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References

Afrika

Wotzka 2019

Hans-Peter Wotzka, *Experimenteller Anbau von Perlhirse (Pennisetum glaucum) im äquatorialen Regenwald des Inneren Kongobeckens, August–November 2016*. In: Jutta Meurers-Balke, Tanja Zerl & Renate Gerlach (Hrsg.), *Auf dem Holzweg . . . , Eine Würdigung für Ursula Tegtmeier*. Archäologische Berichte 30 (Kerpen-Loogh 2019), 269–284.

An agricultural experiment was conducted near the equator in Democratic Republic of the Congo to test the widely held assumption that successful pearl millet cultivation should be impossible in Tropical Rainforest climate lacking incisive rainfall seasonality. Two markedly different varieties of pearl millet, one presently grown by peasants in Ghana, the other bought from an internet seed market, were sown out, and taken to flowering, maturity, grain fill, and a formidable harvest of germinable seeds right across the most humid months of the year, with minimal labour input and without difficulty. The seasonality hypothesis was therefore disproved, an outcome consistent with a number of documented historical and present-day African cultivation practices under Tropical Rainforest and Tropical Monsoon climate conditions. It follows that pearl millet has a much wider habitat tolerance than is reflected in majority patterns of its modern use, primarily in arid or semi-arid environments. Implications for palaeoenvironmental reconstruction as well as Central African Iron Age agriculture and human nutrition are discussed. In accordance with new finds of securely dated Late Iron Age charred pearl millet grains there is now scope for the hypothesis that the species was both cultivable and cultivated in the Interior Congo Basin not only during a short-term Early Iron Age climate episode of more seasonal rainfall variability but, possibly without interruption, for some two millennia until its abandonment in late pre-colonial times and subsequent complete oblivion.

Keywords: Experimental archaeology | Central Africa | tropical rainforest | Iron Age | agriculture | climate history | vegetation history | human palaeonutrition

Nahe dem Äquator in der Demokratischen Republik Kongo wurde ein Anbauexperiment unternommen, um die verbreitete These zu überprüfen, dass die Perlhirse in Tropischem Regenwaldklima wegen dort mangelnder Niederschlagssaisonalität nicht gedeihen könne. Zwei sehr verschiedene Perlhirse-Sorten, eine von Kleinbauern Ghanas genutzte sowie eine im Internethandel erworbene Varietät, wurden ausgesät und bei geringem Arbeitsaufwand problemlos zur Blüte, Kornfüllung und Reife gebracht. Der gesamte Versuch, einschließlich einer beachtlichen Ernte keimfähiger Früchte, erstreckte sich über die regenreichsten Wochen des äquatorialen Jahres. Die Saisonalitätshypothese wurde somit widerlegt. Das Versuchsergebnis steht im Einklang mit verschiedenen Dokumentationen zu historischen und heutigen Anbaupraktiken unter Tropischem Regenwald- und Tropischem Monsunklima. Die Perlhirse hat demnach einen deutlich weiteren ökologischen Toleranzbereich als die Hauptmuster ihrer gegenwärtigen, vor allem auf aride und semiaride Habitate beschränkten Nutzung erkennen lassen. Implikationen für die Paläoumweltrekonstruktion sowie Landwirtschaft und menschliche Ernährung während der zentralafrikanischen Eisenzeit werden erörtert. Unter Einbeziehung

neuer, zuverlässig in die späte Eisenzeit datierter Funde verkohlter Körner liegt nun die Hypothese nahe, dass der Perlhirseanbau nicht, wie bislang weithin angenommen, nur während einer kurzzeitigen früheisenzeitlichen Klimaschwankung hin zu ausgeprägter Niederschlagssaisonalität erfolgreich in der Regenwaldzone des Inneren Kongobeckens praktiziert werden konnte, sondern dort möglicherweise kontinuierlich über rund zwei Jahrtausende hinweg bedeutend blieb, bis man ihn in spätvorkolonialer Zeit aufgab und komplett vergaß.

Keywords: Experimentelle Archäologie | Zentralafrika | Tropischer Regenwald | Eisenzeit | Landwirtschaft | Klimageschichte | Vegetationsgeschichte | Ernährungsgeschichte

Aktuell

Ather 2019

S. Hussain Ather, *Livestreaming science*. science **365** (2019), 294.

I arrive at the lab where I work as a postbaccalaureate researcher and, like many scientists starting their days, I open my laptop, check my email, and plan my agenda. But then, when I'm ready to get to work, I turn on my laptop camera. I perform computational research studying the neuroscience of zebrafish—and I use an online streaming service to share it with the world in real time. I had started to use the platform, called Twitch, a few years ago to watch people play video games. But until last year, it had never occurred to me that I could use it for research, too.

