Liste erstellt am 2012-10-20

Literatur

Afrika

Connah 1987

Graham Connah, *African civilizations, Precolonial cities and states in tropical Africa: an archaeological perspective.* (Cambridge ²2001).

Aktuell

Ackerman 2012

Jennifer Ackerman, *Tausend Billionen Freunde.* Spektrum der Wissenschaft **2012**, xi, 27–33.

Ist die in westlichen Ländern grassierende Fettleibigkeit auf vermehrte Antibiotikagaben für Babys zurückzuführen? Rühren die zunehmenden Autoimmunkrankheiten von einem Trend zu Kaiserschnittgeburten her? Auf solche Fragen stoßen Forscher, seit sie die unzähligen nützlichen Bakterien näher untersuchen, die so manche wichtige Körperfunktion erst ermöglichen.

Callaway 2012

Ewen Callaway, *Economics and genetics meet in uneasy union.* nature **490** (2012), 154–155.

Use of population-genetic data to predict economic success sparks war of words.

The manuscript had been circulating on the Internet for more than two years, garnering little attention outside economics – until last month, when Science published a summary of the paper in its section on new research in other journals. This sparked a sharp response from a long list of prominent scientists, including geneticist David Reich of Harvard Medical School in Boston, Massachusetts, and Harvard University palaeoanthropologist Daniel Lieberman in Cambridge.

They have missed the point, responds Galor, a prominent economist whose work examines the ancient origins of contemporary economic factors. “The entire criticism is based on a gross misinterpretation of our work and, in some respects, a superficial understanding of the empirical techniques employed,” he says. Galor and Ashraf told Nature that, far from claiming that genetic diversity directly influences economic development, they are using it as a proxy for immeasurable cultural, historical and biological factors that influence economies. “Our study is not about a nature or nurture debate,” says Ashraf. “It seems like the devil is in the interpretation more than the actual application of the statistics,” says Sohini Ramachandran, a popu lation geneticist at Brown University who provided the genetic data for the study.

Chalmers 2012

Out of the darkness. nature **490** (2012), Supplement, S2–S4.

The 62nd Lindau Nobel Laureate Meeting opened with a talk by Brian Schmidt, who shared the 2011 physics prize for the shocking revelation that the Universe is expanding at an accelerating rate. Fifteen years after Schmidt’s initial discovery, the ‘dark energy’ invoked to explain this cosmic acceleration is still a mystery.

Matthew Chalmers

Gonzalez 2012

Raul Gonzalez & James M. Swanson, *Long-term effects of adolescent-onset and persistent use of cannabis*. PNAS **109** (2012), 15970–15971.

[Older] findings differ in two important ways from those reported by Meier et al.: they suggest that detrimental effects of cannabis may be specific to some neurocognitive functions (rather than general) and that cannabis-associated deficits may recover with abstinence (rather than persist).

What new questions or reinterpretations of the literature are suggested by the findings of Meier et al.? The most obvious issue is related to the degree of exposure. Both adolescent onset and almost 2 decades of persistent cannabis use may be needed to obtain the magnitude and pervasiveness of long-term neuropsychological deficits reported by Meier et al.

Meier 2012

Madeline H. Meier et al., *Persistent cannabis users show neuropsychological decline from childhood to midlife*. PNAS **109** (2012), 15980.

pnas109-15980-Fulltext.pdf, pnas109-15980-Supplement1.docx, pnas109-15980-Supplement2.docx, pnas109-15980-Supplement3.docx

Madeline H. Meier, Avshalom Caspi, Antony Ambler, HonaLee Harrington, Renate Houts, Richard S. E. Keefe, Kay McDonald, Aimee Ward, Richie Poulton and Terrie E. Moffitt

