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References

Afrika

Humphris 2018

Jane Humphris, Robert Bussert, Fareed Alshishani & Thomas Scheibner, *The ancient iron mines of Meroe*. Azania **53** (2018), 291–311.

Ongoing archaeometallurgical research at the Royal City of Meroe and the nearby Meroitic town of Hamadab in Sudan has established the presence of a Kushite iron production tradition spanning over one thousand years. Potentially from as early as the seventh century BC to as late as the sixth century AD, a significant quantity of iron was produced at Meroe, while Hamadab appears to have started producing iron during the latter stages of this time-frame. Previous investigations assumed that the iron ore exploited for use was widely available and easily accessible, close to the ancient city itself. This paper presents the results of archaeological and geological research that has, for the first time, identified ancient iron mining activity in the area. Insights gained into certain aspects of the ore procurement stage of the chaîne opératoire of Meroitic iron production, including the nature of the mined ores and the manner in which this activity was conducted, are presented. Indications as to the organisation of mining activities are also provided. The significant potential of this avenue of research is highlighted and potential future research questions are posed.

Keywords: Meroe | archaeometallurgy | iron | ore | mining | Sudan

Kay 2019

Andrea U. Kay et al., *Diversification, Intensification and Specialization, Changing Land Use in Western Africa from 1800 BC to AD 1500*. Journal of World Prehistory **32** (2019), 179–228.

JWoPrehist32-179-Supplement.zip

Many societal and environmental changes occurred between the 2nd millennium BC and the middle of the 2nd millennium AD in western Africa. Key amongst these were changes in land use due to the spread and development of agricultural strategies, which may have had widespread consequences for the climate, hydrology, biodiversity, and ecosystem services of the region. Quantification of these land-use influences and potential feedbacks between human and natural systems is controversial, however, in part because the archaeological and historical record is highly fragmented in time and space. To improve our understanding of how humans contributed to the development of African landscapes, we developed an atlas of landuse practices in western Africa for nine time-windows over the period 1800 BC–AD 1500. The maps are based on a broad synthesis of archaeological, archaeobotanical, archaeozoological, historical, linguistic, genetic, and ethnographic data, and present land use in 12 basic categories. The main differences between categories is the relative reliance on, and variety of, domesticated plant and animal species utilized, and the energy invested in cultivating or keeping them. The maps highlight the irregular and frequently non-linear trajectory of land-use change in the prehistory of western Africa. Representing an original attempt to produce rigorous spatial synthesis from diverse sources, the atlas will be useful for a range of studies of human–environment interactions in the past, and highlight major spatial and temporal gaps in data that may guide future field studies.

Keywords: Archaeology | Land-use change | Western Africa | Human subsistence | Iron age | Archaeobotany | Archaeozoology | Agriculture

Andrea U. Kay, Dorian Q. Fuller, Katharina Neumann, Barbara Eichhorn, Alexa Höhn, Julie Morin-Rivat, Louis Champion, Veerle Linseele, Eric Huysecom, Sylvain Ozainne, Laurent Lespez, Stefano Biagetti, Marco Madella, Ulrich Salzmann & Jed O. Kaplan

Aktuell

Al-Aly 2021

Ziyad Al-Aly, Yan Xie & Benjamin Bowe, *High-dimensional characterization of post-acute sequelae of COVID-19*. nature **594** (2021), 259–264. DOI:10.1038/s41586-021-03553-9.