Barkley 2019

Anne E. Barkley, Joseph M. Prospero & Cassandra J. Gaston et al., *African biomass burning is a substantial source of phosphorus deposition to the Amazon, Tropical Atlantic Ocean, and Southern Ocean*. PNAS **116** (2019), 16216–16221.

pnas116-16216-Supplement.pdf

Anne E. Barkley, Joseph M. Prospero, Natalie Mahowald, Douglas S. Hamilton, Kimberly J. Popendorf, Amanda M. Oehlert, Ali Pourmand, Alexandre Gatineau, Kathy Panechou-Pulcherie, Patricia Blackwelder & Cassandra J. Gaston

The deposition of phosphorus (P) from African dust is believed to play an important role in bolstering primary productivity in the Amazon Basin and Tropical Atlantic Ocean (TAO), leading to sequestration of carbon dioxide. However, there are few measurements of African dust in South America that can robustly test this hypothesis and even fewer measurements of soluble P, which is readily available for stimulating primary production in the ocean. To test this hypothesis, we measured total and soluble P in long-range transported aerosols collected in Cayenne, French Guiana, a TAO coastal site located at the northeastern edge of the Amazon. Our measurements confirm that in boreal spring when African dust transport is greatest, dust supplies the majority of P, of which 5 % is soluble. In boreal fall, when dust transport is at an annual minimum, we measured unexpectedly high concentrations of soluble P, which we show is associated with the transport of biomass burning (BB) from southern Africa. Integrating our results into a chemical transport model, we show that African BB supplies up to half of the P deposited annually to the Amazon from transported African aerosol. This observational study links P-rich BB aerosols from Africa to enhanced P deposition in the Amazon. Contrary to current thought, we also show that African BB is a more important source of soluble P than dust to the TAO and oceans in the Southern Hemisphere and may be more important for marine productivity, particularly in boreal summer and fall.

Keywords: dust | biomass burning | phosphorus | Atlantic Ocean | Amazon Basin

Significance: Phosphorus (P) deposition from aerosols can stimulate primary productivity in P-depleted marine and terrestrial ecosystems. We tested the hypothesis that African dust fertilizes the Amazon Basin and Tropical Atlantic Ocean (TAO) by measuring windborne dust, P, and soluble P in samples collected at a coastal site on the northeastern edge of the Amazon. Using satellite data andmodels,we identified a previously underestimated source of soluble P: biomass burning aerosol transported from southern Africa that can supply P to the Amazon, TAO, and Southern Ocean. Because P associated with biomass burning emissions is more soluble than P in transported dust, biomass burning aerosols immediately impact P cycling and primary production, especially in marine ecosystems like the TAO.

Dangendorf 2019

Sönke Dangendorf, Carling Hay, Francisco M. Calafat, Marta Marcos, Christopher G. Piecuch, Kevin Berk & Jürgen Jensen, *Persistent acceleration in global sea-level rise since the 1960s*. nature climate change (2019), preprint, 1–8. DOI:10.1038/s41558-019-0531-8.

NatClimCh2019.08-Dangendorf-Supplement1.pdf, NatClimCh2019.08-Dangendorf-Supplement2.txt

Previous studies reconstructed twentieth-century global mean sea level (GMSL) from sparse tide-gauge records to understand whether the recent high rates obtained from satellite altimetry are part of a longer-term acceleration. However, these analyses used techniques that can only accurately capture either the trend or the variability in GMSL, but not both. Here we present an improved hybrid sea-level reconstruction during 1900–2015 that combines previous techniques at time scales where they perform best. We find a persistent acceleration in GMSL since the 1960s and demonstrate that this is largely (≈76 %) associated with sea-level changes in the Indo-Pacific and South Atlantic. We show that the initiation of the acceleration in the 1960s is tightly linked to an intensification and a basin-scale equatorward shift of Southern Hemispheric westerlies, leading to increased ocean heat uptake, and hence greater rates of GMSL rise, through changes in the circulation of the Southern Ocean.

Hergarten 2019

Stefan Hergarten, Gerwin Wulf & Thomas Kenkmann, *Comment on "Earth and Moon impact flux increased at the end of the Paleozoic"*. science **365** (2019), 230.