Recent reports show that fewer adolescents believe that regular cannabis use is harmful to health. Concomitantly, adolescents are initiating cannabis use at younger ages, and more adolescents are using cannabis on a daily basis. The purpose of the present study was to test the association between persistent cannabis use and neuropsychological decline and determine whether decline is concentrated among adolescent-onset cannabis users. Participants were members of the Dunedin Study, a prospective study of a birth cohort of 1,037 individuals followed from birth (1972/1973) to age 38 y. Cannabis use was ascertained in interviews at ages 18, 21, 26, 32, and 38 y. Neuropsychological testing was conducted at age 13 y, before initiation of cannabis use, and again at age 38 y, after a pattern of persistent cannabis use had developed. Persistent cannabis use was associated with neuropsychological decline broadly across domains of functioning, even after controlling for years of education. Informants also reported noticing more cognitive problems for persistent cannabis users. Impairment was concentrated among adolescent-onset cannabis users, with more persistent use associated with greater decline. Further, cessation of cannabis use did not fully restore neuropsychological functioning among adolescent-onset cannabis users. Findings are suggestive of a neurotoxic effect of cannabis on the adolescent brain and highlight the importance of prevention and policy efforts targeting adolescents.

marijuana | longitudinal | cognition

Anthropologie

Eriksson 2012

Anders Eriksson et al., *Late Pleistocene climate change and the global expansion of anatomically modern humans*. PNAS **109** (2012), 16089–16094.

pnas109-16089-Supplement1.xls, pnas109-16089-Supplement2.avi

Anders Eriksson, Lia Betti, Andrew D. Friend, Stephen J. Lycett, Joy S. Singarayer, Noreen von Cramon-Taubadel, Paul J. Valdes, Francois Balloux and Andrea Manica

The extent to which past climate change has dictated the pattern and timing of the out-of-Africa expansion by anatomically modern humans is currently unclear [Stewart JR, Stringer CB (2012) Science 335:1317-1321]. In particular, the incompleteness of the fossil record makes it difficult to quantify the effect of climate. Here, we take a different

approach to this problem; rather than relying on the appearance of fossils or archaeological evidence to determine arrival times in different parts of the world, we use patterns of genetic variation in modern human populations to determine the plausibility of past demographic parameters.We develop a spatially explicit model of the expansion of anatomically modern humans and use climate reconstructions over the past 120 ky based on the Hadley Centre global climate model HadCM3 to quantify the possible effects of climate on human demography. The combinations of demographic parameters compatible with the current genetic makeup of worldwide populations indicate a clear effect of climate on past population densities. Our estimates of this effect, based on population genetics, capture the observed relationship between current climate and population density in modern hunter- gatherers worldwide, providing supporting evidence for the realism of our approach. Furthermore, although we did not use any archaeological and anthropological data to inform the model, the arrival times in different continents predicted by our model are also broadly consistent with the fossil and archaeological records. Our framework provides the most accurate spatiotemporal reconstruction of human demographic history available at present and will allow for a greater integration of genetic and archaeological evidence.
human dispersals | colonization | population bottlenecks | net primary productivity | most recent common ancestor

Richter 2012

Jürgen Richter, Martin Melles & Frank Schäbitz, *Temporal and spatial corridors of Homo sapiens sapiens population dynamics during the Late Pleistocene and early Holocene*. Quaternary International **274** (2012), 1–4.
The present special issue of Quaternary International compiles 17 contributions defining the starting points and describing first results of the CRC 806. All contributions result from research reports the authors presented at an interdisciplinary workshop held at Rösrath near Cologne in 2011, and the subsequent discussions during the workshop. Results of recent fieldwork and respective analysis, completed since the workshop took place, are also included.

Richter 2012

Jürgen Richter, Thomas Hauck, Ralf Vogelsang, Thomas Widlok, Jean-Marie Le Tensorer, Peter Schmid, *"Contextual areas" of early Homo sapiens and their significance for human dispersal from Africa into Eurasia between 200 ka and 70 ka*. Quaternary International **274** (2012), 5–24.
The African origin of our species has essentially been accepted as a scientific fact, but evolutionary advantages connected with the reasons and circumstances of modern human dispersal remain widely unexplained or controversial. Consequently, this paper provides an overview of the natural and cultural context of earliest AMH (Anatomically Modern Humans). According to the locations and dating of AMH fossils, the focus is on E-Africa, NE-Africa and the Middle East within a time range from 200 ka to 70 ka. At least three different "contextual areas" appear to have existed at the time, two of them in E-Africa and NE-Africa, dominated by "Bifacial-plus-Levallois" technology, and the third one in the Middle East, mostly connected with an "only-Levallois" technology. A comparison with some non-AMH sites from Eurasia displays similarity of technological principles between artifact assemblages from African AMH sites and Eurasian non-AMH (early Neanderthal) sites on the one hand, and dissimilarity between African AMH sites and Middle Eastern AMH sites on the other hand. This is particularly surprising if environmental contexts are taken into account – tropical in Africa and glacial in Eurasia.
Thus, compared to their archaic neighbors (particularly early Neanderthals), earliest modern humans currently seem to lack any specific "cultural fingerprint" and their demographic success may not be explained by behavioral superiority alone. The idea of a small

