

References

Aktuell

D'ACUNTO 2014

Francesco d'Acunto, Marcel Prokopczuk & Michael Weber, *Distrust in Finance Lingers, Jewish Persecution and Households' Investments*. unknown (2014), preprint, 1–61. <http://faculty.chicagobooth.edu/michael.weber/research/pdf/antisem.pdf>.

We look at the geography of historical Jewish persecution to proxy for localized distrust in finance. Households in German counties where Jewish persecution was one standard deviation higher are 7.5% to 12% less likely to invest in stocks. The results hold when comparing only geographically close counties, and counties that hosted documented Jewish communities in the distant past. Current antisemitism, discriminatory beliefs, generalized trust, or supply-side forces do not explain the effect, which instead is consistent with a norm of distrust in finance, transmitted across generations. The forced migrations of Jewish communities across the German lands in the Middle Ages help assess if the effect of Jewish persecution on stockholdings is causal.

Keywords: Cultural Economics, Social Stereotypes, Household Finance, History & Finance.

CHO 2014

Adrian Cho, *Breakthrough lost in coin toss?* *science* **346** (2014), 22–23.

A controversial quantum measurement that seems to bend the rules may not be very quantum after all.

However, Anthony Leggett, a theorist at the University of Illinois, Urbana-Champaign, says Ferrie and Combes have made a good case that anomalous weak values are an artifact of a disturbance and postselection. But he cautions that Ferrie and Combs have not proved that all the experiments done with weak values have classical explanations. “One ought to look at the individual case in detail,” he says. Aephraim Steinberg, the experimentalist at the University of Toronto in Canada who applied weak values to the two-slit experiment, says he’s “still mulling it over.” He notes that the debate has never been over whether the experiments work as predicted: “We all agree on the experiments, we just don’t agree on what they mean.”

COHEN 2014

Jon Cohen, *When Ebola protection fails*. *science* **346** (2014), 17–18.

Repeated cases among health care workers are a puzzle, but more staff and better training may lower risks.

As of 23 September, the outbreak had sickened 375 health care workers and killed 211, according to the World Health Organization. A clearer understanding of the risks could lead to better precautions and ease the minds of those thinking of joining the fight. Rigorous training can bring down the risk of infection. Doctors Without Borders (MSF), which literally has written the book on operating an Ebola treatment unit, has so far had only one worker contract the disease despite taking care of the majority of patients in this epidemic.

LEGATES 2013

David R. Legates, Willie Soon, William M. Briggs, Christopher Monckton of Brenchley, *Climate Consensus and ‘Misinformation’, A Rejoinder to Agnotology, Scientific Consensus, and the Teaching and Learning of Climate Change*. *Science Education* (2013), preprint, 1–20. DOI:10.1007/s11191-013-9647-9.

Agnotology is the study of how ignorance arises via circulation of misinformation calculated to mislead. Legates et al. (*Sci Educ* 22:2007–2017, 2013) had questioned the applicability of agnotology to politically-charged debates. In their reply, Bedford and Cook (*Sci Educ* 22:2019–2030, 2013), seeking to apply agnotology to climate science, asserted that fossil-fuel interests had promoted doubt about a climate consensus. Their definition of climate ‘misinformation’ was contingent upon the post-modernist assumptions that scientific truth is discernible by measuring a consensus among experts, and that a near unanimous consensus exists. However, inspection of a claim by Cook et al. (*Environ Res Lett* 8:024024, 2013) of 97.1% consensus, heavily relied upon by Bedford and Cook, shows just 0.3% endorsement of the standard definition of consensus: that most warming since 1950 is anthropogenic. Agnotology, then, is a two-edged sword since either side in a debate may claim that general ignorance arises from misinformation allegedly circulated by the other. Significant questions about anthropogenic influences on climate remain. Therefore, Legates et al. appropriately asserted that partisan presentations of controversies stifle debate and have no place in education.

PEASE 2014

Roland Pease, *Double-whammy tsunami?* *science* **346** (2014), 18.

Japan’s 2011 quake may have had a hidden accomplice.

They conclude that a slab of sediment measuring 20 by 40 kilometers and up to 2 kilometers thick slid about 300 meters down the steep slope of the Japan Trench, “acting like a piston.”