n594-0259-Supplement.pdf

The acute clinical manifestations of COVID-19 have been well characterized1,2, but the post-acute sequelae of this disease have not been comprehensively described. Here we use the national healthcare databases of the US Department of Veterans Affairs to systematically and comprehensively identify 6-month incident sequelae—including diagnoses, medication use and laboratory abnormalities—in patients with COVID-19 who survived for at least 30 days after diagnosis. We show that beyond the first 30 days of illness, people with COVID-19 exhibit a higher risk of death and use of health resources. Our high-dimensional approach identifies incident sequelae in the respiratory system, as well as several other sequelae that include nervous system and neurocognitive disorders, mental health disorders, metabolic disorders, cardiovascular disorders, gastrointestinal disorders, malaise, fatigue, musculoskeletal pain and anaemia. We show increased incident use of several therapeutic agents—including pain medications (opioids and non-opioids) as well as antidepressant, anxiolytic, antihypertensive and oral hypoglycaemic agents—as well as evidence of laboratory abnormalities in several organ systems. Our analysis of an array of prespecified outcomes reveals a risk gradient that increases according to the severity of the acute COVID-19 infection (that is, whether patients were not hospitalized, hospitalized or admitted to intensive care). Our findings show that a substantial burden of health loss that spans pulmonary and several extrapulmonary organ systems is experienced by patients who survive after the acute phase of COVID-19. These results will help to inform health system planning and the development of multidisciplinary care strategies to reduce chronic health loss among individuals with COVID-19.

Callaway 2021

Ewen Callaway & Heidi Ledford, *How bad is Omicron? What scientists know so far*. nature **600** (2021), 197–199.

COVID researchers are working at breakneck speed to learn about the variant's transmissibility, severity and ability to evade vaccines.

Callaway 2021

Ewen Callaway, *Beyond Omicron, What's next for SARS-CoV-2 evolution*. nature **600** (2021), 204–207.

The rapid spread of new variants offers clues to how the virus is adapting and how the pandemic will play out over the next several months.

Ke 2021

Ruian Ke, Carolin Zitzmann, David D. Ho, Ruy M. Ribeiro & Alan S. Perelson, *In vivo kinetics of SARS-CoV-2 infection and its relationship with a person's infectiousness*. PNAS **118** (2021), e2111477118. DOI:10.1073/pnas.2111477118.

pnas118-e2111477118-Supplement.pdf

The within-host viral kinetics of SARS-CoV-2 infection and how they relate to a person's infectiousness are not well understood. This limits our ability to quantify the impact of interventions on viral transmission. Here, we develop viral dynamic models of SARS-CoV-2 infection and fit them to data to estimate key withinhost parameters such as the infected cell half-life and the withinhost reproductive number. We then develop a model linking viral load (VL) to infectiousness and show a person's infectiousness increases sublinearly with VL and that the logarithm of the VL in the upper respiratory tract is a better surrogate of infectiousness than the VL itself. Using data on VL and the predicted infectiousness, we further incorporated data on antigen and RT-PCR tests and compared their usefulness in detecting infection and preventing transmission. We found that RT-PCR tests perform better than antigen tests assuming equal testing frequency; however, more frequent antigen testing may perform equally well with RT-PCR tests at a lower cost but with many more false-negative tests. Overall, our models provide a quantitative framework for inferring the impact of therapeutics and vaccines that lower VL on the infectiousness of individuals and for evaluating rapid testing strategies.

Keywords: SARS-CoV-2 | viral kinetics | SARS-CoV-2 infectiousness

Significance: Quantifying the kinetics of SARS-CoV-2 infection and individual infectiousness is important for understanding SARS-CoV2 transmission and evaluating intervention strategies. Here, we developed within-host models of SARS-CoV-2 infection, and by fitting them to clinical data, we estimated key within-host viral dynamic parameters. We also developed a mechanistic model for viral transmission and show that the logarithm of the viral load in the upper respiratory tract serves as an appropriate surrogate for a person's infectiousness. Using data on how viral load changes during infection, we further evaluated the effectiveness of PCR and antigenbased testing strategies for averting transmission and identifying infected individuals.

Kupferschmidt 2021

Kai Kupferschmidt & Gretchen Vogel, *How bad is Omicron? Some clues are emerging*. science **374** (2021), 1304–1305. DOI:10.1126/science.acx9782.

New variant appears to evade immunity and shows signs of spreading more rapidly.