group of early AMH people migrating out of Africa, enabled by cultural superiority over their neighbors appears highly questionable in the light of archaeological evidence. Moreover, the concept of virtual "migration routes" deserves a revision if ethnodemographic evidence about spatial behavior of hunter-gatherers is taken into account. The proposed concept of "contextual areas" serves as a methodological alternative, comprising linked cultural and environmental features.
Keywords: Anatomically Modern Humans (AMH) | Neanderthals | Bifacial-plus-Levallois | Africa | Middle East | migration routes | Modern Human Behavioral Package (MHBP)

Biologie

Taylor 2012

Alex H. Taylor, Rachael Miller & Russell D. Gray, *New Caledonian crows reason about hidden causal agents*. PNAS **109** (2012), 16389–16391.
pnas109-16389-Supplement.mp4
The ability to make inferences about hidden causal mechanisms underpins scientific and religious thought. It also facilitates the understanding of social interactions and the production of sophisticated tool-using behaviors. However, although animals can reason about the outcomes of accidental interventions, only humans have been shown tomake inferences about hidden causal mechanisms. Here,we show that tool-making New Caledonian crows react differently to an observable event when it is caused by a hidden causal agent. Eight crowswatched two series of events inwhich a stickmoved. In the first set of events, the crows observed a human enter a hide, a stick move, and the human then leave the hide. In the second, the stick moved without a human entering or exiting the hide. The crows inspected the hide and abandoned probing with a tool for food more often after the second, unexplained series of events. This difference shows that the crows can reason about a hidden causal agent. Comparative studies with the methodology outlined here could aid in elucidating the selective pressures that led to the evolution of this cognitive ability.
evolution of intelligence | causal cognition | corvids

Grundlagen

Widlok 2012

Thomas Widlok et al., *Towards a theoretical framework for analyzing integrated socio-environmental systems*. Quaternary International **274** (2012), 259–259.
Thomas Widlok, Anne Aufgebauer, Marcel Bradtmöller, Richard Dikau, Thomas Hoffmann, Inga Kretschmer, Konstantinos Panagiotopoulos, Andreas Pastoors, Robin Peters, Frank Schäbitz, Manuela Schlummer, Martin Solich, Bernd Wagner, Gerd-Christian Weniger & Andreas Zimmermann
This article addresses two major challenges for an integrated analysis of socio-environmental systems, namely the diversity of contributing disciplines and the wide spectrum of temporal and spatial scales. Archaeology, the geosciences and socio-cultural anthropology provide information relating to a diversity of specific time series and spatial distribution maps in order to answer questions relating to the impact of environmental and anthropogenic factors in population growth and migration processes. A model based on the key idea of adaptive cycles as it was initially developed in resilience research can be productively employed to bridge the diversity of disciplines and to integrate the diversity of data that they provide. This article outlines first steps towards recognizing similar patterns across a wide spectrum of empirical observations. It is exploratory in its attempt to trace

these patterns across different layers of understanding the complexity of humaneenvironment interaction.
The case material considered relates to (1) observable ethnographic data on forager mobility and its simulation, (2) the demography of the Central European Neolithic, (3) the palaeodemography of foragers during the Late Upper Palaeolithic, (4) the societal reorganization by Palaeolithic foragers under climate instability, (5) the palaeoenvironmental study of lake Prespa in the Balkans, and (6) environmental responses to agricultural land use practices in relation to sediment flux in hillslope systems. With reference to these cases, an adaptive cycle model is outlined, with phases of growth, conservation, distortion and reorganization. The model helps to infer internal dynamics in the diverse environmental and social domains without reducing one domain to another while still connecting evidence from a host of different sources. More generally, such a model could help in understanding features of non-linearity, multifactoral relations, scale dependency and time-lags which seem to be typical for the complex dynamics of integrated socio-environmental systems.

