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References

Aktuell

McKernan 2023

Kevin McKernan, Yvonne Helbert, Liam T. Kane & Stephen McLaughlin, *Sequencing of bivalent Moderna and Pfizer mRNA vaccines reveals nanogram to microgram quantities of expression vector dsDNA per dose*. unknown (2023), preprint, 1–22. DOI:10.31219/osf.io/b9t7m.

Multiple assays support DNA contamination that exceeds the European Medicines Agency (EMA) 330ng/mg requirement and the FDAs 10ng/dose requirements. These data may impact the surveillance of vaccine mRNA in breast milk or plasma as RT-qPCR assays targeting the vaccine mRNA cannot discern DNA from RNA without RNase or DNase nuclease treatments. Likewise, studies evaluating the reverse transcriptase activity of LINE-1 and vaccine mRNA will need to account for the high levels of DNA contamination in the vaccines.

Archäologie

Bourke 2008

Stephen Bourke (Hrsg.), *The Middle East, The Cradle of Civilization*. Ancient civilizations (London ^{2}2018).

Synthesizes the latest research and information from a range of disciplines to tell the compelling story, from the Neolithic period through to the Arab conquest, of how a group of linguistically disparate, nomadic tribes responded to specific social, economic and environmental factors to form the world's first complex societies.

Childe 1930

V. Gordon Childe, *The Bronze Age*. (London 1930).

Bibel

Gertoux 2015

Gérard Gertoux, *Moses and the Exodus, Chronological, Historical and Archaeological Evidence*. (unpublished 2015).

To be or not to be is a crucial question regarding Moses as well as the Exodus because, according to the Bible, the character related to that famous event forms the basis of the Passover which meant the Promised Land for Jews and later the Paradise for Christians. However, according to most Egyptologists, there is absolutely no evidence of Moses and the Exodus in Egyptian documents, which leads them to conclude that the whole biblical story is a myth written for gullible people. Ironically, if one considers that "truth" must be based on two pillars: an accurate chronology anchored on absolute dates (Herodotus' principle) and reliable documents coming from critical editions (Thucydides' principle), that implies an amazing conclusion: those who believe Egyptologists are actually the real gullible

ones. According to Egyptian accounts the last king of the 15th dynasty, named Apopi, "very pretty" in Hebrew that is Moses' birth name (Ex 2:2), reigned 40 years in Egypt from 1613 to 1573 BCE, then 40 years later he met Seqenenre Taa the last pharaoh of the 17th dynasty and gave him an unspecified disturbing message. The eldest son of Seqenenre Taa, Ahmose Sapaïr, who was crown prince died in a dramatic and unexplained way shortly before his father. Seqenenre Taa died in May 1533 BCE, after 11 years of reign, in dramatic and unclear circumstances. The state of his mummy proves, however, that his body received severe injuries and remained abandoned for several days before being mummified, in agreement with Psalms 136:15. Prince Kamose, Seqenenre Taa's brother, assured interim of authority for 3 years and threatened attack the former pharaoh Apopi, new prince of Retenu (Palestine) who took the name Moses, according to Manetho, an Egyptian priest and historian. In the stele of the Tempest, Kamose also blames Apopi for all the disasters that come to fall upon Egypt, which caused many deaths.

GERTOUX 2017

Gérard Gertoux, *The Pharaoh of the Exodus, Fairy tale or real history?* (unpublished 2017).

As we have seen the current "war of liberation against the Hyksos" is the result of Egyptian propaganda which began very early with Kamose, successor and brother of Seqenenre who died suddenly in a disaster. According to The Quarrel of Apophis and Sekenenre, we know that Seqenenre, the last pharaoh of the 17th dynasty (1544-1533) met Apopi just before dying. Surprisingly, Apopi had been the last Hyksos king of the 15th dynasty (1613-1573), 40 years earlier! According to the Egyptian account, Apopi had given Seqenenre an unspecified disturbing message just before his death and we also know, according to the mortuary statue of Ahmose Sapaïr, who was crown prince, that he also died in a dramatic and unexplained way shortly before his father. There is no mention of war, but only two strange complaints: Apopi worshipped his unique God "Lord (baal)" and he could not stand in Avaris that the hippos of Thebes (900 km farther) made too much noise.

