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References

Afrika

Sigl 2021

Johanna Sigl & Jörg Linstädter, *Jahrtausendealt: Netzwerke südlich der Sahara*. Archäologie in Deutschland **2021**, iv, 14–19.

Afrika ist Schauplatz sozialer, politischer und kultureller Umschwünge sowie einer Metamorphose von Natur, Mensch und Sprache, die bis heute anhält. Archäologisch gibt es dort noch sehr viel zu erforschen.

Amerika

Chase 2023

Diane Z. Chase et al., *Mesoamerican urbanism revisited, Environmental change, adaptation, resilience, persistence, and collapse*. PNAS **120** (2023), e2211558120.

pnas120-e2211558120-Supplement.pdf

Urban adaptation to climate change is a global challenge requiring a broad response that can be informed by how urban societies in the past responded to environmental shocks. Yet, interdisciplinary eforts to leverage insights from the urban past have been stymied by disciplinary silos and entrenched misconceptions regarding the nature and diversity of premodern human settlements and institutions, especially in the case of prehispanic Mesoamerica. Long recognized as a distinct cultural region, prehispanic Mesoamerica was the setting for one of the world's original urbanization episodes despite the impediments to communication and resource extraction due to the lack of beasts of burden and wheeled transport, and the limited and relatively late use of metal implements. Our knowledge of prehispanic urbanism in Mesoamerica has been signiicantly enhanced over the past two decades due to signiicant advances in excavating, analyzing, and contextualizing archaeological materials. We now understand that Mesoamerican urbanism was as much a story about resilience and adaptation to environmental change as it was about collapse. Here we call for a dialogue among Mesoamerican urban archaeologists, sustainability scientists, and researchers interested in urban adaptation to climate change through a synthetic perspective on the organizational diversity of urbanism. Such a dialogue, seeking insights into what facilitates and hinders urban adaptation to environmental change, can be animated by shifting the long-held emphasis on failure and collapse to a more empirically grounded account of resilience and the factors that fostered adaptation and sustainability.

Keywords: urbanism | adaptation | climate change | archaeology | Mesoamerica

Diane Z. Chase, José Lobo, Gary M. Feinman, David M. Carballo, Arlen F. Chase, Adrian S. Z. Chase, Scott R. Hutson, Alanna Ossa, Marcello Canuto, Travis W. Stanton, L. J. Gorenlo, Christopher A. Pool, Barbara Arroyo, Rodrigo Liendo Stuardo & Deborah L. Nichols

Salazar 2023

Lucy Salazar, Richard Burger, Jason Nesbitt & Lars Fehren-Schmitz et al., *Insights into the genetic histories and lifeways of*

Machu Picchu's occupants. Science Advances **9** (2023), eadg3377. DOI:10.1126/sciadv.adg3377.

SciAdv09-eadg3377-Supplement.pdf

Machu Picchu originally functioned as a palace within the estate of the Inca emperor Pachacuti between ≈1420 and 1532 CE. Before this study, little was known about the people who lived and died there, where they came from or how they were related to the inhabitants of the Inca capital of Cusco. We generated genome-wide data for 34 individuals buried at Machu Picchu who are believed to have been retainers or attendants assigned to serve the Inca royal family, as well as 34 individuals from Cusco for comparative purposes. When the ancient DNA results are contextualized using historical and archaeological data, we conclude that the retainer population at Machu Picchu was highly heterogeneous with individuals exhibiting genetic ancestries associated with groups from throughout the Inca Empire and Amazonia. The results suggest a diverse retainer community at Machu Picchu in which people of diferent genetic backgrounds lived, reproduced, and were interred together.

Lucy Salazar, Richard Burger, Janine Forst, Rodrigo Barquera, Jason Nesbitt, Jorge Calero, Eden Washburn, John Verano, Kimberly Zhu, Korey Sop, Kalina Kassadjikova, Bebel Ibarra Asencios, Roberta Davidson, Brenda Bradley, Johannes Krause & Lars Fehren-Schmitz

Anthropologie

Heggarty 2023

Paul Heggarty, Cormac Anderson, Benedict King, Denise Kühnert & Russell D. Gray et al., *Language trees with sampled ancestors support a hybrid model for the origin of Indo-European languages*. science **381** (2023), 414.

