era and that, in most cases, it starts to increase millennia before deglaciations. Both variations occur concomitantly with CO2 changes, implying a dominant control of CO2 on global biosphere productivity that supports a pervasive negative feedback under the glacial climate.

Neolithikum

Duru 2021

Güneş Duru, Mihriban Özbaşaran, Sera Yelözer, Melis Uzdurum & Ian Kuijt, *Space making and home making in the world's first villages, Reconsidering the circular to rectangular architectural transition in the Central Anatolian Neolithic*. Journal of Anthropological Archaeology **64** (2021), 101357, 1–23.

In the beginning of the 8th millennium BCE, the people of Asikli Höyük dramatically changed how they constructed their buildings. People no longer constructed circular, semi-subterranean residential buildings and instead started to build above

ground rectangular buildings. The long-term Asikli Höyük excavations help us understand the tempo and organization of this important evolutionary transition. This study advances discussion in three ways:
1) it provides a fine grained understanding of the diachronic shift in social and economic practices,
2) through broad horizontal excavation, this research provides new insights into the built environment, including the opportunity to understand the synchronic organization of residential and non-residential spaces, and
3) this study puts forth a detailed understanding of the evolutionary shift from circular-oval to rectangular architectural practices within a single residential setting. Collectively, the long-term research project at Asikli Höyük, with extensive horizontal excavations and detailed radiocarbon dating project, advances our understanding of the changing social and economic context of the transition from circular to rectangular residential buildings.

Keywords: Neolithic | Southwest Asia | Central Anatolia | Asikli Höyük | Architecture | Material culture | Space making | Households

Ostasien

Wang 2022

Fa-Gang Wang, Shi-Xia Yang, Cheng-Long Deng, Francesco d'Errico & Michael Petraglia et al., *Innovative ochre processing and tool use in China 40,000 years ago.* nature **603** (2022), 284–289.

n603-0284-Supplement.pdf

Homo sapiens was present in northern Asia by around 40,000 years ago, having replaced archaic populations across Eurasia after episodes of earlier population expansions and interbreeding1–4. Cultural adaptations of the last Neanderthals, the Denisovans and the incoming populations of H. sapiens into Asia remain unknown1,5–7. Here we describe Xiamabei, a well-preserved, approximately 40,000-year-old archaeological site in northern China, which includes the earliest known ochre-processing feature in east Asia, a distinctive miniaturized lithic assemblage with bladelet-like tools bearing traces of hafting, and a bone tool. The cultural assembly of traits at Xiamabei is unique for Eastern Asia and does not correspond with those found at other archaeological site assemblages inhabited by archaic populations or those generally associated with the expansion of H. sapiens, such as the Initial Upper Palaeolithic8–10. The record of northern Asia supports a process of technological innovations and cultural diversification emerging in a period of hominin hybridization and admixture2,3,6,11.

Fa-Gang Wang, Shi-Xia Yang, Jun-Yi Ge, Andreu Ollé, Ke-Liang Zhao, Jian-Ping Yue, Daniela Eugenia Rosso, Katerina Douka, Ying Guan, Wen-Yan Li, Hai-Yong Yang, Lian-Qiang Liu, Fei Xie, Zheng-Tang Guo, Ri-Xiang Zhu, Cheng-Long Deng, Francesco d'Errico & Michael Petraglia

Religion

Boudry 2011

Maarten Boudry & Johan De Smedt, *In Mysterious Ways, On petitionary prayer and subtle forms of supernatural causation.* Religion **41** (2011), 449–459.