JAMES 2008

Peter James, *The Alleged "Anchor Point" of 732 BC for the Destruction of Hazor V*. Antiguo Oriente **6** (2008), 137–183.

All previous discussions of the chronology of Iron Age Hazor assume as an "anchor point" the destruction of Hazor V by Tiglath-pileser III in 732 BC. Re-examination of Yadin's case for this date shows that it was merely an assumption on his part. A review of the dating evidence – partly historical but principally the input from the independently dateable archaeological chronologies of Cyprus, Phoenicia, Mesopotamia and Egypt – suggests that Hazor V fell much later than 732 BC. Consequently both the Yadin ("high") and Finkelstein ("low") models for the chronology of Iron II Hazor are working from an incorrect baseline. A model is offered here which, while arguing a shift of the Iron IIA period from the tenth to ninth century BC, does not unduly compress Strata X-VII, closes the alleged long settlement gap at the site during the Neo-Babylonian to Early Persian period and resolves numerous dating anomalies arising from imported finds.

Keywords: Hazor | Iron Age II Chronology | Samaria –Megiddo

Biographie

Wartke 2008

Ralf-B. Wartke (Hrsg.), *Auf dem Weg nach Babylon, Robert Koldewey – Ein Archäologenleben.* (Mainz 2008).

Biologie

Wade 2023

Lizzie Wade, *Maize has an unexpected wild ancestor.* science **382** (2023), 983–984.

Genes from second wild grass may have helped propel its success—but scientists don't know how.

Yang 2023

Ning Yang et al., *Two teosintes made modern maize.* science **382** (2023), 1013.

s382-1013-Supplement.pdf

The origins of maize were the topic of vigorous debate for nearly a century, but neither the current genetic model nor earlier archaeological models account for the totality of available data, and recent work has highlighted the potential contribution of a wild relative, Zea mays ssp. mexicana. Our population genetic analysis reveals that the origin of modern maize can be traced to an admixture between ancient maize and Zea mays ssp. mexicana in the highlands of Mexico some 4000 years after domestication began. We show that variation in admixture is a key component of maize diversity, both at individual loci and for additive genetic variation underlying agronomic traits. Our results clarify the origin of modern maize and raise new questions about the anthropogenic mechanisms underlying dispersal throughout the Americas.

Ning Yang, Yuebin Wang, Xiangguo Liu, Minliang Jin, Miguel Vallebueno-Estrada, Erin Calfee, Lu Chen, Brian P. Dilkes, Songtao Gui, Xingming Fan, Thomas K. Harper, Douglas J. Kennett, Wenqiang Li, Yanli Lu, Junqiang Ding, Ziqi Chen, Jingyun Luo, Sowmya Mambakkam, Mitra Menon, Samantha Snodgrass, Carl Veller, Shenshen Wu, Siying Wu, Lin Zhuo, Yingjie Xiao, Xiaohong Yang, Michelle C. Stitzer, Daniel Runcie, Jianbing Yan, Jeffrey Ross-Ibarra

Datierung

Gassmann 2018

Guntram Gassmann & Andreas Schäfer, *Doubting radiocarbon dating from in-slag charcoal, Five thousand years of iron production at Wetzlar-Dalheim?* Archeologické rozhledy **70** (2018), 309–327.

A Roman-Period bloomery smelting site had been excavated in the Lahn valley at Wetzlar-Dalheim in central Germany during 2006–2012. The production unit consisted of a big rectangular workshop pit with 13 slag pit-furnaces, two waste dumps and a small sunken hut. The stratigraphical sequence, along with abundant pottery and small finds, allows the dating of short-lived smelting activity to a time slot around the third quarter of the first century AD. As a first series of radiocarbon measurements from in-slag charcoal samples resulted in a bewildering date range from the Iron Age right back into the Neolithic, a second dating series has

been undertaken. This time exclusively charcoal samples taken from the bottom of the furnace pits have been analysed. The resulting dates fit to the archaeologically derived dating. It is clear that the 14C content of the in-slag charcoal samples must have been altered already during the process in antiquity. With none of the analysed dates younger than the archaeologically fixed date of the bloomery production unit, it is obvious that a contamination with fossil carbon must have taken place. The wide and inconsistent date range suggests that fossil carbon has entered the metallurgical system within the furnace in an uncontrollable manner. The observed phenomenon has wide implications for other metallurgical sites with high temperature processes under strongly reducing conditions. Charcoal samples from such sites, especially from inside slags, might be contaminated to an unpredictable degree and produce seemingly older dates. A first review of previously published data series calls for a reconsideration of the reliability of radiocarbon dates from metallurgical slags.