The origins of the Indo-European language family are hotly disputed. Bayesian phylogenetic analyses of core vocabulary have produced conflicting results, with some supporting a farming expansion out of Anatolia ≈9000 years before present (yr B.P.), while others support a spread with horse-based pastoralism out of the Pontic-Caspian Steppe ≈6000 yr B.P. Here we present an extensive database of Indo-European core vocabulary that eliminates past inconsistencies in cognate coding. Ancestry-enabled phylogenetic analysis of this dataset indicates that few ancient languages are direct ancestors of modern clades and produces a root age of ≈8120 yr B.P. for the family. Although this date is not consistent with the Steppe hypothesis, it does not rule out an initial homeland south of the Caucasus, with a subsequent branch northward onto the steppe and then across Europe. We reconcile this hybrid hypothesis with recently published ancient DNA evidence from the steppe and the northern Fertile Crescent.

Paul Heggarty, Cormac Anderson, Matthew Scarborough, Benedict King, Remco Bouckaert, Lechosław Jocz, Martin Joachim Kümmel, Thomas Jügel, Britta Irslinger, Roland Pooth, Henrik Liljegren, Richard F. Strand, Geoffrey Haig, Martin Macák, Ronald I. Kim, Erik Anonby, Tijmen Pronk, Oleg Belyaev, Tonya Kim Dewey-Findell, Matthew Boutilier, Cassandra Freiberg, Robert Tegethoff, Matilde Serangeli, Nikos Liosis, Krzysztof Stroński, Kim Schulte, Ganesh Kumar Gupta, Wolfgang Haak, Johannes Krause, Quentin D. Atkinson, Simon J. Greenhill, Denise Kühnert & Russell D. Gray

Kun 2023

Eucharist Kun, Tarjinder Singh & Vagheesh M. Narasimhan et al., *The genetic architecture and evolution of the human skeletal form*. science **381** (2023), 283.

The human skeletal form underlies bipedalism, but the genetic basis of skeletal proportions (SPs) is not well characterized. We applied deep-learning models to 31,221 x-rays from the UK Biobank to extract a comprehensive set of SPs, which were associated with 145 independent loci genome-wide. Structural equation modeling suggested that limb proportions exhibited strong genetic sharing but were independent of width and torso proportions. Polygenic score analysis identified specific associations between osteoarthritis and hip and knee SPs. In contrast to other traits, SP loci were enriched in human accelerated regions and in regulatory elements of genes that are differentially expressed between humans and great apes. Combined, our work identifies specific genetic variants that affect the skeletal form and ties a major evolutionary facet of human anatomical change to pathogenesis.

Eucharist Kun, Emily M. Javan, Olivia Smith, Faris Gulamali, Javier de la Fuente, Brianna I. Flynn, Kushal Vajrala, Zoe Trutner, Prakash Jayakumar, Elliot M. Tucker-Drob, Mashaal Sohail, Tarjinder Singh & Vagheesh M. Narasimhan

Bibel

Galil 2009

Gershon Galil, Mark Geller & Alan Millard (Hrsg.), *Homeland and Exile, Biblical and Ancient Near Eastern Studies in Honour of Bustenay Oded*. Vetus Testamentum Supplements 130 (Leiden 2009).

Janowski 2014

Bernd Janowski, *Die lebendige næpæš, Das Alte Testament und die Frage nach der "Seele" – Alfred Marx zum 70. Geburtstag*. In: Bernd Janowski (Hrsg.), *Der nahe und der ferne Gott*. Beitrage zur Theologie des Alten Testaments 5 (Neukirchen-Vluyn 2014), 73–116.

Zusammenfassend lässt sich sagen, dass næpæš in der Bedeutung "Seele" "über den Bereich emotionaler seelischer Regungen ... nicht hinaus(geht)" und vor allem nicht mit dem Topos der "Unsterblichkeit der Seele" in eins gesetzt werden darf. Dafür lässt sich alttestamentlich kein Beleg beibringen.