Maier 2021

Benjamin F. Maier, Marc Wiederman, Angelique Burdinsk, Pascal Klamse, Mirjam A. Jenn, Cornelia Betsc & Dirk Brockmann, *Germany's current COVID-19 crisis is mainly driven by the unvaccinated*. medRxiv **2021**, 21266831, 1–21. DOI:10.1101/2021.11.24.21266831.

Vaccines are the most powerful pharmaceutical tool to combat the COVID-19 pandemic. While the majority (about 65 %) of the German population were fully vaccinated, incidence started growing exponentially in October 2021 with about 41 % of recorded new cases aged twelve or above being symptomatic breakthrough infections, presumably also contributing to the dynamics. At the time, it (i) remains elusive how significant this contribution is and (ii) whether targeted

non-pharmaceutical interventions (NPIs) may stop the amplification of the ongoing crisis. Here, we estimate that about 67 %–76 % of all new infections are caused by unvaccinated individuals, implying that only 24 %–33 % are caused by the vaccinated. Furthermore, we estimate 38 %–51 % of new infections to be caused by unvaccinated individuals infecting other unvaccinated individuals. In total, unvaccinated individuals are expected to be involved in 8–9 of 10 new infections. We further show that decreasing the transmissibility of the unvaccinated by, e. g. targeted NPIs, causes a steeper decrease in the effective reproduction number R than decreasing the transmissibility of vaccinated individuals, potentially leading to temporary epidemic control. Furthermore, reducing contacts between vaccinated and unvaccinated individuals serves to decrease R in a similar manner as increasing vaccine uptake. Taken together, our results contribute to the public discourse regarding policy changes in pandemic response and highlight the importance of combined measures, such as vaccination campaigns and contact reduction, to achieve epidemic control and preventing an overload of public health systems.

Pulliam 2021

Juliet R. C. Pulliam, Cari van Schalkwyk, Nevashan Govender, Anne von Gottberg, Cheryl Cohen, Michelle J. Groome, Jonathan , *Increased risk of SARS-CoV-2 reinfection associated with emergence of the Omicron variant in South Africa*. medRxiv **2021**, 21266068, 1–43. DOI:10.1101/2021.11.11.21266068.

Population-level evidence suggests that the Omicron variant is associated with substantial ability to evade immunity from prior infection. In contrast, there is no population-wide epidemiological evidence of immune escape associated with the Beta or Delta variants. This finding has important implications for public health planning, particularly in countries like South Africa with high rates of immunity from prior infection. Urgent questions remain regarding whether Omicron is also able to evade vaccine-induced immunity and the potential implications of reduced immunity to infection on protection against severe disease and death.

Juliet R. C. Pulliam, Cari van Schalkwyk, Nevashan Govender, Anne von Gottberg, Cheryl Cohen, Michelle J. Groome, Jonathan Dushoff, Koleka Mlisana & Harry Moultrie

Amerika

Miller 2021

Melanie J. Miller, Iain Kendall, José M. Capriles, Maria C. Bruno, Richard P. Evershed & Christine A. Hastorf, *Quinoa, potatoes, and llamas fueled emergent social complexity in the Lake Titicaca Basin of the Andes*. PNAS **118** (2021), e2113395118.

pnas118-e2113395118-Supplement.pdf

The Lake Titicaca basin was one of the major centers for cultural development in the ancient world. This lacustrine environment is unique in the high, dry Andean altiplano, and its aquatic and terrestrial resources are thought to have contributed to the florescence of complex societies in this region. Nevertheless, it remains unclear to what extent local aquatic resources, particularly fish, and the introduced crop, maize, which can be grown in regions along the lakeshores, contributed to facilitating sustained food production and population growth, which underpinned increasing social political complexity starting in the Formative Period (1400 BCE to 500 CE) and culminating with the Tiwanaku state (500 to 1100

CE). Here, we present direct dietary evidence from stable isotope analysis of human skeletal remains spanning over two millennia, together with faunal and floral reference materials, to reconstruct foodways and ecological interactions in southern Lake Titicaca over time. Bulk stable isotope analysis, coupled with compound-specific amino acid stable isotope analysis, allows better discrimination between resources consumed across aquatic and terrestrial environments. Together, this evidence demonstrates that human diets predominantly relied on C3 plants, particularly quinoa and tubers, along with terrestrial animals, notably domestic camelids. Surprisingly, fish were not a significant source of animal protein, but a slight increase in C4 plant consumption verifies the increasing importance of maize in the Middle Horizon. These results underscore the primary role of local terrestrial food resources in securing a nutritious diet that allowed for sustained population growth, even in the face of documented climate and political change across these periods.