Although our simulation only predicts a statistical distribution and not absolute numbers of craters, it is visible from the shapes of the curves alone that constant crater production in combination with constant (over time, but spatially variable) erosion can reproduce the observed agefrequency distribution. We conclude that the curvature in the age-frequency distribution can be explained by degradation of the crater inventory by erosion and does not necessarily require an increase in impact flux.

We do not claim that the exponential model is better than the power law suggested by Mazrouei et al., but given the uncertainties in the data, we are not convinced that the calibration dataset consisting of only nine craters can refute the exponential model.

Manzar 2019

Gohar Manzar, *Seeing my science clearly*. science **365** (2019), 514.

"You are about to witness a thesis implode," I declared to my summer student. As I ran the critical sample through the flow cytometer, my trembling hand betrayed my nervousness that the result would confirm my worst fears: I had been fooling myself. Three years prior, I had been a bright-eyed first-year Ph.D. student. "This is guaranteed to give you data," my mentor had said of the project he wanted me to take over. Preliminary data suggested that a poorly understood protein might trigger immune cells to kill cancer cells. It was an exciting possibility, but I was concerned. The previous rotation student had been unable to replicate the finding and wasn't convinced the protein did anything at all. But I couldn't turn down a project that sounded so promising.

Mazrouei 2019

Sara Mazrouei, Rebecca R. Ghent, William F. Bottke, Alex H. Parker & Thomas M. Gernon, *"Earth and Moon impact flux increased at the end of the Paleozoic"*, *Response to Comment*. science **365** (2019), 230.

del Moral 2019

Lerys del Moral, *Take the leap*. science **365** (2019), 402.

I had never jumped out of a plane before. I was not a thrill seeker, and I disliked heights. But I had decided that I would learn to skydive. I volunteered to be the first in the group to jump. My instructor nodded reassuringly, and suddenly I was outside the plane, in shock, kicking and fumbling. But within seconds I found myself floating in midair, smiling so wide that by the time I landed, my face felt stuck in that position. I felt such elation I decided to jump again. Something inside me had shifted. Unexpected new possibilities seemed open to me. It's a feeling I have come to embrace in all aspects of my life, including my career.

Sokol 2019

Joshua Sokol, *New tactics clash on speed of expanding universe*. science **365** (2019), 306–307.

Hubble constant debate points to "crisis" in physics.

One day after the paper appeared, Freedman presented the result at the meeting: a surprisingly low H0 of about 70. "It definitely felt like an album drop," says Scolnic, a SH0ES team member. The value is smack in the middle between the two sides—and slightly favors the cosmologists. "It has caused at least some people to pause for a second," Freedman says.

Yokochi 2019

Reika Yokochi, Roi Ram & Roland Purtschert et al., *Radiokrypton unveils dual moisture sources of a deep desert aquifer*. PNAS **116** (2019), 16222–16227.

pnas116-16222-Supplement.pdf

Reika Yokochi, Roi Ram, Jake C. Zappala, Wei Jiang, Eilon Adar, Ryan Bernier, Avihu Burg, Uri Dayan, Zheng-Tian Lu, Peter Mueller, Roland Purtschert & Yoseph Yechieli

In arid regions, groundwater is a vital resource that can also provide a long-term record of the regional water cycle. However, the use of groundwater as a paleoclimate proxy has been limited by the complex hydrology and the lack of appropriate chronometers to determine the recharge time without complication. Applying 81Kr, a long-lived radioisotope tracer, we investigate the paleohydroclimate and subsurface water storage properties of the Nubian Sandstone Aquifer in the Negev Desert, Israel. Based on the spatial distributions of stable isotopes and the abundance of

81Kr, we resolve subsurface mixing and identify two distinct moisture sources of the recharge: one recent (<38 ky ago) from the Mediterranean and the other 361 . 30 ky ago from the tropical Atlantic, both of which occurred under conditions of low orbital eccentricity comparable to that of the present. The recent recharge provided by the moisture from Mediterranean cyclones can be attributed to the southward shift of the storm track during the Last Glacial Maximum, and the earlier recharge can be attributed to moisture from the Atlantic delivered as tropical plumes under a climate colder than the present. Furthermore, the residence time of the latter reveals that tectonically active terrain can store groundwater for an unexpectedly long period, likely due to strongly attenuated groundwater flow across the fault zones. With this tracer, groundwater can now serve as a direct record of paleoprecipitation over land and of subsurface water storage from the mid-Pleistocene and onward.