Biologie

Kalyuzhny 2023

Michael Kalyuzhny, Jeffrey K. Lake, S. Joseph Wright & Annette M. Ostling, *Pervasive within-species spatial repulsion among adult tropical trees*. science **381** (2023), 563–568.

s381-0563-Supplement.pdf

For species to coexist, performance must decline as the density of conspecific individuals increases. Although evidence for such conspecific negative density dependence (CNDD) exists in forests, the within-species spatial repulsion it should produce has rarely been demonstrated in adults. In this study, we show that in comparison to a null model of stochastic birth, death, and limited dispersal, the

adults of dozens of tropical forest tree species show strong spatial repulsion, some to surprising distances of approximately 100 meters. We used simulations to show that such strong repulsion can only occur if CNDD considerably exceeds heterospecific negative density dependence—an even stronger condition required for coexistence—and that large-scale repulsion can indeed result from small-scale CNDD. These results demonstrate substantial niche differences between species that may stabilize species diversity.

Grabung

Alarashi 2023

Hala Alarashi, Marion Benz, Lionel Gourichon, Beatrice Demarchi, Meaghan Mackie & Hans Georg K. Gebel et al., *Threads of memory, Reviving the ornament of a dead child at the Neolithic village of Ba'ja (Jordan).* PLoS ONE **18** (2023), e288075. DOI:10.1371/journal.pone.0288075.

In 2018, a well-constructed cist-type grave was discovered at Ba'ja, a Neolithic village (7,400–6,800 BCE) in Southern Jordan. Underneath multiple grave layers, an 8-year-old child was buried in a fetal position. Over 2,500 beads were found on the chest and neck, along with a double perforated stone pendant and a delicately engraved mother-of-pearl ring discovered among the concentration of beads. The first was found behind the neck, and the second on the chest. The meticulous documentation of the bead distribution indicated that the assemblage was a composite ornament that had gradually collapsed, partly due to the burying position. Our aim was to challenge time degradation and to reimagine the initial composition in order to best explore the significance of this symbolic category of material culture, not as mere group of beads, but as an ornamental creation with further aesthetic, artisanal and socioeconomic implications. The reconstruction results exceeded our expectations as it revealed an imposing multi-row necklace of complex structure and attractive design. Through multiple lines of evidence, we suggest that the necklace was created at Ba'ja, although significant parts of beads were made from exotic shells and stones, including fossil amber, an unprecedented material never attested before for this period. The retrieval of such an ornament from life and its attribution to a young dead child Highlights the significant social status of this individual. Beyond the symbolic functions related to identity, the necklace is believed to have played a key role in performing the inhumation rituals, understood as a public event gathering families, relatives, and people from other villages. In this sense, the necklace is not seen as belonging completely to the realm of death but rather to the world of the living, materializing a collective memory and shared moments of emotions and social cohesion.

Hala Alarashi, Marion Benz, Julia Gresky, Alice Burkhardt, Andrea Fischer, Lionel Gourichon, Melissa Gerlitzki, Martin Manfred, Jorune Sakalauskaite, Beatrice Demarchi, Meaghan Mackie, Matthew Collins, Carlos P. Odriozola, José Ángel Garrido Cordero, Miguel Ángel Avilés, Luisa Vigorelli, Alessandro Re & Hans Georg K. Gebel

Bader 2022

Gregor D. Bader, Brandi MacDonald, Elizabeth Velliky, Bob Forrester & Jörg Linstädter, *Lion Cavern im Süden Afrikas.* Archäologie in Deutschland **2022**, iii, 14–19.

Ocker begleitet den Menschen seit Anbeginn der Zeiten. Als in den spaten 1960er-Jahren die Lion Cavern an der Grenze zu Sudafrika entdeckt wurde, durfte

man vermuten: Dieser Fundort wird Entscheidendes zur Erforschung des Phanomens Ocker beitragen. Jungste Untersuchungen konnten mithilfe modernster Datierungsverfahren diesen Verdacht bestatigen.

Sukenik 1932

Eleazar Lipa Sukenik, *The Ancient Synagogue of Beth Alpha, An Account of the Excavations Conducted On Behalf of the Hebrew University, Jerusalem.* Gorgias Classic Archaeological Reprints 14 (Piscataway 2007).

Whitlam 2023

Jade Whitlam, Bill Finlayson, Amy Bogaard, Michael Charles & Cheryl A. Makarewicz, *Processing and storage of tree fruits, cereals and pulses at PPNA Sharara, southern Jordan.* Vegetation History and Archaeobotany (2023), preprint, 1–16. DOI:10.1007/s00334-023-00938-w.