Keywords: dietary reconstruction | stable isotopes | amino acids | agropastoralism | subsistence resilience

Significance: Food production systems are critical components in the emergence of complex socioecological systems. In the Andes, societal complexity has often been related to the increasing production and consumption of maize by elites, but the importance of highland cultivated crops, such as potatoes, one of the most cultivated crops in the world, and quinoa, presently recognized as a "superfood," remains largely underappreciated. Using stable isotopes including compound-specific amino acids, we reconstruct the diets of people living in southern Lake Titicaca, where the Tiwanaku state emerged. Over time, locally produced potatoes, quinoa, and llamas, by means of increasingly intensive practices, facilitated long-term food security, which sustained population growth, contributed to increasing sociopolitical complexity, and facilitated resiliency through episodes of significant climatic variation.

Anthropologie

Kwon 2021

Young Hye Kwon, Kwangsun Yoo, Hillary Nguyen, Yong Jeong & Marvin M. Chun, *Predicting multilingual effects on executive function and individual connectomes in children*, *An ABCD study*. PNAS **118** (2021), e2110811118.

pnas118-e2110811118-Supplement.pdf

While there is a substantial amount of work studying multilingualism's effect on cognitive functions, little is known about how the multilingual experience modulates the brain as a whole. In this study, we analyzed data of over 1,000 children from the Adolescent Brain Cognitive Development (ABCD) Study to examine whether monolinguals and multilinguals differ in executive function, functional brain connectivity, and brain–behavior associations. We observed significantly better performance from multilingual children than monolinguals in working-memory tasks. In one finding, we were able to classify multilinguals from monolinguals using only their whole-brain functional connectome at rest and during an emotional n-back task. Compared to monolinguals, the multilingual group had different functional connectivity mainly in the occipital lobe and subcortical areas during the emotional n-back task and in the occipital lobe and prefrontal cortex at rest. In contrast, we did not find any differences in behavioral performance and functional connectivity when performing a stopsignal task. As a second finding, we investigated the degree to which behavior is reflected in the brain by implementing a

connectome-based behavior prediction approach. The multilingual group showed a significant correlation between observed and connectome-predicted individual working-memory performance scores, while the monolingual group did not show any correlations. Overall, our observations suggest that multilingualism enhances executive function and reliably modulates the corresponding brain functional connectome, distinguishing multilinguals from monolinguals even at the developmental stage.

Keywords: multilingualism | functional connectivity | fMRI | working memory | children

Significance: Given that using multiple languages incorporates cognitive functions that require a harmony of the whole brain, can we tell whether a child is monolingual or multilingual by only looking at the pattern of functional connectivity? Here, we show that the multilingual experience modulates the functional connections of multilinguals enough to be distinguished from monolinguals. The pattern is distinctive when children are performing an emotional n-back task and even at rest. Furthermore, we found that multilingual children have a stronger relationship between their working-memory functional connectivity and behavior performance than monolinguals. Along with the result that multilingual children outperformed in measures of working memory, we highlight that using multiple languages in early life shapes executive function and functional connections.