Keywords: radiocarbon dating | methodology | charcoal samples | slag | fossil carbon

Energie

Lelieveld 2023

Jos Lelieveld, Andy Haines, Richard Burnett, Cathryn Tonne, Klaus Klingmüller, Thomas Münzel & Andrea Pozzer, *Air pollution deaths attributable to fossil fuels, Observational and modelling study.* British Medical Journal **383** (2023), e77784.

Phasing out fossil fuels is deemed to be an effective intervention to improve health and save lives as part the United Nations' goal of climate neutrality by 2050. Ambient air pollution would no longer be a leading, environmental health risk factor if the use of fossil fuels were superseded by equitable access to clean sources of renewable energy.

Grabung

Akkermans 2023

Peter M. M. G. Akkermans & Merel L. Brüning, *Dwellings with Three Rooms, A new type of architecture at late seventh millennium BCE Tell Sabi Abyad, Syria.* In: Bleda S. Düring & Peter M. M. G. Akkermans (Hrsg.), *Style and Society in the Prehistory of West Asia, Essays in Honour of Olivier P. Nieuwenhuyse.* PALMA 29 (Leiden 2023), 29–29.

Tell Sabi Abyad in Syria has yielded a long and continuous sequence of a seventhmillennium BCE settlement, exposed over large areas in excavations that took place be tween 1986 and 2010. Each settlement layer contains a number of single-generational houses of different shapes and sizes. This paper will delve into a new type of dwellings found at Tell Sabi Abyad in layers dated to 6400-6300 BCE – the so-called 'three-room buildings'. The buildings' characteristics as well as their development through time are discussed, with special attention given to the fiercely burnt three-room building in the upper settlement level A2.

Keywords: 8.2 Ereignis | 8.2 event

Bevins 2023

Richard E. Bevins et al., *The Stonehenge Altar Stone was probably not sourced from the Old Red Sandstone of the Anglo-Welsh Basin, Time to broaden our geographic and stratigraphic horizons?* Journal of Archaeological Science: Reports **51** (2023), 104215, 1–14.

Stone 80, the recumbent Altar Stone, is the largest of the Stonehenge foreign "bluestones", mainly igneous rocks forming the inner Stonehenge circle. The Altar Stone's anomalous lithology, a sandstone of continental origin, led to the previous suggestion of a provenance from the Old Red Sandstone (ORS) of west Wales, close to where the majority of the bluestones have been sourced (viz. the Mynydd Preseli area in west Wales) some 225 km west of Stonehenge. Building upon earlier investigations we have examined new samples from the Old Red Sandstone (ORS) within the Anglo-Welsh Basin (covering south Wales, the Welsh Borderland, the West Midlands and Somerset) using traditional optical petrography but additionally portable XRF, automated SEM-EDS and Raman Spectroscopic techniques. One of the key characteristics of the Altar Stone is its unusually high Ba content (all except one of 106 analyses have Ba > 1025 ppm), reflecting high modal baryte. Of the 58 ORS samples analysed to date from the Anglo-Welsh Basin, only four show analyses where Ba exceeds 1000 ppm, similar to the lower range of the Altar Stone composition. However, because of their contrasting mineralogies, combined with data collected from new automated SEM-EDS and Raman Spectroscopic analyses these four samples must be discounted as being from the source of the Altar Stone. It now seems ever more likely that the Altar Stone was not derived from the ORS of the Anglo-Welsh Basin, and therefore it is time to broaden our horizons, both geographically and stratigraphically into northern Britain and also to consider continental sandstones of a younger age. There is no doubt that considering the Altar Stone as a 'bluestone' has influenced thinking regarding the long-held view to a source in Wales. We therefore propose that the Altar Stone should be 'declassified' as a bluestone, breaking a link to the essentially Mynydd Preseli-derived bluestones.