Recent excavations at the Pre-Pottery Neolithic A site of Sharara (ca. 9250 cal bc) in southern Jordan have yielded a rich assemblage of charred macrobotanical remains. The bulk of this assemblage was recovered from a single structure at the settlement that was destroyed by fire and which appears to have functioned as an area for processing and possibly also for storing plant foods. Among the charred plant remains recovered from this space were nearly 700 fig fruits. Based on detailed archaeobotanical and contextual analyses, we infer that these were laid out to dry on the roof of the structure when it burnt down. We also demonstrate that plant exploitation and processing strategies at Sharara focused on a range of wild cereals, pulses and tree fruits (fig and pistachio), including several taxa that are not part of the canonical 'Neolithic founder crop package'. We discuss our findings in relation to broader understandings of pre-agricultural plant management in southwest Asia and within the southern Levant specifically.

Keywords: Southwest Asia | Early Holocene | Ficus carica (fig) | Lathyrus inconspicuus (inconspicuous pea) | Cereal processing

Klima

Björklund 2023

Jesper Björklund et al., *Fennoscandian tree-ring anatomy shows a warmer modern than medieval climate.* nature **620** (2023), 97–103.

n620-0097-Supplement1.xlsx, n620-0097-Supplement2.xlsx

Earth system models and various climate proxy sources indicate global warming is unprecedented during at least the Common Era1. However, tree-ring proxies often estimate temperatures during the Medieval Climate Anomaly (950–1250 ce) that are similar to, or exceed, those recorded for the past century2,3, in contrast to simulation experiments at regional scales4. This not only calls into question the reliability of models and proxies but also contributes to uncertainty in future climate projections5. Here we show that the current climate of the Fennoscandian Peninsula is substantially warmer than that of the medieval period. This Highlights the dominant role of anthropogenic forcing in climate warming even at the regional scale, thereby reconciling inconsistencies between reconstructions and model simulations. We used an annually resolved 1,170-year-long tree-ring record that relies exclusively on tracheid anatomical measurements from Pinus sylvestris

trees, providing high-idelity measurements of instrumental temperature variability during the warm season. We therefore call for the construction of more such millennia-long records to further improve our understanding and reduce uncertainties around historical and future climate change at inter-regional and eventually global scales.

Jesper Björklund, Kristina Seftigen, Markus Stoffel, Marina V. Fonti, Sven Kottlow, David C. Frank, Jan Esper, Patrick Fonti, Hugues Goosse, Håkan Grudd, Björn E. Gunnarson, Daniel Nievergelt, Elena Pellizzari, Marco Carrer & Georg von Arx

Geng 2023

Tao Geng, Fan Jia, Wenju Cai, Lixin Wu, Bolan Gan, Zhao Jing, Shujun Li & Michael J. McPhaden, *Increased occurrences of consecutive La Niña events under global warming*. nature **619** (2023), 774–781.

n619-0774-Supplement.pdf

Most El Niño events occur sporadically and peak in a single winter1–3, whereas La Niña tends to develop after an El Niño and last for two years or longer4–7. Relative to single-year La Niña, consecutive La Niña features meridionally broader easterly winds and hence a slower heat recharge of the equatorial Paciic6,7, enabling the cold anomalies to persist, exerting prolonged impacts on global climate, ecosystems and agriculture8–13. Future changes to multi-year-long La Niña events remain unknown. Here, using climate models under future greenhouse-gas forcings14, we ind an increased frequency of consecutive La Niña ranging from 19 ± 11 % in a low-emission scenario to 33 ± 13 % in a high-emission scenario, supported by an inter-model consensus stronger in higher-emission scenarios. Under greenhouse warming, a mean-state warming maximum in the subtropical northeastern Paciic enhances the regional thermodynamic response to perturbations, generating anomalous easterlies that are further northward than in the twentieth century in response to El Niño warm anomalies. The sensitivity of the northward-broadened anomaly pattern is further increased by a warming maximum in the equatorial eastern Paciic. The slower heat recharge associated with the northward-broadened easterly anomalies facilitates the cold anomalies of the irst-year La Niña to persist into a second-year La Niña. Thus, climate extremes as seen during historical consecutive La Niña episodes probably occur more frequently in the twenty-irst century.