Jungpaläolithikum

Beleza 2012

Sandra Beleza et al., *The timing of pigmentation lightening in Europeans.* Molecular Biology and Evolution (2012), preprint, 1–34.

MolBiolEvol2012-preprint-Supplement.pdf

Sandra Beleza, António Múrias dos Santos, Brian McEvoy, Isabel Alves, Cláudia Martinho, Emily Cameron, Mark D. Shriver, Esteban J. Parra, Jorge Rocha

The inverse correlation between skin pigmentation and latitude observed in human populations is thought to have been shaped by selective pressures favoring lighter skin in order to facilitate vitamin D synthesis in regions far from the equator. Several candidate genes for skin pigmentation have been shown to exhibit patterns of polymorphism that overlap the geospatial variation in skin color. However, little work has focused on estimating the timeframe over which skin pigmentation has changed and on the intensity of selection acting on different pigmentation genes. To provide a temporal framework for the evolution of lighter pigmentation, we used forward Monte Carlo simulations coupled with a rejection sampling algorithm to estimate the time of onset of selective sweeps and selection coefficients at four genes associated with this trait in Europeans: KITLG, TYRP1, SLC24A5, and SLC45A2. Using compound haplotype systems consisting of rapidly evolving microsatellites linked to one SNP in each gene, we estimate that the onset of the sweep shared by Europeans and East Asians at KITLG occurred about 30,000 years ago, after the out-of-Africa migration, while the selective sweeps for the European-specific alleles at TYRP1, SLC24A5, and SLC45A2 started much later, within the last 11,000-19,000 years, well after the first migrations of modern humans into Europe. We suggest that these patterns were influenced by recent increases in size of human populations, which favored the accumulation of advantageous variants at different loci.

Keywords: pigmentation genes, age of selection, selection coefficient, European populations

Klima

Golledge 2012

Nicholas R. Golledge, Christopher J. Fogwill, Andrew N. Mackintosh & Kevin M. Buckley, *Dynamics of the last glacial maximum Antarctic ice-sheet and its response to ocean forcing.* PNAS **109** (2012), 16052–16056.

Retreat of the Last Glacial Maximum (LGM) Antarctic ice sheet is thought to have been initiated by changes in ocean heat and eustatic sea level propagated from the Northern Hemisphere (NH) as northern ice sheets melted under rising atmospheric temperatures. The extent to which spatial variability in ice dynamics may have modulated the resultant pattern and timing of decay of the Antarctic ice sheet has so far received little attention, however, despite the growing recognition that dynamic effects account for a sizeable proportion of mass-balance changes observed in modern ice sheets. Here we use a 5-km resolution whole-continent numerical ice-sheet model to assess whether differences in the mechanisms governing ice sheet flow could account for discrepancies between geochronological studies in different parts of the continent. We first simulate the geometry and flow characteristics of an equilibrium LGM ice sheet, using pan-Antarctic terrestrial and marine geological data for constraint, then perturb the system with sea level and ocean heat flux increases to investigate ice-sheet vulnerability. Our results identify that fast-flowing glaciers in the eastern Weddell Sea, the Amundsen Sea, central Ross Sea, and in the Amery Trough respond most rapidly to ocean forcings, in agreement with empirical data. Most significantly, we find that although ocean warming and sea-level rise bring about mainly localized glacier acceleration, concomitant drawdown of ice from neighboring areas leads to widespread thinning of entire glacier catchments —a discovery that has important ramifications for the dynamic changes presently being observed in modern ice sheets.
deglaciation | ice-sheet modeling | longitudinal coupling | enhanced flow

Zielhofer 2012

Christoph Zielhofer et al., *The decline of the early Neolithic population center of 'Ain Ghazal and corresponding earth-surface processes, Jordan Rift Valley.* Quaternary Research (2012), preprint, 1–15. DOI:10.1016/j.yqres.2012.08.006.