Keywords: groundwater dating | radiokrypton isotopes | moisture sources | paleohydroclimate | subsurface water storage

Significance: Paleoprecipitation records and subsurface water storage properties are essential data ingredients for accurate hydroclimate and water balance projections. Although both types of data could be extracted from groundwater, their application over long timescales had been limited by the lack of appropriate chronometers. We used a long-lived radiokrypton isotope and identified two distinct moisture source contributions to a deep desert aquifer from low eccentricity periods, one recent and the other 360 ky ago. The groundwater recharge periods show the sensitivity of the moisture transport processes to orbital forcing, whereas the long storage reflects subsurface flow attenuation exerted by faults. Krypton-81 enables groundwater to serve as a direct record of paleoprecipitation over land and of subsurface water storage for the past 1,300 ky.

Archäologie

Meurers-Balke 2019

Jutta Meurers-Balke, Tanja Zerl & Renate Gerlach (Hrsg.), *Auf dem Holzweg . . . , Eine Würdigung für Ursula Tegtmeier*. Archäologische Berichte 30 (Kerpen-Loogh 2019).

Bibel

von Dassow 2019

Eva von Dassow, *Song of Liberation, Freedom in the Late Bronze Age*. Biblical Archaeology Review **45** (2019), iv, 45–51.

Subjection could be legitimate, whether it resulted from conquest, the provision of credit, or the exercise of lawful authority. It should have a limit, however, so that the creditor could not keep indebted persons forever in servitude, and the ruling authority could not exact unlimited service or impose unlimited dominion. The term of bondage should last no longer than the period commensurate with the sum of the debt or the price of the subject, after which the gods would require the party in power to pay—for the subjects were originally theirs. But they were not to exit bondage only to enter servitude with a god or a temple. They were to be restored to freedom. The gods require justice among men, and permanent subjection of free men is unjust. This is the theme of the Song of Liberation.

This is also a theme of biblical prophecy. The eighth-century prophet Amos informs the Israelites that their God takes no pleasure in their oferings; he does

not need them to feed him—contra Zazalla's ofer to provide for Teshub—and desires instead that they do justice. Jeremiah, prophesying in Jerusalem more than a century later, communicates the same message on a speciic occasion of injustice: Zedekiah, king of Judah, had accomplished what Megi did not and had obtained the assent of the ruling class to efect debt amnesty (deror, in Hebrew). After irst releasing enslaved Judaeans, however, they forced them back into servitude. Their peridy brought upon them Yahweh's wrath, so that he decided to destroy Judah by the hand of the Babylonians and make it desolate of habitation, just as Teshub did to Ebla.

The same theme appears in the poetry of Solon, Jeremiah's near-contemporary in Athens. Solon warned that it was not Zeus who would destroy Athens but its own citizens, who by their rapacity and injustice would bring divine retribution upon themselves and cause their city to fall into slavery. From this calamity Solon saved his city by proclaiming seisachtheia, releasing her citizens from the servitude into which they had been sold for debt and releasing the earth herself, groaning under the weight of foreclosed mortgages, from her bondage.

Panitz-Cohen 2019

Nava Panitz-Cohen & Naama Yahalom-Mack, *The Wise Woman of Abel Beth Maacah*. Biblical Archaeology Review **45** (2019), iv, 26–33, 88.

Adroit at diplomacy and knowledgeable of accepted wisdom, wise women apparently functioned like authoritative military leaders or prophets within their communities—when necessary. The anonymity of the wise women in the Bible seems to coni rm that when this term was used, it evoked a culturally accepted role in the community that removed the need for further description.

Interestingly, wise women (sometimes termed "old women") are also mentioned in Late Bronze Age (1550–1200 B.C.E.) Hittite texts as ritual experts who operated based on folk knowledge, practicing a range of divinatory and magical tasks, which included fertility rites, healing, and protection against plague or other misfortunes. Although our Wise Woman herself was not necessarily a divinator or spiritual leader, tradition places her in a town—and a nearby region, if we add Dan, as the Septuagint and the archaeological evidence do—characterized as having a long reputation for wisdom and faithfulness to the tradition of Israel. This long-standing tradition of "inquiry" at Abel Beth Maacah, perhaps a center of an oracle, might have been one of the sources of her authority, as was her wisdom itself.