Keywords: Neolithic | Stonehenge | Altar Stone | Sandstone analysis | Provenancing

Richard E. Bevins, Nick J. G. Pearce, Rob A. Ixer, Duncan Pirrie, Sergio Andò, Stephen Hillier, Peter Turner & Matthew Power

Lozano Rodríguez 2023

José Antonio Lozano Rodríguez et al., *The provenance of the stones in the Menga dolmen reveals one of the greatest engineering feats of the Neolithic.* Scientific Reports **13** (2023), 21184. DOI:10.1038/s41598-023-47423-y.

The technical and intellectual capabilities of past societies are reflected in the monuments they were able to build. Tracking the provenance of the stones utilised to build prehistoric megalithic monuments, through geological studies, is of utmost interest for interpreting ancient architectures as well as to contribute to their protection. According to the scarce information available, most stones used in European prehistoric megaliths originate from locations near the construction sites, which would have made transport easier. The Menga dolmen (Antequera, Malaga, Spain), listed in UNESCO World Heritage since July 2016, was designed and built with stones weighting up to nearly 150 tons, thus becoming the most colossal stone monument built in its time in Europe (c. 3800–3600 BC). Our study (based on high-resolution geological mapping as well as petrographic and stratigraphic analyses) reveals key geological and archaeological evidence to establish

the precise provenance of the massive stones used in the construction of this monument. These stones are mostly calcarenites, a poorly cemented detrital sedimentary rock comparable to those known as 'soft stones' in modern civil engineering. They were quarried from a rocky outcrop located at a distance of approximately 1 km. In this study, it can be inferred the use of soft stone in Menga reveals the human application of new wood and stone technologies enabling the construction of a monument of unprecedented magnitude and complexity.

José Antonio Lozano Rodríguez, Leonardo García Sanjuán, Antonio M. Álvarez-Valero, Francisco Jiménez-Espejo, Jesús María Arrieta, Eugenio Fraile-Nuez, Raquel Montero Artús, Giuseppe Cultrone, Fernando Alonso Muñoz-Carballeda & Francisco Martínez-Sevilla

Rosenberg 2023

Danny Rosenberg, Ehud Galili & Dafna Langgut, *The Unseen Record, Ninth–Seventh Millennia Cal. BP Wooden and Basketry Objects from Submerged Settlements off the Carmel Coast, Israel.* Forests **14** (2023), 2373, 1–21. DOI:10.3390/f14122373.

Wood and basketry artefacts rarely survive in the prehistoric record since they require exceptional conditions for preservation; as a result, the current knowledge about when and how prehistoric societies used these basic organic raw materials is limited. Focusing on the southern Levant, we discuss for the first time a collection of 16 late prehistoric organic artefacts found in underwater research conducted in the last forty years off the coast of the Carmel Ridge (Israel). The waterlogged finds, including bowls, shafts, a wedge, a trough, a pitchfork, logs, a mat, and a basket, were found at sites spanning from the Pre-Pottery Neolithic to Middle Chalcolithic periods (ninth–seventh millennia cal. BP), constituting an unprecedented record of prehistoric wood and other perishable materials, providing us with new information about raw material preferences and manufacturing technologies.

Keywords: wooden objects | organic materials | waterlogged wood | Neolithic | Chalcolithic | underwater archaeology

Isotope

Ganiatsou 2023

Elissavet Ganiatsou & Christina Papageorgopoulou et al., *Application of machine learning on isotopic data from tooth microsections for reconstructing weaning patterns and physiological stress.* Journal of Archaeological Science: Reports **47** (2023), 103765, 1–13.

The recent development of measuring stable isotope ratios (d15N and d13C) in collagen from tooth microsections provides temporal resolution of dietary changes and has been widely used for the reconstruction of breastfeeding, weaning and physiological stress in archaeological datasets. We applied incremental dentine analysis, measuring the d15N and d13C in collagen from first permanent molars of 45 adult individuals from the city of Thessaloniki (4th c. BC – 16th c. AD). We were able to reconstruct the diet of 31 individuals from birth up to the age of seven. To this dataset, we added 20 previously published individuals from the same site and we re-examined the weaning ages with WEAN, an automated application for estimating the weaning age based on the measurements of d15N. Furthermore, we used the k-means machine learning method to discern clusters of different isotopic patterns in the individual profiles and trace possible signals of physiological stress.