The authors make a good case but are far from proving it, says Costas Synolakis, a tsunami expert at the University of Southern California in Los Angeles. Synolakis collaborated with Tappin and Grilli on previous studies that showed a similar slump caused a deadly 1998 tsunami off Papua New Guinea. This time, however, he worries the researchers are fixated on details of the tsunami modeling at the expense of the big picture. “Anyone who thinks you can model the behavior of a tsunami to better than a factor of 2 is crazy!” he says. A detailed survey of the sea floor would settle the case, he says. Satake, however, maintains that his two-quake explanation is adequate and that the existing seafloor mapping reveals nothing.

PULLIUM 2014

Jennifer K. Pullium, Gordon S. Roble & Mark A. Raymond, *Be prepared*. *nature* **514** (2014), 430.

Scenario-based training for disasters is better than just drawing up a paper plan, say Jennifer K. Pullium and colleagues.

Too many training programmes look for responses guided by standard operating procedures, with predetermined ‘correct’ answers. By contrast, tactical decision games simulate stressful, challenging situations and require participants to make choices without full information or clearly correct answers². Exercises that were initially developed for military use have been adapted for civilians by industrial psychologists such as Margaret Crichton. Such training is becoming standard in aviation, nuclear-power plants and medicine³. After coping with Sandy, our team created a programme for animal-care facilities.

People may not enjoy these exercises, but they do see the value. Working through shifting scenarios allows trainees to become confident in their thought processes and abilities. When people are reduced to stumbling responses, this is framed as an area to improve. In our exercises, much as in a real disaster, a right answer is not essential; making a decision is.

TAPPIN 2014

David R. Tappin et al., *Did a submarine landslide contribute to the 2011 Tohoku tsunami?* *Marine Geology* (2014), preprint, 1–72. DOI:10.1016/j.margeo.2014.09.043.

David R. Tappin, Stephan T. Grilli, Jeffrey C. Harris, Robert J. Geller, Timothy Masterlark, James T. Kirby, Fengyan Shi, Gangfeng Ma, K.K.S. Thingbaijam & P.M. Mai

Many studies have modelled the Tohoku tsunami of March 11, 2011 as being due entirely to slip on an earthquake fault, but the following discrepancies suggest that further research is warranted. (1) Published models of tsunami propagation and coastal impact underpredict the observed runup heights of up to 40 m measured along the coast of the Sanriku district (the northeast part of Honshu Island). (2) Published models cannot reproduce the timing and high frequency content of tsunami waves recorded at three nearshore buoys off Sanriku, as well as the timing and dispersion properties of the waveforms at offshore DART buoy #21418. (3) The rupture centroids obtained by tsunami inversions are biased about 60 km NNE of that obtained by the Global CMT Project. Based on an analysis of seismic and geodetic data, together with recorded tsunami waveforms, we propose that, while the primary source of the tsunami was the vertical displacement of the seafloor due to the earthquake, an additional tsunami source is also required. We infer the location of the proposed additional source based on an analysis of the travel times of higher frequency tsunami waves observed at nearshore buoys. We further propose that the most likely additional tsunami source was a submarine mass failure (SMF—i.e., a submarine landslide). A comparison of pre- and post-tsunami bathymetric surveys reveals tens of meters of vertical seafloor movement at the proposed SMF location, and a slope stability analysis confirms that the horizontal acceleration from the earthquake was sufficient to trigger an SMF. Forward modelling of the tsunami generated by a combination of the earthquake and the SMF reproduces the recorded on-, near- and offshore tsunami observations well, particularly the high frequency component of the tsunami waves off Sanriku, which were not well simulated by previous models. The conclusion that a significant part of the 2011 Tohoku tsunami was generated by an SMF source has important implications for estimates of tsunami hazard in the Tohoku region as well in other tectonically similar regions.

Altpaläolithikum

JÖRIS 2014

Olaf Jöris, *Early Palaeolithic Europe*. In: COLIN RENFREW & PAUL BAHN (Hrsg.), *The Cambridge World Prehistory, 3. West and Central Asia and Europe*. (2014), 1703–1746.

Life in Early Palaeolithic Europe was significantly different from that in the Upper Palaeolithic after the first Anatomically Modern Humans had entered the continent. For almost two million years the continent had been occupied by hominins different from us. These ancestral populations adapted to, and learned to cope with, entirely different climatic and environmental conditions within Europe's

constantly changing geography. The hominins established culture and a way of life, both of which changed through time, increasing their own influence on the environment. They were highly knowledgeable and became skilled and experienced hunters, well equipped for life in Ice Age Europe. However, they also remained entirely different from Modern Humans.