Wassén 2019

Cecilia Wassén, *Stepped Pools and Stone Vessels, Rethinking Jewish Purity Practices in Palestine*. Biblical Archaeology Review **45** (2019), iv, 52–58.

Nevertheless, the literary support for the use of stone vessels in connection to purity is surprisingly meager. The purity status of stone vessels is not mentioned in biblical laws, but rabbinic literature assumes that stone was insusceptible to deilement together with vessels made of dung and unired earth (e.g., Mishnah ʻOhalot 5.5; Mishnah Parah 3.2; 5.5). It is noteworthy that the connection between stone cups and hand-washing is not evident in early rabbinic literature. Mishnah Yadayim 1.2 implies that any vessel may be used to pour water onto the hands. In sum, early textual evidence supporting the theory that stone vessels would have been unsusceptible to ritual impurity is absent. We are then left with the vague association between puriication and stone vessels in John 2:6, which was written

at the end of the irst century C.E. A clear opinion that stone vessels would be insusceptible to impurity doesn't appear until early rabbinic traditions.

Stepped pools are built not only in Judea and Galilee, but also in Samaria. Traditionally, people used to wash themselves in the courtyards of their houses aided by a basin, pouring water on themselves while standing or squatting in a basin, or bathed in springs or rivers. With the inluence of Greek and Roman culture, however, the general trend turned toward bathing as a means of bodily washing. Accordingly, those who could aford it built bathtubs, stepped pools, sitting tubs, or large pools.6 Eventually, a standard for constructing pools evolved that was associated with ritual puriication as promoted by the rabbis. This likely took place in the second century C.E., but even then there were diverse uses of stepped pools. Hence, in the late Second Temple period (516 B.C.E.–70 C.E.), Jews purified themselves in different ways, including going down into a stepped pool. In other words, the presence of stepped pools demonstrate that people washed themselves in new ways; it does not reveal much about whether people also cared about purity.

The spread of stone vessels and mikva'ot is commonly presented as key evidence that Jews were greatly concerned about purity everywhere. In contrast, I suggest that these do not reveal much about purity practices.

Biologie

Stembridge 2019

Mike Stembridge, Rob Shave & Philip N. Ainslie et al., *The overlooked significance of plasma volume for successful adaptation to high altitude in Sherpa and Andean natives*. PNAS **116** (2019), 16177–16179.

Mike Stembridge, Alexandra M. Williams, Christopher Gasho, Tony G. Dawkins, Aimee Drane, Francisco C. Villafuerte, Benjamin D. Levine, Rob Shave & Philip N. Ainslie

In contrast to Andean natives, high-altitude Tibetans present with a lower hemoglobin concentration that correlates with reproductive success and exercise capacity. Decades of physiological and genomic research have assumed that the lower hemoglobin concentration in Himalayan natives results from a blunted erythropoietic response to hypoxia (i.e., no increase in total hemoglobin mass). In contrast, herein we test the hypothesis that the lower hemoglobin concentration is the result of greater plasma volume, rather than an absence of increased hemoglobin production. We assessed hemoglobin mass, plasma volume and blood volume in lowlanders at sea level, lowlanders acclimatized to high altitude, Himalayan Sherpa, and Andean Quechua, and explored the functional relevance of volumetric hematological measures to exercise capacity. Hemoglobin mass was highest in Andeans, but also was elevated in Sherpa compared with lowlanders. Sherpa demonstrated a larger plasma volume than Andeans, resulting in a comparable total blood volume at a lower hemoglobin concentration. Hemoglobin mass was positively related to exercise capacity in lowlanders at sea level and in Sherpa at high altitude, but not in Andean natives. Collectively, our findings demonstrate a unique adaptation in Sherpa that reorientates attention away from hemoglobin concentration and toward a paradigm where hemoglobin mass and plasma volume may represent phenotypes with adaptive significance at high altitude.

Keywords: hypoxia | altitude | hemoglobin | Tibetans | Andeans

Datierung

Frank 2019

Thomas Frank & Norbert Hanel, *Die Frankenfeldzüge der Kaiser Konstantin I. und Valentinian I. – Überlegungen zur spätrömischen Rheinbrücke zwischen der Colonia Agrippina und dem rechtsrheinischen castrum Divitensium anhand dendrochronologischer Daten.* In: Jutta Meurers-Balke, Tanja Zerl & Renate Gerlach (Hrsg.), *Auf dem Holzweg ..., Eine Würdigung für Ursula Tegtmeier.* Archäologische Berichte 30 (Kerpen-Loogh 2019), 125–164.