Christoph Zielhofer, Lee Clare, Gary Rollefson, Stephan Wächter, Dirk Hoffmeister, Georg Bareth, Christopher Roettig, Heike Bullmann, Birgit Schneider, Hubert Berke & Bernhard Weninger

'Ain Ghazal is among the earliest large population centers known in the Middle East. A total of four major stratigraphic cultural units have been identified: 1) The oldest Middle Pre-Pottery Neolithic B (MPPNB) unit (10.2 to 9.5 cal ka BP) clearly corresponds with the early Holocene maximum Dead Sea levels. 2) The second unit consists of Late Pre-Pottery Neolithic B (LPPNB) in situ walls and hearths. 3) In the subsequent PPNC (8.9 to 8.6 cal ka BP) the population density at the settlement drops dramatically, which corresponds with a significant drop in the Dead Sea level. 4) The 4th stratigraphic unit is characterized by the "Yarmoukian rubble layer". Additionally, there is evidence for a previously unrecognized use of the site by Chalcolithic pastoralists. Sedimentological analyses reveal a constant increase in dust from a remote source during the entire human occupation period, which correlates well with the detectable drops in climatic humidity from the Dead Sea. As the major focus of this study, we can now rule out previous notions that the "Yarmoukian" rubble layer could have been produced by (catastrophic) slope-scale gravitational movements. To this point, it appears that the Neolithic mega-site was abandoned due to a climatic aridification.
Keywords: Neolithic population center | Earth-surface processes | Rapid climate changes | 8.2 event | Southern Levant | Geoarcheology

Kupfer

Bartelheim 2002

Martin Bartelheim, Ernst Pernicka & Rüdiger Krau-

se (Hrsg.), *Die Anfänge der Metallurgie in der Alten Welt*, *Euroseminar Freiberg/Sachsen, November 1990*. Forschungen zur Archäomatrie 1 (Rahden/Westf. 2002).

Begemann 1999

Friedrich Begemann, Konrad Kallas, Sigrid Schmitt-Strecker & Ernst Pernicka, *Tracing ancient tin via isotope analyses*. In: Andreas Hauptmann, Ernst Pernicka, Thilo Rehren & Unsal Yalgin (Hrsg.), *The Beginnings of Metallurgy*, *Proceedings of the International Conference „The Beginnings of Metallurgy", Bochum 1995*. Veröffentlichungen aus dem Deutschen Bergbau-Museum 84 (Bochum 1999), 277–284.

Chernykh 2002

Evgenij N. Chernykh, *Some of the most important aspects and problems of early Metal Age studying*. In: Martin Bartelheim, Ernst Pernicka & Rüdiger Krause (Hrsg.), *Die Anfänge der Metallurgie in der Alten Welt*, *Euroseminar Freiberg/Sachsen, November 1990*. Forschungen zur Archäomatrie 1 (Rahden/Westf. 2002), 25–32.

Several problems of world history are briefly discussed in this paper. The transition to productive economy is considered to be one of the radical changes in technological development of humankind. A complex productive economy includes not only food production, but also metallurgy. This advanced type of economy is the decisive threshold that definitely marks the beginning of an uneven historical development of our planet's various cultures. Another important result of the development into a complex productive economy was the international division of labour: due to an uneven geographical distribution of metallic ores (especially copper, tin, arsenic and others) the status of manufacturers and consumers came up. The next problem under discussion is whether origin and expansion of metallurgy were mono- or polycentristic, which is especially important as regards the vast metallurgical provinces in Eurasia. A wide geographical spread of metal was often accompanied by migrations, active military actions and tribute relationship. Finally, the question of differences in the development of metallurgy in the New and the Old World is shortly touched in the article.

Keywords: Early Metal Age, Mining And Metallurgy, Metallurgical Provinces, Eurasia, Complex Productive Economy

Craddock 1991

Paul T. Craddock, *Copper production in Bronze Age Britain*. In: Jean-Pierre Mohen & Christiane Éluère (Hrsg.), *Découverte du métal*. Millénaires 2 (Paris 1991), 197–212.

Evidence is now emerging that copper was first smelted in central and western Europe by a variety of different methods in the 3rd-2nd millennium BC, all rather different from each other, and more significantly very different from the highly reducing contemporary smelting processes of the Near and Middle East which had by then been in use for almost a millennia. Surely if the knowledge of metallurgy had spread to western Europe from the east the prospectors or metallurgists would have used their own contemporary technology rather than regressing to a much more primitive process. The simplicity and diversity of the various processes of the European Bronze Age suggest independent discovery and development at a number of centres.