Anthropologie

CALLAWAY 2014

Ewen Callaway, *Oldest-known human genome sequenced*. [nature 514 \(2014\), 413](#).

The more precise dates for Neanderthal–human mating pose a challenge for scientists who have proposed that modern humans left Africa before 100,000 years ago and reached Asia more than 75,000 years ago, says Chris Stringer, a palaeo-anthropologist at London’s Natural History Museum. Those researchers, who include Michael Petraglia, an archaeologist at the University of Oxford, UK, have pointed to *H. sapiens*-like bones from the Levant that are older than 100,000 years and to 70,000-year-old stone tools found in India as evidence for an early human exodus to Asia along a southern coastal route that eventually reached Oceania and Australia.

FU 2014

Qiaomei Fu et al., *Genome sequence of a 45,000-year-old modern human from western Siberia*. [nature 514 \(2014\), 445–449](#).

[n514-0445-Supplement.pdf](#)

Qiaomei Fu, Heng Li, Priya Moorjani, Flora Jay, Sergey M. Slepchenko, Aleksei A. Bondarev, Philip L. F. Johnson, Ayinuer Aximu-Petri, Kay Prüfer, Cesare de Filippo, Matthias Meyer, Nicolas Zwyns, Domingo C. Salazar-García, Yaroslav V. Kuzmin, Susan G. Keates, Pavel A. Kosintsev, Dmitry I. Razhev, Michael P. Richards, Nikolai V. Peristov, Michael Lachmann, Katerina Douka, Thomas F. G. Higham, Montgomery Slatkin, Jean-Jacques Hublin, David Reich, Janet Kelso, T. Bence Viola & Svante Pääbo

We present the high-quality genome sequence of a 45,000-year-old modern human male from Siberia. This individual derives from a population that lived before—or simultaneously with—the separation of the populations in western and eastern Eurasia and carries a similar amount of Neanderthal ancestry as present-day Eurasians. However, the genomic segments of Neanderthal ancestry are substantially longer than those observed in present-day individuals, indicating that Neanderthal gene flow into the ancestors of this individual occurred 7,000–13,000 years before he lived. We estimate an autosomal mutation rate of 0.4×10^9 to 0.6×10^9 per site per year, a Y chromosomal mutation rate of 0.7×10^9 to 0.9×10^9 per site per year based on the additional substitutions that have occurred in present-day nonAfricans compared to this genome, and a mitochondrial mutation rate of 1.8×10^8 to 3.2×10^8 per site per year based on the age of the bone.

PICKERING 2014

Martin J. Pickering & Simon Garrod, *Neural integration of language production and comprehension*. [PNAS 111 \(2014\), 15291–15292](#).

Two key assumptions underpin the cognitive neuroscience of language. First, there is a clear-cut split between the processes involved in understanding an utterance (recognizing a word, resolving ambiguity) and the processes involved in

crafting that utterance (translating an idea into sound or writing). Second, researchers assume that the linguistic mechanisms are lateralized, with production processes (e.g., lexical selection, articulation) and, to some extent, comprehension processes primarily occurring in the left hemisphere. Silbert et al. report a neuroimaging study based on the production and comprehension of naturalistic narrative that challenges these two assumptions.

In addition, they identified the brain regions in which the neural responses were coupled between production and comprehension of the same narrative. To accomplish this, Silbert et al. identified regions in which BOLD changes correlated between the speaker's brain and the listener's brain at exactly the same point in the narrative.

REBOLLEDO-JARAMILLO 2014

Boris Rebolledo-Jaramillo et al., *Maternal age effect and severe germline bottleneck in the inheritance of human mitochondrial DNA*. [PNAS 111 \(2014\), 15474–15479](#).

[pnas111-15474-Supplement.xls](#)

Boris Rebolledo-Jaramillo, Marcia Shu-Wei Su, Nicholas Stoler, Jennifer A. McElhoe, Benjamin Dickins, Daniel Blankenberg, Thorfinn S. Korneliusen, Francesca Chiaromonte, Rasmus Nielsen, Mitchell M. Holland, Ian M. Paul, Anton Nekrutenko & Kateryna D. Makova