Suwa 2021

Gen Suwa et al., *Canine sexual dimorphism in Ardipithecus ramidus was nearly human-like*. PNAS **118** (2021), e2116630118.

pnas118-e2116630118-Supplement.pdf

Body and canine size dimorphism in fossils inform sociobehavioral hypotheses on human evolution and have been of interest since Darwin's famous reflections on the subject. Here, we assemble a large dataset of fossil canines of the human clade, including all available Ardipithecus ramidus fossils recovered from the Middle Awash and Gona research areas in Ethiopia, and systematically examine canine dimorphism through evolutionary time. In particular, we apply a Bayesian probabilistic method that reduces bias when estimating weak and moderate levels of dimorphism. Our Results show that Ar. ramidus canine dimorphism was significantly weaker than in the bonobo, the least dimorphic and behaviorally least aggressive among extant great apes. Average male-to-female size ratios of the canine in Ar. ramidus are estimated as 1.06 and 1.13 in the upper and lower canines, respectively, within modern human population ranges of variation. The slightly greater magnitude of canine size dimorphism in the lower than in the upper canines of Ar. ramidus appears to be shared with early Australopithecus, suggesting that male canine reduction was initially more advanced in the behaviorally important upper canine. The available fossil evidence suggests a drastic size reduction of the male canine prior to Ar. ramidus and the earliest known members of the human clade, with little change in canine dimorphism levels thereafter. This evolutionary pattern indicates a profound behavioral shift associated with comparatively weak levels of male aggression early in human evolution, a pattern that was subsequently shared by Australopithecus and Homo.

Keywords: canine dimorphism | Bayesian estimate | Ardipithecus ramidus | Australopithecus | Homo

Gen Suwa, Tomohiko Sasaki, Sileshi Semaw, Michael J. Rogers, Scott W. Simpson, Yutaka Kunimatsu, Masato Nakatsukasa, Reiko T. Kono, Yingqi Zhang, Yonas Beyene, Berhane Asfaw & Tim D. White

Significance: Humans have the proportionately smallest male canines among all anthropoids and little canine sexual dimorphism. However, the evolutionary emergence of this defining condition remains unclear because until now we have lacked

a reliable method of determining dimorphism in weakly dimorphic fossil species. Using a probability-based method we recently developed, we estimated canine size dimorphism in the ≈4.5 million-year-old Ardipithecus ramidus and found it to be weak and comparable to that of modern humans. Our analysis of >300 fossils spanning 6 million years shows that male canine size reduction occurred early in human evolution, broadly coincident with the adoption of bipedality. This suggests a profound and evolutionarily deep sociobehavioral shift that minimized male–male aggression, most likely mediated by female choice.

Bibel

Dershowitz 2021

Idan Dershowitz & James D. Tabor, *The Shapira Scrolls, The Case for Authenticity*. Biblical Archaeology Review **47** (2021), iv, 47–53.

The Shapira Scrolls have long been viewed as clever forgeries. But are they? Earlier this year, biblical scholar Idan Dershowitz gained international attention as he argued that these scroll fragments preserve an early version of the Book of Deuteronomy. Here he summarizes that research, and archaeologist James D. Tabor analyzes the scrolls' origin story. From their investigations, they contend that the Shapira Scrolls are authentic.

Gertoux 2013

Gérard Gertoux, *Dating the Sennacherib's Campaign to Judah*. (unpublished 2013).

The traditional date of 701 BCE for Sennacherib's campaign to Judah, with the siege of Lachish and Jerusalem and the Battle of Eltekeh, is accepted by historians for many years without notable controversy. However, the inscription of Sargon II, found at Tang-i Var in 1968, requires to date this famous campaign during his 10th campaign, in 712 BCE, implying a coregency with Sennacherib from 714 BCE. A thorough analysis of the annals and the reliefs of Sargon and Sennacherib shows that there was only one campaign in Judah and not two.

The Assyrian assault involved the presence of at least six kings (or similar): 1) taking of As Ashdod by the Assyrian king Sargon II in his 10th campaign, 2) taking of Lachish by Sennacherib during his 3rd campaign, 3) siege of Jerusalem dated 14th year of Judean King Hezekiah; 4) battle of Eltekeh led by Nubian co-regent Taharqa; 5) under the leadership of King Shabataka during his 1st year of reign; 6) probable disappearance of the Egyptian king Osorkon IV in his 33rd year of reign. This conclusion agrees exactly with the biblical account that states all these events occurred during the 14th year of Judean King Hezekiah dated 712 BCE (2Kings 18:13-17, 19:9; 2Chronicles 32:9; Isaiah 20:1, 36:1, 37:9).