Kang 2023

Sarah M. Kang, Yue Yu, Clara Deser, Xiyue Zhang, In-Sik Kang, Sun-Seon Lee, Keith B. Rodgers & Paulo Ceppi, *Global impacts of recent Southern Ocean cooling*. PNAS **120** (2023), e2300881120.

pnas120-e2300881120-Supplement.pdf

Since the beginning of the satellite era, Southern Ocean sea surface temperatures (SSTs) have cooled, despite global warming. While observed Southern Ocean cooling has previously been reported to have minimal impact on the tropical Pacific, the effciency of this teleconnection has recently shown to be mediated by subtropical cloud feedbacks that are highly model- dependent. Here, we conduct a coupled model intercomparison of paired ensemble simulations under historical radiative forcing: one with freely evolving SSTs and the other with Southern Ocean SST anomalies constrained to follow observations. We reveal a global impact of observed Southern Ocean cooling in the model with stronger (and more realistic) cloud feedbacks, including Antarctic sea–ice expansion, southeastern tropical Pacific cooling, northward- shifted Hadley circulation, Aleutian low weakening,

and North Pacific warming. Our results therefore suggest that observed Southern Ocean SST decrease might have contributed to cooler conditions in the eastern tropical Pacific in recent decades.

Keywords: Southern Ocean cooling | global teleconnection | tropical Paciic cooling | subtropical cloud feedback

Significance: In the recent past, the Southern Ocean has undergone a pronounced surface cooling; at the same time, the tropical Paciic has been cooling particularly in the eastern basin. However, these sea surface temperature (SST) trends are notoriously not captured by coupled global climate models under historical forcing. It is an open question if the missing Southern Ocean cooling signal partly explains the model-observation discrepancy in the recent tropical Paciic SST trends. A coupled model intercomparison study conducted here reveals a global teleconnection pattern driven by observed Southern Ocean SST decrease in the model with realistically strong cloud feedbacks. Our results thus suggest that Southern Ocean SST decrease is partly responsible for driving the southeastern tropical Paciic cooling in recent decades.

Wu 2023

Xian Wu, *Frequency of long La Niña events expected to rise*. nature **619** (2023), 702–703.

La Niña events involve a cooling of the tropical Pacific Ocean, and can last for two years or more, prolonging their impact. Climate simulations reveal that global warming could cause multi-year La Niña events to become more frequent.

Kupfer

Berger 2023

Daniel Berger, Kai Kaniuth, Gerhard Brügmann & Ernst Pernicka, *Why Central Asia's Mushiston is not a source for the Late Bronze Age tin ingots from the Uluburun shipwreck*. Frontiers in Earth Science **11** (2023), 1211478, 1–16.

Tin was a crucial commodity in prehistory to produce bronze, and knowledge ofthe origins of this metal is important for understanding cultural relations and thecomplexity and extent of trade. However, many aspects of the provenance of tinare still not resolved. A recent study in Science Advances 8(48) examined thehistorically signicant tin ingots from the Uluburun shipwreck, which are key to theeconomy and long-distance trade of tin in the Late Bronze Age Mediterranean andbeyond. Isotopic and chemical data of the objects was collected, from which a tinorigin from Central Asia, particularly Mushiston in Tajikistan, and Anatolia wasreconstructed. The study thereby proposed a solution to the long-standing riddleof tin provenance via scientic reasoning and comparative data. While this avenueof investigation is intriguing, this article maintains that the authors¡[a] arguments donot support their far-reaching conclusions. Instead, it emphasises the similaritieswith Late and Middle Bronze Age tin ingots from Israel and Britain, and alternativelysuggests a common origin of part of the Uluburun cargo with these items. SouthwestEngland is considered a very likely source region, but other tin ingots of theUluburun wreck could also originate from Afghanistan and perhapssomewhere else.

Keywords: tin ingots | Uluburun shipwreck | Late Bronze Age | tin isotopes | lead isotopes | tin provenance

Methoden

O'Grady 2023

Cathleen O'Grady, *Honesty papers retracted for data 'discrepancies'*. science **381** (2023), 255–256.

After retractions, colleagues expand scrutiny of work by behavioral scientist Francesca Gino.