The manifestation of mitochondrial DNA (mtDNA) diseases depends on the frequency of heteroplasmy (the presence of several alleles in an individual), yet its transmission across generations cannot be readily predicted owing to a lack of data on the size of the mtDNA bottleneck during oogenesis. For deleterious heteroplasmies, a severe bottleneck may abruptly transform a benign (low) frequency in a mother into a disease-causing (high) frequency in her child. Here we present a high-resolution study of heteroplasmy transmission conducted on blood and buccal mtDNA of 39 healthy mother–child pairs of European ancestry (a total of 156 samples, each sequenced at $\approx 20,000\times$ per site). On average, each individual carried one heteroplasmy, and one in eight individuals carried a disease-associated heteroplasmy, with minor allele frequency $\geq 1\%$. We observed frequent drastic heteroplasmy frequency shifts between generations and estimated the effective size of the germline mtDNA bottleneck at only $\approx 30\text{--}35$ (interquartile range from 9 to 141). Accounting for heteroplasmies, we estimated the mtDNA germ-line mutation rate at $1.3 \mid 108$ (interquartile range from $4.2 \mid 109$ to $4.1 \mid 108$) mutations per site per year, an order of magnitude higher than for nuclear DNA. Notably, we found a positive association between the number of heteroplasmies in a child and maternal age at fertilization, likely attributable to oocyte aging. This study also took advantage of droplet digital PCR (ddPCR) to validate heteroplasmies and confirm a de novo mutation. Our results can be used to predict the transmission of disease-causing mtDNA variants and illuminate evolutionary dynamics of the mitochondrial genome.

[mitochondria | heteroplasmy](#)

SILBERT 2014

Lauren J. Silbert, Christopher J. Honey, Erez Simony, David Poeppel & Uri Hasson, *Coupled neural systems underlie the production and comprehension of naturalistic narrative speech*. [PNAS 111 \(2014\), E4687–E4696](#).

Neuroimaging studies of language have typically focused on either production or comprehension of single speech utterances such as syllables, words, or sentences.

In this study we used a new approach to functional MRI acquisition and analysis to characterize the neural responses during production and comprehension of complex real-life speech. First, using a time-warp based intrasubject correlation method, we identified all areas that are reliably activated in the brains of speakers telling a 15-min-long narrative. Next, we identified areas that are reliably activated in the brains of listeners as they comprehended that same narrative. This allowed us to identify networks of brain regions specific to production and comprehension, as well as those that are shared between the two processes. The results indicate that production of a real-life narrative is not localized to the left hemisphere but recruits an extensive bilateral network, which overlaps extensively with the comprehension system. Moreover, by directly comparing the neural activity time courses during production and comprehension of the same narrative we were able to identify not only the spatial overlap of activity but also areas in which the neural activity is coupled across the speaker's and listener's brains during production and comprehension of the same narrative. We demonstrate widespread bilateral coupling between production- and comprehension-related processing within both linguistic and nonlinguistic areas, exposing the surprising extent of shared processes across the two systems.

speech production | speech comprehension | intersubject correlation | brain-to-brain coupling

Bibel

HAWKINS 2008

Ralph K. Hawkins, *The Survey of Manasseh and the Origin of the Central Hill Country Settlers*. In: RICHARD S. HESS, GERALD A. KLINGBEIL & PAUL J. RAY JR. (Hrsg.), *Critical Issues in Early Israelite History*. Bulletin for biblical research supplements 3 (Winona Lake 2008), 165–179.

In this study, I seek to use the survey of Manasseh as a test case for the theory of indigenous Israelite origins. This essay reviews the wealth of new data the survey has produced in relation to the emergence of Israel, especially in regard to the chronology of the settlement process. It examines objections to the survey's methodology and then seeks to understand the data in relation to the biblical books of Joshua and Judges and the question of Israelite origins.

Taken as a whole, the book of Joshua provides a much more balanced view of the Israelite settlement and/or conquest (Merling 1997b). The Israelites migrated into Canaan from the east and, because of the Canaanite presence in the lowland, they concentrated their settlements in the hill country. But despite the fact that, in Israel's process of settlement, they confined themselves to the hill country for some time, this turned out to be propitious. Yohanan Aharoni's observations, written more than 30 years ago, describe the longterm ramifications of their initial geographic location:

“The necessity to settle in the mountain areas was responsible for the fact that the Israelite occupation became more than a conquest. For the first time the center of gravity of the country moved to the mountain districts, creating conditions propitious for the establishment of an independent and strong monarchy.” (Aharoni 1971: 128)

HAWKINS 2008

Ralph K. Hawkins, *The Date of the Exodus-Conquest is Still an Open Question, A Response to Rodger Young and Bryant Wood*. [Journal of the Evangelical Theological Society](#) **51** (2008), 245–266.