However it must be stressed again that these suggestions are very tentative relying, as they do, as much on the absence of evidence as on its presence. Clearly more survey and

excavation work such as is currently in progress by the Early Mines Research Group and others will enable the development of metallurgy in Europe to be better understood.

Craddock 1999
Paul T. Craddock:, *Paradigms of metallurgical innovation in prehistoric Europe*. In: Andreas Hauptmann, Ernst Pernicka, Thilo Rehren & Unsal Yalgin (Hrsg.), *The Beginnings of Metallurgy*, *Proceedings of the International Conference „The Beginnings of Metallurgy“, Bochum 1995*. Veröffentlichungen aus dem Deutschen Bergbau-Museum 84 (Bochum 1999), 175–192.

Hauptmann 1999
Andreas Hauptmann, Ernst Pernicka, Thilo Rehren & Unsal Yalgin (Hrsg.), *The Beginnings of Metallurgy*, *Proceedings of the International Conference „The Beginnings of Metallurgy“, Bochum 1995*. Veröffentlichungen aus dem Deutschen Bergbau-Museum 84 (Bochum 1999).

Keesmann 1999
Ingo Keesmann, Auxiliadora Moreno Onorato, *Naturwissenschaftliche Untersuchungen zur frühen Technologie von Kupfer und Kupfer-Arsen-Bronze*. In: Andreas Hauptmann, Ernst Pernicka, Thilo Rehren & Unsal Yalgin (Hrsg.), *The Beginnings of Metallurgy*, *Proceedings of the International Conference „The Beginnings of Metallurgy“, Bochum 1995*. Veröffentlichungen aus dem Deutschen Bergbau-Museum 84 (Bochum 1999), 317–332.
Vergleichende archäometallurgische Untersuchungen zur Arsen-Kupfer-Technologie in Südspanien (Los Millares, El Malagön und Fernando Lopez) liefern ein weitgehend vollständiges Bild der wesentlichen Elemente dieser Metallurgiekette. Es ist, obwohl mit einfachen Mitteln als Tiegelverfahren in kleinem Maßstab durchgeführt, bereits im Chalkolithikum ein hochentwickeltes Verfahren: Komplex zusammengesetzte polymetallische Erze wurden in einem gezielt mehrstufig durchgeführten metallurgischen Prozeß zu einem geeigneten Werkstoff und zu metallischen Objekten verarbeitet.

Marshall 1999
Peter D. Marshall, Sarah L. O'Hara & Barbara S. Ottaway, *Early copper metallurgy in Austria and methods of assessing its impact on the environment*. In: Andreas Hauptmann, Ernst Pernicka, Thilo Rehren & Unsal Yalgin (Hrsg.), *The Beginnings of Metallurgy*, *Proceedings of the International Conference „The Beginnings of Metallurgy“, Bochum 1995*. Veröffentlichungen aus dem Deutschen Bergbau-Museum 84 (Bochum 1999), 255–264.
In summary it seems as though the medieval mining and metalworking did not have the drastic effect on the environment ususally assumed in the literature (Darby 1956). From the results presented here the only noticeable effect on woodland was a decrease in Fagus. There was no wholesale woodland clearance. Taking this result together with the large quantities of wood that was undeniably needed for mining and certainly for smelting, the absence of a major effect on woodland could suggest careful management of woodland resources. The amount of Pb contamination to the environment was noticeable, that of Zn and Cu, however, was minimal, although this may have been caused by the distance

of the sampling site from mining and smelting activities (approximately 3 km), and the lack of a backgound level of metal deposition prior to any human activity with which to compare the results.
Given these results and the promise of success of a multi-disciplinary approach to the study of the impacts of mining and smelting, there is a need for more studies of this kind to test assumptions about the prehistoric past and the first metal producing industries. Our results are supported by results from Wales and Ireland (Mighall 1992; Mighall & Chambers 1989,1993,1994) which also suggest that Bronze Age mining did not have a destructive impact on the environment. The effects of roasting and smelting of ores are likely to have been more severe in that greater amounts of wood will have been required and larger quantities of heavy metals will have been released. The study of the effects of prehistoric mining and smelting must also be the starting point for a thorough understanding of the present day anthropogenic changes of climate associated with global industrial activities and those predicted for the short and long term future (IPCC Conference Berlin, April 1995).
The interpretation presented in this paper may of course be influenced by our modern day perception of what constitutes a major industrial impact. At present there is no way of quantifying industrial output with environmental impact. However, ongoing data analysis and future work may overcome this problem.