Hendel 2021

Ronald S. Hendel & Matthieu Richelle, *The Shapira Scrolls, The Case for Forgery*. Biblical Archaeology Review **47** (2021), iv, 39–46.

BAR47.4-039-Comment1.pdf

In 1883, antiquities dealer Moses Shapira presented to the watching world several scroll fragments that he claimed were an ancient biblical manuscript. Yet the manuscript was quickly decried as a forgery. Although its authenticity has been reappraised recently, biblical scholars Ronald S. Hendel and Matthieu Richelle argue—with old and new evidence—that the Shapira Scrolls are forgeries.

Políglota Complutense 1514

Biblia Políglota Complutense, *Herausgegeben von Kardinal Francisco Jiménez de Cisneros*. (Alcalá de Henares 1514).

Wir haben die lateinische Übersetzung des seligen Hieronymus zwischen jene der Synagoge [den hebräischen Text] und jene der östlichen Kirche [den griechischen Text] gesetzt, genauso wie die Diebe zu beiden Seiten Jesu gehängt wurden, der die römische oder lateinische Kirche darstellt.

Ohne Korrekturen der Fehler in der Vulgata und mit „Rückübersetzung“ des Comma Johanneum ins Griechische.

Biologie

Nielsen 2021

Sofie Holtsmark Nielsen & Martin Sikora et al., *31,600-year-old human virus genomes support a Pleistocene origin for common childhood infections*. bioRxiv **2021**, June 28, 1–22. DOI:10.1101/2021.06.28.450199.

The origins of viral pathogens and the age of their association with humans remains largely elusive. To date, there is no direct evidence about the diversity of viral infections in early modern humans pre-dating the Holocene. We recovered two near-complete genomes (5.2X and 0.7X) of human adenovirus C (HAdV-C), as well as low-coverage genomes from four distinct species of human herpesvirus obtained from two 31,630-year-old milk teeth excavated at Yana, in northeastern Siberia. Phylogenetic analysis of the two HAdV-C genomes suggests an evolutionary origin around 700,000 years ago consistent with a common evolutionary history with hominin hosts. Our findings push back the earliest direct molecular evidence for human viral infections by ≈25,000 years, and demonstrate that viral species causing common childhood viral infections today have been in circulation in humans at least since the Pleistocene.

Sofie Holtsmark Nielsen, Lucy van Dorp, Charlotte J. Houldcroft, Anders G. Pedersen, Morten E. Allentoft, Lasse Vinner, Ashot Margaryan, Elena Pavlova, Vyacheslav Chasnyk, Pavel Nikolskiy, Vladimir Pitulko, Ville N. Pimenoff, François Balloux & Martin Sikora

Energie

Eichhorn 2019

Barbara Eichhorn, Jane Humphris, Caroline Robion-Brunner & Aline Garnier, *A ‘long-burning issue’, Comparing woody resource use for ironworking in three major iron smelting centres of sub-Saharan Africa*. In: Jutta Meurers-Balke, Tanja Zerl & Renate Gerlach (Hrsg.), *Auf dem Holzweg . . . , Eine Würdigung für Ursula Tegtmeier*. Archäologische Berichte 30 (Kerpen-Loogh 2019), 103–124.

Ancient sub-Saharan iron metallurgy has often been blamed for triggering ecological deterioration, above all by a presumed over-exploitation of wood for operating the fuel-thirsty smelting furnaces. This assessment is largely negative, regardless of the different natural environments where iron smelting took place, and thus in spite of the variability of provided ecosystem services and differing resilience to wood exploitation. We argue for a more differentiated view of the impacts of traditional African iron smelting, respecting the fact that wood is a renewable resource and bearing the dissimilarity of exploitable resources in mind.