Young and Wood conclude their article by suggesting that my arguments for a late-date exodus-conquest “do not hold up to critical analysis.” In this rejoinder, I have sought to show that the date of the exodus-conquest is still an open question. As one can see from my discussion of the settlement data and the Ebal site, I am inclined at present toward the later date. I agree, however, with Hoffmeier, who wrote that, “should . . . new evidence emerge that would support the 15th-century theory, I would shift my position, because I am not ideologically committed the 13th-century date.” Hoffmeier concluded his article by urging evangelical scholars “not to expend all their energies on defending a date for the exodus when the real debate today is whether the books of Exodus-Judges contain any history at all and if there was a sojourn and an exodus.” The Mt. Ebal site, which has largely been ignored by the scholarly community, has much to contribute to our understanding of early Israelite society. If the structure on Mt. Ebal was an Israelite cultic site—whether Joshua’s altar or not—then it may attest to social organization, centralization of cult, and a crystallizing national consciousness at this early stage in the people’s history. The origin of the Ebal site is also “consistent with the dramatic settlement activity in the central hill country early in the twelfth century B.C.” These are important implications that may substantiate the biblical portrayal of early Israel as a people unified by their faith in Yahweh even in this early period when they entered the land of Canaan. These data should stimulate further inquiry into Israel’s early history with a view toward the recovery of the OT past.

Biologie

Bos 2014

Kirsten I. Bos et al., *Pre-Columbian mycobacterial genomes reveal seals as a source of New World human tuberculosis*. [nature](#) **514** (2014), 494–497.

[n514-0494-Supplement1.pdf](#), [n514-0494-Supplement2.zip](#)

Kirsten I. Bos, Kelly M. Harkins, Alexander Herbig, Mireia Coscolla, Nico Weber, Iñaki Comas, Stephen A. Forrest, Josephine M. Bryant, Simon R. Harris, Verena J. Schuenemann, Tessa J. Campbell, Kerttu Majander, Alicia K. Wilbur, Ricardo A. Guichon, Dawnie L. Wolfe Steadman, Della Collins Cook, Stefan Niemann, Marcel A. Behr, Martin Zumarraga, Ricardo Bastida, Daniel Huson, Kay Nieselt, Douglas Young, Julian Parkhill, Jane E. Buikstra, Sebastien Gagneux, Anne C. Stone & Johannes Krause

Modern strains of *Mycobacterium tuberculosis* from the Americas are closely related to those from Europe, supporting the assumption that human tuberculosis was introduced post-contact¹. This notion, however, is incompatible with archaeological evidence of pre-contact tuberculosis in the New World². Comparative genomics of modern isolates suggests that *M. tuberculosis* attained its worldwide distribution following human dispersals out of Africa during the Pleistocene epoch³, although this has yet to be confirmed with ancient calibration points. Here we present three 1,000-year-old mycobacterial genomes from Peruvian human skeletons, revealing that a member of the *M. tuberculosis* complex caused human disease before contact. The ancient strains are distinct from known human-adapted forms and are most closely related to those adapted to seals and sea lions. Two independent dating approaches suggest a most recent common ancestor for the

M. tuberculosis complex less than 6,000 years ago, which supports a Holocene dispersal of the disease. Our results implicate sea mammals as having played a role in transmitting the disease to humans across the ocean.

KISLEV 1989

M. E. Kislev, *Pre-domesticated Cereals in the Pre-Pottery Neolithic A Period*. In: ISRAEL HERSHKOVITZ (Hrsg.), *People and Culture in Change, Second Symposium on Upper Palaeolithic, Mesolithic and Neolithic Populations of Europe and the Mediterranean Basin*. BAR International Series 508(i) (Oxford 1989), 147–151.

One of the major components of the agricultural revolution in the Neolithic Near East is the cultivation and domestication of two cereals, namely, barley and emmer. It is suggested that the mixtures of wild and domesticated barley, reported in some PPNA sites, may all actually be wild types because 1) the rachis fragments reported are never longer than 1 internode; 2) grain size is not a character symptomatic of the stage of domestication; 3) ancient, charred nodes which exhibit the morphology of domesticated barley have the anatomy of the wild species; 4) in wild, extant barley populations, about 10% of rachis nodes may show an attached fragment of the upper internode, a fact previously attributed to domesticated plants only. In the case of wild and domesticated emmer wheats, there is still no way to distinguish between them. Therefore, the supposed dating of domestication of cereals to the PPNA period is questioned.