The psychology of prayer and supernatural causation has received surprisingly little attention from empirical researchers. This paper discusses implicit belief

patterns about the causal mechanisms by which God effects changes in the world. The authors offer a psychological account of belief in supernatural causation based on the existing empirical literature on petitionary prayer, incorporating mechanisms of psychological selfcorrection and rationalisation, confirmation bias and folk physics. They propose that religious believers 'prefer' modes of divine action that are subtle and indistinguishable from the natural course of events: given that the causal structure of our world is partly inscrutable, beliefs in subtle and unascertainable modes of supernatural causation will be compelling and cognitively appealing because they are more susceptible to occasional confirmation and less vulnerable to repeated disconfirmation. In other words, believers who request supernatural interventions that are subtle and indistinguishable from the natural course of events will have a better chance of finding themselves in a situation in which they can attribute the events in question to God answering their prayers. The authors argue that such individual psychological factors play a role in the cultural transmission of prayer practices as well, leading to culturally widespread beliefs in subtle forms of supernatural causation.

Keywords: petitionary prayer | supernatural causation | divine intervention | cognitive science of religion | psychological self-correction | theological incorrectness | cultural transmission | epidemiology of religious representations

Sprachlehre

Assael 2022

Yannis Assael & Thea Sommerschield et al., *Restoring and attributing ancient texts using deep neural networks*. nature **603** (2022), 280–283.

Ancient history relies on disciplines such as epigraphy—the study of inscribed texts known as inscriptions—for evidence of the thought, language, society and history of past civilizations1. However, over the centuries, many inscriptions have been damaged to the point of illegibility, transported far from their original location and their date of writing is steeped in uncertainty. Here we present Ithaca, a deep neural network for the textual restoration, geographical attribution and chronological attribution of ancient Greek inscriptions. Ithaca is designed to assist and expand the historian's workflow. The architecture of Ithaca focuses on collaboration, decision support and interpretability. While Ithaca alone achieves 62 % accuracy when restoring damaged texts, the use of Ithaca by historians improved their accuracy from 25 % to 72 %, confirming the synergistic effect of this research tool. Ithaca can attribute inscriptions to their original location with an accuracy of 71 % and can date them to less than 30 years of their ground-truth ranges, redating key texts of Classical Athens and contributing to topical debates in ancient history. This research shows how models such as Ithaca can unlock the cooperative potential between artificial intelligence and historians, transformationally impacting the way that we study and write about one of the most important periods in human history.

Yannis Assael, Thea Sommerschield, Brendan Shillingford, Mahyar Bordbar, John Pavlopoulos, Marita Chatzipanagiotou, Ion Androutsopoulos, Jonathan Prag & Nando de Freitas

Roueché 2022

Charlotte Roueché, *Mind the gap as AI guesses at lost Greek inscriptions*. nature **603** (2022), 235–236.

The use of artificial intelligence (AI) is transforming many areas of research. A new AI tool helps to fill in missing text and estimate the timeframe and geographical origin of ancient inscriptions.

Ithaca's potential for discovery is clear; it is not about displacing diagnostic expertise, but turbo-charging it. It is easy for our hopes and expectations to skew our vision, but this tool approaches any fragment of text without human prejudice. It can work consistently across texts, whether they are of evident importance or seemingly insignificant. Then, crucially, it offers not a fixed answer for what the text corresponding to missing gaps might be, but rather a range of answers ranked by their probability.

The use of AI should not render the scholar redundant, but should instead challenge their understanding of what they thought they knew.

Story or Book

Ball 2022

Philip Ball, *A tour of the evolution of minds*. nature **603** (2022), 221–222.

An informative guide takes in archaea, birds, primates and more — overconfidently.

Journey of the Mind: How Thinking Emerged from Chaos. Ogi Ogas and Sai Gaddam. W. W. Norton & Company (2022)

Many assertions go beyond the facts. The discussion of consciousness rests on the belief that the problem has been solved by cognitive scientist Stephen Grossberg (whom the authors thank for "guidance and support"). Since the late 1960s, Grossberg has developed the idea that consciousness arises from 'resonance' between specific modules of the brain. Ogas and Gaddam are vague about what resonance means here, beyond saying that the modules amplify and prolong each other's outputs, and they give the reader little indication of what empirical evidence exists to support the idea. Grossberg's theory is provocative and stimulating, but, couched in the abstract mathematical framework of dynamical systems theory, it remains contingent on his supposition that "all conscious states are resonant states". I'm not convinced it amounts to the revolution that the authors assert.