Summarizing our previous research, we compare the anthracological results which we obtained at three major iron smelting centres (Fiko Tradition, Mali; Bassar, Togo; the Meroe area, Sudan). Regardless of the prevailing environmental conditions, the predominant use of high density wood is striking. However, only in the Meroe area is extreme selectiveness of a single species evident, whereas in the West African iron smelting centres a wide array of woody taxa has been used. In addition to fuel quality, cultural preferences probably controlled the choice of species.

Fuel provision in Fiko and Bassar was mainly based on the exploitation of zonal vegetation, particularly the agroforestry systems surrounding the sites. In contrast, the extrazonal Acacia nilotica woodlands of the Nile River valley seem to have provided a stable and reliable fuel supply in the arid Meroe area. At the West African sites, the anthracological records point to vegetation changes over the course of time. However, we consider fuel exploitation for iron smelting as only one among multiple causal factors affecting the regional woody vegetation during the Late Iron Age. The expansion of arable land and changing agricultural practices due to the general availability of iron agricultural tools intensified the effects of wood exploitation, for iron production and various other purposes, on the tree cover.

Keywords: West Africa | Meroe | metallurgy | fuel | wood charcoal | phytoliths

Die traditionelle Eisenmetallurgie des subsaharischen Afrika wurde und wird in der Literatur häufig mit ökologischer Degradation in Verbindung gebracht, insbesondere durch eine vermeintliche Übernutzung von Holz als Brennstoff für den Betrieb der Schmelzöfen. Diese negative Einschätzung erfolgt weitgehend unabhängig von den sehr unterschiedlichen ökologischen Rahmenbedingungen, unter denen Eisenverhüttung in Afrika stattfand, obwohl mit diesen eine hohe Variabilität der nutzbaren natürlichen Ressourcen und eine unterschiedliche Resilienz der Gehölzvegetation gegenüber Holzentnahme einhergeht. Um eine differenziertere Betrachtung zu erreichen, vergleichen wir in diesem Beitrag unsere anthrakologischen Ergebnisse von drei bedeutenden Zentren traditioneller afrikanischer Eisenproduktion (Fiko Tradition, Mali; Bassar, Togo; Meroe-Region, Sudan). Unabhängig von den jeweils vorherrschenden Umweltbedingungen wurde für die Verhüttung überwiegend Holz mit hoher Dichte verwendet. Allerdings zeichnet sich nur in der Meroe-Region eine extreme Selektivität für eine einzelne Baumart ab, während in Westafrika ein breiteres Spektrum von Gehölztaxa zum Einsatz kam. Neben der tatsächlichen Qualität als Brennstoff haben mit hoher Wahrscheinlichkeit kulturelle Präferenzen die Wahl der Gehölzarten beeinflusst.

Der Brennstoffbedarf der westafrikanischen Fundplätze wurde überwiegend aus der zonalen Vegetation, insbesondere aus den umliegenden Agroforstsystemen, gedeckt. Im Gegensatz dazu scheinen in der ariden Meroe-Region die extrazonalen Acacia nilotica-Bestände des Niltals eine stabile und zuverlässige Brennstoffversorgung ermöglicht zu haben. An den westafrikanischen Fundplätzen belegen die Holzkohleanalysen Veränderungen der Gehölzvegetation im Laufe der Zeit. Die Brennstoffgewinnung für die Eisenverhüttung war jedoch nur einer von zahlreichen Faktoren, die die regionale Gehölzvegetation während der späten Eisenzeit beeinflussten. Die Ausweitung des Ackerbaus und die Veränderung der landwirtschaftlichen Praktiken, die mit der generellen Verfügbarkeit von Eisen einhergingen, verstärkten die Auswirkungen der Holzentnahme für die Eisenherstellung und andere Zwecke.

Keywords: Westafrika | Meroe | Metallurgie | Brennstoff | Holzkohle | Phytolithe

Mittelalter

Borst 1953
Arno Borst, *Die Katharer*. (Freiburg 1991).