Our results show that 45 out of 51 individuals were breastfed but weaned at different ages ranging from one to three years old. Five individuals were breastfed

for an even shorter period or were never breastfed. The weaning diet was comprised mostly of animal protein and C3 plants, while the consumption of small fish and/or C4 plants intensified from the Roman period onwards. There were no statistically significant differences between males and females and among chronological periods. Based on the machine learning approach we could identify 9 individuals with probable evidence of physiological stress, which may be linked to maladaptive breastfeeding patterns. Our study reports new data on breastfeeding and weaning utilizing the implementation of computational Methods and illustrates the complexity of the infant feeding practices in ancient societies.

Keywords: Incremental dentine analysis | Carbon and nitrogen isotopes | Breastfeeding | Unsupervised clustering | Roman | Byzantine | Greece

Elissavet Ganiatsou, Angeliki Georgiadou, Angelos Souleles, Asterios Aidonis, Tania Protopsalti, Stavroula Tzevreni, Krino Konstantinidou, Stella Vasileiadou, Frank Siegmund & Christina Papageorgopoulou

Velte 2023

Maren Velte, Andrea Czermak, Deborah Neidich, Sandra Lösch & Michaela Harbeck et al., *Tracing early life histories from Roman times to the Medieval era, Weaning practices and physiological stress.* Archaeological and Anthropological Sciences **15** (2023), 190, 1–22.

ArchAnthSci15-a190-Supplement1.docx, ArchAnthSci15-a190-Supplement2.xlsx

In humans, breastfeeding and weaning depend on the infant's needs and physiology but are also influenced by environmental and cultural factors. While infant feeding strategies vary across different regions and historical eras, the associated transition from breastmilk to solid foods is universally thought to be stressful. However, still little is known about infant feeding practices and possibly associated stress in former times. This also applies to the period of transition from classical antiquity to medieval times, which shaped modern Western civilization. To enhance the understanding of childhood nutrition and stress during this period, we first analyzed stable carbon and nitrogen isotopes in serial dentine samples from the first molars of 38 individuals buried in the region once known as the Roman frontier province of Raetia secunda, now encompassing Southern Bavaria. In addition, we investigated the presence of linear enamel hypoplasia (LEH), known to be a marker of unspecific physiological stress, within their dentition. We used this data to create isotope profiles that display dietary changes in comparison with the occurrence of LEH. We found highly variable d15N and d13C values and different shapes of isotope profiles which indicate different nutrition of breastfeeding individuals, complementary foods and post-weaning diets, and individual weaning patterns. For most individuals, the weaning process was completed between the ages of two and three. Interestingly, some females of non-local origin show longer weaning periods, likely displaying the influence of different cultural practices in other communities. We also found that LEH most frequently occurred in the post-weaning phase, which supports the assumption that children were at increased risk once breastfeeding had ceased completely. Furthermore, a change in the post-weaning diet in the seventh century coincided with an increased prevalence of LEH, indicating that the foods chosen or available during this time affected the susceptibility of children to stress. In conclusion, our study unveiled diverse infant feeding strategies practiced across various communities, both in different historical eras and geographical locations.

Keywords: Early childhood | Serial dentine isotope analysis | Weaning process | Post-weaning diet | Post-weaning stress | Linear enamel hypoplasia (LEH)

Maren Velte, Andrea Czermak, Andrea Grigat, Deborah Neidich, Bernd Trautmann, Sandra Lösch, Bernd Päffgen & Michaela Harbeck

Klima

He 2023

Haozhe He, Ryan J. Kramer, Brian J. Soden & Nadir Jeevanjee, *State dependence of CO2 forcing and its implications for climate sensitivity*. science **382** (2023), 1051–1056.

s382-1051-Supplement.pdf

When evaluating the effect of carbon dioxide (CO2) changes on Earth's climate, it is widely assumed that instantaneous radiative forcing from a doubling of a given CO2 concentration (IRF2×CO2) is constant and that variances in climate sensitivity arise from differences in radiative feedbacks or dependence of these feedbacks on the climatological base state. Here, we show that the IRF2×CO2 is not constant, but rather depends on the climatological base state, increasing by about 25 % for every doubling of CO2, and has increased by about 10 % since the preindustrial era primarily due to the cooling within the upper stratosphere, implying a proportionate increase in climate sensitivity. This basestate dependence also explains about half of the intermodel spread in IRF2×CO2, a problem that has persisted among climate models for nearly three decades.