Trying to build on a faked result consumes time, energy, and resources, and can leave researchers struggling to publish their null findings. "It's a huge cost," [Syon Bhanot] says.

"My intuition is that you cannot stop fraud by catching it," Simonsohn says. "All efforts should go on prevention. Catching it is so erratic."

Neolithikum

Callaway 2023

Ewen Callaway, *DNA Maps Seven Generations of a Prehistoric Family*. nature **620** (2023), 19.

Unprecedented genealogical tree reveals details of Neolithic social relationships.

Politik

Deiana 2023

Claudio Deiana, Vikram Maheshri & Giovanni Mastrobuoni, *Migrants at Sea, Unintended Consequences of Search and Rescue Operations*. American Economic Journal (2023), preprint, 1–55. DOI:10.2139/ssrn.4283858.

The Central Mediterranean Sea is the most dangerous crossing in the world for irregular migrants. Every day, over half a million potential migrants wait in Libya to travel to Italy with the aid of human smugglers. In response to high profile shipwrecks and mounting deaths, European nations intensified search and rescue operations in 2013. We develop a model of irregular migration in order to identify the effects of these operations on activity along this smuggling route. Leveraging plausibly exogenous variation from rapidly varying weather and tidal conditions, we find that smugglers responded to these operations by sending out boats in worse weather conditions and, when inflatable rafts became readily available, by shifting from seaworthy wooden boats to flimsy inflatable rafts. In doing so, these operations induced more crossings and had the ultimate effect of offsetting many of the intended safety benefits of search and rescue operations, which were captured at least in part by smugglers. A more successful policy should target the demand side by expanding legal alternatives to irregular migration and improving domestic conditions in migrants' home countries.

Keywords: Central Mediterranean sea crossings | international | undocumented | irregular migration | search and rescue operations | rubber boats | deaths

Rodríguez Sánchez 2023

Alejandra Rodríguez Sánchez, Julian Wucherpfennig, Ramona Rischke & Stefano Maria Iacus, *Search-and-rescue in the Central Mediterranean Route does not induce migration, Predictive modeling to answer causal*

queries in migration research. Scientific Reports **13** (2023), 11014. DOI:10.1038/s41598-023-38119-4.

SciRep13-11014-Supplement.pdf

State- and private-led search-and-rescue are hypothesized to foster irregular migration (and thereby migrant fatalities) by altering the decision calculus associated with the journey. We here investigate this 'pull factor' claim by focusing on the Central Mediterranean route, the most frequented and deadly irregular migration route towards Europe during the past decade. Based on three intervention periods—(1) state-led Mare Nostrum, (2) private-led search-and-rescue, and (3) coordinated pushbacks by the Libyan Coast Guard—which correspond to substantial changes in laws, policies, and practices of search-and-rescue in the Mediterranean, we are able to test the 'pull factor' claim by employing an innovative machine learning method in combination with causal inference. We employ a Bayesian structural time-series model to estimate the effects of these three intervention periods on the migration flow as measured by crossing attempts (i.e., time-series aggregate counts of arrivals, pushbacks, and deaths), adjusting for various known drivers of irregular migration. We combine multiple sources of traditional and non-traditional data to build a synthetic, predicted counterfactual flow. Results show that our predictive modeling approach accurately captures the behavior of the target time-series during the various pre-intervention periods of interest. A comparison of the observed and predicted counterfactual time-series in the post-intervention periods suggest that pushback policies did affect the migration flow, but that the search-and-rescue periods did not yield a discernible difference between the observed and the predicted counterfactual number of crossing attempts. Hence we do not find support for search-and-rescue as a driver of irregular migration. In general, this modeling approach lends itself to forecasting migration flows with the goal of answering causal queries in migration research.

Story or Book

Castelvecchi 2023

Davide Castelvecchi, *Why Oppenheimer has important lessons for scientists today.* nature **620** (2023), 16–17.

Director Christopher Nolan's ambitious, three-hour film Oppenheimer, about the US theoretical physicist who led the development of the world's first nuclear weapons, opened in UK and US cinemas on 21 July to widespread acclaim. Nature spoke to Richard Rhodes, a foremost historian on the Manhattan Project, the government programme that produced the first nuclear weapons, and author of the Pulitzer-prizewinning 1986 book The Making of the Atomic Bomb.