Mohen 1991

Jean-Pierre Mohen & Christiane Éluère (Hrsg.), *Découverte du métal*. Millénaires 2 (Paris 1991).

Primas 2002

M. Primas, *Early tin bronze in Central and Southern Europe*. In: Martin Bartelheim, Ernst Pernicka & Rüdiger Krause (Hrsg.), *Die Anfänge der Metallurgie in der Alten Welt*, *Euroseminar Freiberg/Sachsen, November 1990*. Forschungen zur Archäomatrie 1 (Rahden/Westf. 2002), 303–314.
The present article deals with the shift from copper to tin bronze and reviews analyses from different regions in the southern part of Europe. Lead isotope analysis suggests a foreign provenance for early tin bronze. The widespread adoption of tin bronze technology between 2200-1800 cal. BC did not produce a uniform pattern. Regional preferences indicate variation in social organisation. Beads of metallic tin will be discussed as probable indicators of interregional networks of exchange.
Keywords: Central And Southern Europe, Early Bronze Age, Tin Bronze, Tin Beads, Social Organisation.

Rovira 2002

Salvador Rovira, *Early slags and smelting by-products of copper metallurgy in Spain*. In: Martin Bartelheim, Ernst Pernicka & Rüdiger Krause (Hrsg.), *Die Anfänge der Metallurgie in der Alten Welt*, *Euroseminar Freiberg/Sachsen, November 1990*. Forschungen zur Archäomatrie 1 (Rahden/Westf. 2002), 83–98.
Many aspects of prehistoric metallurgy in Spain are well known through the research programs carried out over the last years, but early copper smelting slags are almost unknown. This paper deals with the composition and structure of Chalcolithic slags determined by SEM facilities. The slags are products of a smelting process implemented in ceramic reducing crucibles (basins and trays). Other smelting debris such as copper prills, ores and slagged sherds belonging to those reducing implements are also taken into account.

Keywords: Copper Slags, Copper Ores, Copper Smelting, Prills, Composition, Reducing Crucibles, Sem Analysis, Chalcolithic, Bronze Age, Spain.

Ruzanov 1999

Vladimir Ruzanov, *Zum frühen Auftreten der Zinnbronze in Mittelasien*. In: Andreas Hauptmann, Ernst Pernicka, Thilo Rehren & Unsal Yalgin (Hrsg.), *The Beginnings of Metallurgy*, *Proceedings of the International Conference „The Beginnings of Metallurgy", Bochum 1995*. Veröffentlichungen aus dem Deutschen Bergbau-Museum 84 (Bochum 1999), 103–105.

Tylecote 1991

R. F. Tylecote, *Early copper base alloys; natural or man-made*. In: Jean-Pierre Mohen & Christiane Éluère (Hrsg.), *Découverte du métal*. Millénaires 2 (Paris 1991), 213–221.

The purer native coppers are very malleable in the cold state and as expected the arsenical native coppers work harden at a higher rate.

Additions of 9 % As and 10 % Sn to molten native coppers give good castable alloys. Tin can be added to pure copper either as stannite or as cassiterite ; the former seems to be more efficient but les common.

Coppers with 2 % As or less are probably made from oxide copper ores with As as an impurity. Those with more than 4 % are almost certainly made by co-smelting copper and arsenic-containming minerals to molten copper.

In view of its tin resources it is not surprising that NW Europe made bronzes at the start of the EBA, while the Near East had to make do with Cu-As alloys until trade was able to rectify the situation.

Yi 1999

Wen Yi et al., *Tin isotope studies of experimental and prehistoric bronzes*. In: Andreas Hauptmann, Ernst Pernicka, Thilo Rehren & Unsal Yalgin (Hrsg.), *The Beginnings of Metallurgy*, *Proceedings of the International Conference „The Beginnings of Metallurgy", Bochum 1995*. Veröffentlichungen aus dem Deutschen Bergbau-Museum 84 (Bochum 1999), 285–290.