Kultur

Scheffer 2023

Marten Scheffer, Egbert H. van Nes, Luke Kemp, Timothy A. Kohler, Timothy M. Lenton & Chi Xu, *The vulnerability of aging states, A survival analysis across premodern societies*. PNAS **120** (2023), e2218834120.

pnas120-e2218834120-Supplement.pdf

How states and great powers rise and fall is an intriguing enigma of human history. Are there any patterns? Do polities become more vulnerable over time as they age? We analyze longevity in hundreds of premodern states using survival analysis to help provide initial insights into these questions. This approach is commonly used to study the risk of death in biological organisms or failure in mechanical systems. The results reveal that the risk of state termination increased steeply over approximately the irst two centuries after formation and stabilized thereafter. This provides the irst quantitative support for the hypothesis that the resilience of political states decreases over time. Potential mechanisms that could drive such declining resilience include environmental degradation, increasing complexity, growing inequality, and extractive institutions. While the cases are from premodern times, such dynamics and drivers of vulnerability may remain relevant today.

Keywords: archaeology | resilience | societies | civilizations | longevity

Significance: Humans become increasingly fragile as they age. We show that something similar may happen to states, although for states, the risk of termination levels of as they grow older, allowing some to persist for millennia. Proximate causes of their demise such as conquest, coups, earthquakes, and droughts are easy to spot and have received signiicant attention. However, our results suggest that unraveling what shapes resilience to such events is equally important if we are to understand state longevity and collapse. Risk of termination rises over the irst 200 y, inviting a search for mechanisms that can undermine resilience at this timescale.

Mesolithikum

Curry 2023

Andrew Curry, *Oldest forts challenge views of hunter-gatherers*. science **382** (2023), 982–983.

8000 years ago—long before farming arrived—people in Siberia built defensive structures.

Methoden

Clark 2023

Cory J. Clark et al., *Prosocial motives underlie scientific censorship by scientists, A perspective and research agenda*. PNAS **120** (2023), e2301642120.

Science is among humanity's greatest achievements, yet scientiic censorship is rarely studied empirically. We explore the social, psychological, and institutional causes and consequences of scientiic censorship (deined as actions aimed at obstructing particular scientiic ideas from reaching an audience for reasons other than low scientiic quality). Popular narratives suggest that scientiic censorship is driven by authoritarian oicials with dark motives, such as dogmatism and intolerance. Our analysis suggests that scientiic censorship is often driven by scientists, who are primarily motivated by self- protection, benevolence toward peer scholars, and prosocial concerns for the well- being of human social groups. This perspective helps explain both recent indings on scientiic censorship and recent changes to scientiic institutions, such as the use of harm- based criteria to evaluate research. We discuss unknowns surrounding the consequences of censorship and provide recommendations for improving transparency and accountability in scientiic decision-making to enable the exploration of these unknowns. The beneits of censorship may sometimes outweigh costs. However, until costs and beneits are examined empirically, scholars on opposing sides of ongoing debates are left to quarrel based on competing values, assumptions, and intuitions.

Keywords: censorship | academic freedom | science reform | transparency | organizational behavior

Cory J. Clark, Lee Jussim, Komi Frey, Sean T. Stevens, Musa al-Gharbi, Karl Aquino, J. Michael Bailey, Nicole Barbaro, Roy F. Baumeister, April Bleske-Rechek, David Buss, Stephen Ceci, Marco Del Giudice, Peter H. Ditto, Joseph P. Forgas, David C. Geary, Glenn Geher, Sarah Haider, Nathan Honeycutt, Hrishikesh Joshi, Anna I. Krylov, Elizabeth Loftus, Glenn Loury, Louise Lu, Michael Macy, Chris C. Martin, John McWhorter, Geofrey Miller, Pamela Paresky, Steven Pinker, Wilfred Reilly, Catherine Salmon, Steve Stewart- Williams, Philip E. Tetlock, Wendy M. Williams, Anne E. Wilson, Bo M. Winegard, George Yancey & William von Hippel