The discussion about the construction period of the late roman bridge over the River Rhine in Cologne lasts since the 1960s. The concepts of archaeologists and ancient historians seemed to be incommensurate with those of the dendrochronologists. With this essay in honour of Ursula Tegtmeier the authors, an archaeologist of the Roman provinces and a dendroarchaeologist, try to draw a historical coherent picture based upon a reevaluation of the facts from both disciplines with special regard to military strategical events during the 4th century AD. This is to solve the apparent discrepancies persisting to date.

Keywords: Archaeology of the Roman provinces | dendroarchaeology | Late Antiquity | Roman Cologne | Divitia | military | bridges

Die Diskussion um die Bauzeit der spätrömischen Rheinbrücke in Köln erstreckt sich von den 1960er Jahren bis heute. Dabei standen die Positionen der Archäologen und Althistoriker scheinbar unvereinbar denen der Dendrochronologen gegenüber. In diesem Beitrag zu Ehren von Ursula Tegtmeier versuchen die Autoren, ein provinzialrömischer Archäologe und ein Dendroarchäologe, mit einer Neubewertung der Fakten beider Disziplinen ein historisch stimmiges Bild vor dem Hintergrund der militärstrategischen Ereignisse des 4. Jahrhunderts n. Chr. zu entwickeln, das die bisher bestehenden scheinbaren Widersprüche auflöst.

Keywords: Provinzialrömische Archäologie | Dendroarchäologie | Spätantike | römisches Köln | Divitia | Militär | Brücken

Energie

Jacome 2019

Veronica Jacome, Noah Klugman, Catherine Wolfram, Belinda Grunfeld, Duncan Callaway & Isha Ray, *Power quality and modern energy for all.* PNAS **116** (2019), 16308–16313.

pnas116-16308-Supplement.pdf

"Modern energy for all," an internationally supported initiative to connect populations to electricity services, is expected to help reduce poverty-induced vulnerabilities. It has become a primary strategy for meeting sustainable development goals, especially in sub-Saharan Africa. However, when electricity is supplied by a capacity-constrained grid to a resource-constrained population, the service quality can vary both spatially and temporally. This research explores the quality of electricity services based on a case study of Unguja, Tanzania. Using 1) open-ended interviews, 2) detailed electricity-systems monitoring, and 3) household surveys, we show how voltage quality varies significantly, even within highly localized settings. Fluctuations result in dim lights at best and power outages and broken appliances at worst, denying many Unguja residents the expected benefits of access to modern energy. By combining an extensive understanding of the physical system together

with interviews and surveys, this work presents a unique mapping of voltage quality in a system that is financially and physically constrained and Highlights the consequences of poor-quality service for poor users.

Keywords: power quality | electrification | SDG 7 | development | Zanzibar

Significance: This research provides a detailed mapping of voltage quality in a sub-Saharan African (SSA) community and connects power systems data to household surveys and interviews for a comprehensive understanding of life under an unreliable grid. Reliability within the context of "modern energy for all" in SSA has traditionally focused on power outages rather than voltage quality and on businesses rather than households. Our research expands on energy access scholarship and reliability concerns in SSA by offering an illustrative case study of access in Unguja, Tanzania. As electricity access expands in financially constrained communities, creating capacity-constrained connections, our Unguja study offers a crucial look at what that access means for SSA communities.

Grabung

Akkermans 2014

Peter M. M. G. Akkermans, *Late Neolithic Tell Sabi Abyad in Perspective*. In: Peter M. M. G. Akkermans, Merel L. Brüning, Harmen O, Huigens & Olivier P. Nieuwenhuyse (Hrsg.), *Excavations at late Neolithic Tell Sabi Abyad, Syria, The 1994–1999 field seasons*. Papers on archaeology of the Leiden Museum of Antiquities 11 (Turnhout 2014), 247–256.

Klima

Asouti 2017

Eleni Asouti, *Human Palaeoecology in Southwest Asia During the Early Pre-Pottery Neolithic (c.9̇700–8500 cal BC), The Plant Story*. In: Marion Benz, Hans Georg K. Gebel & Trevor Watkins (Hrsg.), *Neolithic Corporate Identities*. SENEPSE 20 (Berlin 2017), 21–53.