Wen Yi, Paul Budd, Rona A. R. McGill, Suzanne M. M. Young, Alex N. Halliday, Randolph Haggerty, Brett Scaife & A. Mark Pollard

Zwicker 1991

U. Zwicker, *Natural copper-arsenic alloy and smelted arsenic bronzes in early metal production*. In: Jean-Pierre Mohen & Christiane Éluère (Hrsg.), *Découverte du métal*. Millénaires 2 (Paris 1991).

There are not many dated slag and crucible samples from smelting processes which contain arsenic bronze, whilst many objects exist which consist of arsenic bronze. As the amount of slag produced from the smelting of oxide ore is very small and often in the form of powder there are not many pieces of slag left from these early smelting processes. From the few investigations done on samples of slag and on fragments of crucibles which contain droplets of arsenic bronze and therefore show that arsenic bronze was smelted or melted one can suppose that the arsenic content of the objects cast from these crucibles varied to a high degree. This would be in good agreement with the variation of the arsenic content in most ores containing arsenic and also with the fact that in early

hoards there is often a great variation of the arsenic content in the same type of objects. Even in the 2 kg of ore which was excavated from the neolithic settlement of Norsun Tepe more than 25 km from the nearest ore body almost pure copper could be produced from some ore particles as well as an alloy containing more than 10 % As. Probably it was well known in the early times of metallurgy that the castability of copper could be improved by the addition of arsenic in the form of pure arsenic or by the addition of ores or of speiss containing arsenic. As these additives were probably introduced into the copper in the form of powder they may have been lost by corrosion processes or were not detected during the excavation of early smelting places. This can be seen from the three layered ingot with matte on the top, speiss in the middle and copper alloy on the bottom, where the speiss showed the highest corrosion and oxidation rate during its more than 3,000 years contact with humid earth. As many smelting and alloying processes may have been used during the beginning of metallurgy it needs many careful excavations and investigations to discover the first production of arsenic bronze.

Mittelpaläolithikum

Balter 2012

Michael Balter, *Did Neandertals Truly Bury Their Dead?* science **337** (2012), 1443–1444.

French archaeologists concluded that all were deliberately buried, making La Ferrassie pivotal to contentions that Neandertals had symbolic capacities.

Until now, that is. New excavations at La Ferrassie, co-directed by archaeologists Alain Turq of the National Museum of Prehistory in nearby Les Eyzies-de-Tayac and Harold Dibble of the University of Pennsylvania, are in part designed to reexamine this question, which many researchers had long thought was itself dead and buried. “People are starting to talk about Neandertal burials again,” Dibble says. “It’s getting heated.”

Dibble thinks the key question is not whether a burial was deliberate, but whether archaeologists confront “a burial or a funeral.” A burial, Dibble says, is simply a “disposal” of a body, while a funeral, complete with ritual activity, is a real “symbolic” act.

Sandgathe 2011

Dennis M. Sandgathe, Harold L. Dibble, Paul Goldberg & Shannon P. McPherron, *The Roc de Marsal Neandertal child: A reassessment of its status as a deliberate burial.* Journal of Human Evolution **61** (2011), 243–253.

Whether Neandertals buried their dead has considerable bearing on the debate concerning the nature of their cultural behavior. Among the claims for intentional Neandertal burial in Europe, the child from Roc de Marsal has long been one of the less contentious examples because its articulated skeleton was found in what has become widely accepted as an intentionally excavated pit. However, what is known about the context of the Roc de Marsal remains from the original descriptions, coupled with new stratigraphic, sedimentological, and archaeological data on the site from recent excavations, cast serious doubt on this interpretation.

Keywords: Middle Paleolithic | France | Taphonomy | Burial

Story or Book

Breuer 2012

Reinhard Breuer, *„Schulden braucht man nicht zurückzuzahlen!“*. Spektrum der Wissenschaft **2012**, xi, 104–105.

Der Anthropologe und Anarchist David Graeber erklärt die Welt neu und bekämpft das Dogma der Zahlungsmoral.
David Graeber. Schulden. Die ersten 5000 Jahre. Aus dem Englischen von Ursel Schäfer, Hans Freundl und Stephan Gebauer. Klett-Cotta, Stuttgart 2012. 600 S., E 26,95