Shinn 2023

Maxwell Shinn, *Phantom oscillations in principal component analysis*. PNAS **120** (2023), e2311420120.

pnas120-e2311420120-Supplement.pdf

Principal component analysis (PCA) is a dimensionality reduction method that is known for being simple and easy to interpret. Principal components are often interpreted as low-dimensional patterns in high-dimensional space. However, this simple interpretation fails for timeseries, spatial maps, and other continuous data. In these cases, nonoscillatory data may have oscillatory principal components.

Here, we show that two common properties of data cause oscillatory principal components: smoothness and shifts in time or space. These two properties implicate almost all neuroscience data. We show how the oscillations produced by PCA, which we call "phantom oscillations," impact data analysis. We also show that traditional crossvalidation does not detect phantom oscillations, so we suggest procedures that do. Our findings are supported by a collection of mathematical proofs. Collectively, our work demonstrates that patterns which emerge from high-dimensional data analysis may not faithfully represent the underlying data.

Keywords: PCA | oscillations | dimensionality reduction | data analysis

Significance: Dimensionality reduction simplifies high-dimensional data into a small number of representative patterns. One dimensionality reduction method, principal component analysis (PCA), often selects oscillatory or U-shaped patterns, even when such patterns do not exist in the data. These oscillatory patterns are a mathematical consequence of the way PCA is computed rather than a unique property of the data. We show how two common properties of high-dimensional data can be misinterpreted when visualized in a small number of dimensions.

Politik

Dentelski 2023

David Dentelski, Ran Damari, Yanir Marmor, Avner Niv, Mor Roses & Yonatan Dubi, *Ninety-Nine Percent? Re-Examining the Consensus on the Anthropogenic Contribution to Climate Change.* Climate **11** (2023), 215, 1–8.

Climate11-a215-Supplement.zip

Anthropogenic activity is considered a central driver of current climate change. A recent paper, studying the consensus regarding the hypothesis that the recent increase in global temperature is predominantly human-made via the emission of greenhouse gasses (see text for reference), argued that the scientific consensus in the peer-reviewed scientific literature pertaining to this hypothesis exceeds 99 %. This conclusion was reached after the authors scanned the abstracts and titles of some 3000 papers and mapped them according to their (abstract) statements regarding the above hypothesis. Here, we point out some major flaws in the methodology, analysis, and conclusions of the study. Using the data provided in the study, we show that the 99 % consensus, as defined by the authors, is actually an upper limit evaluation because of the large number of "neutral" papers which were counted as pro-consensus in the paper and probably does not reflect the true situation. We further analyze these results by evaluating how so-called "skeptic" papers fit the consensus and find that biases in the literature, which were not accounted for in the aforementioned study, may place the consensus on the low side. Finally, we show that the rating method used in the study suffers from a subjective bias which is reflected in large variations between ratings of the same paper by different raters. All these lead to the conclusion that the conclusions of the study does not follow from the data.

Keywords: climate change | anthropogenic climate change | climate consensus

Sprachlehre

Habel 1931

E. Habel & F. Gröbel, *Mittellateinisches Glossar.* (Paderborn ^{2}1959).

Joosten 2023

Jan Joosten, *Mixed Blessings, The biblical notion of blessing in the works of Philo and Flavius Josephus*. unknown (2023), preprint, 1–11. .

Close study of the verb eulogeo shows clearly that the process of translation deeply affected the Greek language as used by the translators. It is not just a matter of creating occasional Hebraisms or overusing expressions that were attested in Greek anyway. Some Greek words really were filled with new, Hebraic, meanings in a way that could easily alienate a Greek reader lacking familiarity with Judaism or with the biblical corpus.

One of the objectives of the projected Historical and Theological Lexicon of the Septuagint is to shine a light on other cases where the meaning and usage of Greek words has changed under the influence of biblical culture. Each word, each group of words, has its own story. But each unique story illuminates in its own way the encounter between Hellenism and Judaism, between Greek thought and biblical thought, that took place in the western diaspora in the early third century BCE.