This chapter tackles one of the most enduring questions posed by prehistoric archaeology worldwide attracting the interest of prehistorians, anthropologists, economists, geographers and natural scientists alike: how and why did late Palaeolithic societies abandon long-lived and highly successful foraging and hunting economies in order to adopt farming? The chapter provides a critical overview of how this transformation unfolded in Southwest Asia, the place of origin for some of the economically most important contemporary plant and animal food staples, at the very end of the Pleistocene and the beginning of the Holocene some 12,000 years ago. It focuses in particular on the nature of plant management practices during this period and how they were intertwined with changes in climate and vegetation, seasonality patterns, local micro-ecological variability, people's historical experiences and perceptions of the landscape, mobility strategies, community interactions, and associated symbolic and ritual behaviours. Some of the currently accepted notions about the nature, ecology and economic returns of predomestication cultivation, the causes and evolution of the morphological domestication syndrome in crop progenitor species, and the predicted impacts of climate and environmental change on economic decision-making are critically reviewed and

revisited. The chapter concludes by discussing some of the implications of the Southwest Asian case study for understanding the nature and evolution of prehistoric human economic behaviours, and the central role that resource ecologies play in determining the directionality and pace of macroeconomic change.

Keywords: Southwest Asia | Neolithic | domestication | climate change | niche construction theory

Neolithikum

Douché 2018

Carolyne Douché & Fiona Pichon (Hrsg.), *From the Caucasus to the Arabian Peninsula: Domestic Spaces in the Neolithic, Proceedings of the International Conference in Paris, October 16th and 17th, 2015*. Revue de l'Orient ancien (Paris 2018).

Douché 2018

Carolyne Douché & Fiona Pichon, *Agricultural Strategies at Dja'de el-Mughara, Northern Syria (10th–9th millennium cal. BC)*. In: Carolyne Douché & Fiona Pichon (Hrsg.), *From the Caucasus to the Arabian Peninsula: Domestic Spaces in the Neolithic, Proceedings of the International Conference in Paris, October 16th and 17th, 2015*. Revue de l'Orient ancien (Paris 2018), 119–149.

In Southwest Asia, the numerous mutations that have taken place around 12000 cal BC resulted in the emergence of the irst sedentary societies. Hunting and gathering were progressively replaced by plant cultivation and animal husbandry as a new form of subsistence. Those changes can be observed at Dja'de el-Mughara (Northern Syria), occupied for a long time from the 10th millennium (late PPNA) to the end of the 9th millennium cal. B.C (early PPNB). The site Highlights the evolution of agricultural practices during this period, also characterised by many social and technological changes. This paper aims to present some preliminary results from both archaeobotanical study and functional analysis of harvesting tools. Due to the syrian conlict, most of the lithic pieces were inaccessible, thus the functional analysis was only carried on the material from the late phase (DJ3). This work provides an insight into the evolution of agricultural strategies at one of the earliest sedentary communities. The identiied taxa allow us to discuss their probable use in daily life activities.

The study of more than 400 archaeobotanical samples shows that there is no evidence for morphological domestication. However, the increase of frequencies of cereals and pulses with time, associated to that of arable weeds, let consider that inhabitants of Dja'de were cultivators and not only collectors or gatherers. The functional analysis of a hundred glossy blades from Dja'de allow to understand the way neolithic groups exploited the plant resources in their environment (especially cereal harvesting) during the process of plant domestication.

Keywords: Neolithisation | Syria | Dja'de el-mughara | Agriculture | Plant Economy | Archaeobotanical Analysis | Functional Analysis | Harvesting | Sickle Blades.

Uzdurum 2018

Melis Uzdurum, *Live together around fire: Hearths and the use of space at the onset of sedentism, Aşkılı Höyük (Turkey), a case study.*

In: Carolyne Douché & Fiona Pichon (Hrsg.), *From the Caucasus to the Arabian Peninsula: Domestic Spaces in the Neolithic, Proceedings of the International Conference in Paris, October 16th and 17th, 2015*. Revue de l'Orient ancien (Paris 2018), 11–47.

Asikli Höyük is an Aceramic Neolithic settlement, located in the Central Anatolian Plateau, Turkey, and inhabited for a thousand years (≈ 8350-7300 B.C.). This archaeological site reflects the emergence of new conditions during the transition to sedentism in the region. In the re-establishment of this new way of life, hearths and ovens had a dominant role. They were building elements that reflected and defined social regulations regarding the use of space. Their structural characteristics and uses gradually changed during the overall occupation span of the settlement. In this article, the relationship between hearths and the use of space at Asikli Höyük will be evaluated with the aim to contribute to understanding the transition to a sedentary way of life.

Keywords: Hearth | Use of Space | Residence | Sedentism | Asikli Höyük.

Politik

Sotoudeh 2019

Ramina Sotoudeh, Kathleen Mullan Harris & Dalton Conley, *Effects of the peer metagenomic environment on smoking behavior*. PNAS **116** (2019), 16302–16307.

pnas116-16302-Supplement.pdf

Recent scholarship suggests that the genomes of those around us affect our own phenotypes. Much of the empirical evidence for such "metagenomic" effects comes from animal studies, where the socio-genetic environment can be easily manipulated. Among humans, it is more difficult to identify such effects given the non-random distribution of genes and environments. Here we leverage the as-if-random distribution of grade-mates' genomes conditional on school-level variation in a nationally representative sample. Specifically, we evaluate whether one's peers' genetic propensity to smoke affects one's own smoking behavior net of one's own genotype. Results show that peer genetic propensity to smoke has a substantial effect on an individual's smoking outcome. This is true not only when the peer group includes direct friends, and therefore where the individual plays an active role in shaping the metagenomic context but also when the peer group includes all grade-mates and thus in cases where the individual does not select the metagenomic environment. We explore these effects further and show that a small minority with high genetic risk to smoke ('bad apples') can greatly affect the smoking behavior of an entire grade. The methodology used in this paper offers a potential solution to many of the challenges inherent in estimating peer effects in nonexperimental settings and can be utilized to study a wide range of outcomes with a genetic basis. On a policy level, our Results suggest that efforts to reduce adolescent smoking should take into account metagenomic effects, especially bad apples, within social networks.

Keywords: sociogenomics | adolescent smoking | social genetic effects

Significance: Metagenomic or social genetic effects—how the genetic makeup of organisms around an individual impacts an individual's phenotype—have been demonstrated for animals. However, in humans, where experimental manipulation is less feasible, such metagenomic effects of peers have largely been suggestive. Here, we leverage as-if-random variation in samegrade peers to document metagenomic effects on adolescent smoking outcomes. The effect of grade-mates' genotypes is larger in magnitude than many other predictors of smoking, including ego's own

genotype, being male, and family income. Further, a minority with high genetic propensities to smoke can affect the smoking behavior of an entire grade. This approach offers a way to integrate genetic and environmental influences on human phenotypes.

Sprachlehre

Wimmer 2000

Stefan Wimmer, *Zu einer kurzen Ritzinschrift aus et-Tell / Beth Saida*. Biblische Notizen **102** (2000), 33–34.

Bestätigend kommt noch die Fundsituation des Krugfragments hinzu. Es befand sich in einer der Kammern des Stadttores, und zwar in Kammer 4, an deren Außenseite die besagte Stele aufgestellt war. Zusammen mit dem Krug wurden in derselben Kammer Räuchertassen gefunden, die die kultische Funktion des Ensembles unterstreichen.

Die Graphie des zunächst rätselhaften Zeichens, im Verbund mit dem Fundkontext, drängt also zu dem Schluss, dass es sich um eine vielleicht leicht vereinfachte Abbildung desselben Gottes handelt, der zur selben Zeit am selben Ort auf der Stele dargestellt war. Anders als ein Ankh-Zeichen fügt sich unsere Deutung perfekt zum Wortlaut der Inschrift "zu Gunsten des Gottes X". Das Zeichen steht piktografisch für den Namen der Gottheit, den wir leider nicht eindeutig angeben können.

Mit der Verwendung eines Piktogramms innerhalb eines Alfabettextes wird ein Phänomen berührt, das über diese Kurznotiz hinausweist und an anderer Stelle behandelt werden soll.

Wimmer 2001

Stefan Jakob Wimmer & Samaher Wimmer-Dweikat, *The Alphabet from Wadi el-Hôl, A First Try*. Göttinger Miszellen **180** (2001), 107–112.

Their suggested dating to the early 2nd millennium, could make them the earliest known alphabetic texts, predating the inscriptions from Sinai, which are assigned to either the 12th or the 18th dynasty. The difficulties obviously do not lie in identifying the letters. They can be matched, most of them quite plainly, with examples from the Sinai texts.

Inscriptions such as these, merely short sequences of consonants, are particularly susceptible to forceful and/or wishful readings and interpretations. Naturally others will present alternative and perhaps in places more convincing solutions. We are confident that our contribution should deserve at least the merit of opening the discussion on these remarkable inscriptions.