SAGE 1995

Rowan F. Sage, *Was low atmospheric CO₂ during the Pleistocene a limiting factor for the origin of agriculture?* *Global Change Biology* 1 (1995), 93–106.

Agriculture originated independently in many distinct regions at approximately the same time in human history. This synchrony in agricultural origins indicates that a global factor may have controlled the timing of the transition from foraging to foodproducing economies. The global factor may have been a rise in atmospheric CO₂ from below 200 to near 270 $\mu\text{mol mol}^{-1}$ which occurred between 15,000 and 12,000 years ago. Atmospheric CO₂ directly affects photosynthesis and plant productivity, with the largest proportional responses occurring below the current level of 350 $\mu\text{mol mol}^{-1}$. In the late Pleistocene, CO₂ levels near 200 $\mu\text{mol mol}^{-1}$ may have been too low to support the level of productivity required for successful establishment of agriculture. Recent studies demonstrate that atmospheric CO₂ increase from 200 to 270 $\mu\text{mol mol}^{-1}$ stimulates photosynthesis and biomass productivity of C₃ plants by 25% to 50%, and greatly increases the performance of C₃ plants relative to weedy C₄ competitors. Rising CO₂ also stimulates biological nitrogen fixation and enhances the capacity of plants to obtain limiting resources such as water and mineral nutrients. These results indicate that increases in productivity following the late Pleistocene rise in CO₂ may have been substantial enough to have affected human subsistence patterns in ways that promoted the development of agriculture. Increasing CO₂ may have simply removed a productivity barrier to successful domestication and cultivation of plants. Through effects on ecosystem productivity, rising CO₂ may also have been a catalyst for agricultural origins by promoting population growth, sedentism, and novel social relationships that in turn led to domestication and cultivation of preferred plant resources.

Keywords: origin of agriculture, CO₂ enrichment, crop domestication, global change, neolithic transition, photosynthesis

Datierung

GERLOFF 2007

Sabine Gerloff, *Reinecke's ABC and the Chronology of the British Bronze Age*. In: CHRISTOPHER BURGESS, PETER TOPPING & FRANCES LYNCH (Hrsg.), *Beyond Stonehenge, Essays on the Bronze Age in honour of Colin Burgess*. (Oxford 2007), 117–161.

Firstly, Reinecke's chronology of the central European Bronze Age, the subsequent divisions of his Urnfield phases by Muller-Karpe (1959) and Sperber (1987) and the new absolute chronology (post-Reinecke and Muller-Karpe) based on scientific dating will be discussed. It will be pointed out that Sperber's 'new' phases – like those of most Swiss authors – although frequently aligned to Müller-Karpe's terminology, do not correspond in content to the traditional Müller-Karpe scheme which is still usually still used for establishing correlations across Europe. Special attention will be also given to more recently introduced 'post-Reinecke' phases, i.e. Bz A3 and Ha C0/C1a. Muller-Karpe's Ha B2, normally disregarded, will be reviewed and reinstated.

The traditional and revised British chronologies will be discussed and correlated with the current central European schemes in the main body of this paper. The British Early Bronze Age will be divided into three major phases: the earliest (EBA 1 or Migdale phase) corresponding to Reinecke Bz A1; Wessex I (EBA 2 or Bush Barrow phase) aligned to the classical phase of the Unetice culture of early Bz A2 (although originally included in Bz A1 by Reinecke); Wessex II (EBA 3 or Camerton-Snowhill phase) should correspond to the conventional late Bz A2 (i.e. Bz A3), or Sögel phase in northwest Germany (Period 1A in northern Europe), and persist – in Wessex – into Bz B and possibly early C. The earliest Middle Bronze Age (mainly found outside Wessex) is seen as contemporary with later Wessex II burials in Wessex and thus with Bz B (Wohlde phase in northwest Germany, Period IB in northern Europe) and early C (Reinecke's 1924 Bz C1). The later Middle Bronze Age or Taunton phase should mainly correspond to later Bz C, i.e. C2 (Period II in northern Europe) and possibly persist into early D. The earlier Penard (Appleby) phase – characterized by straight-sided blades – is seen to correspond to the entire Rosnoen complex in Brittany as well as to Bz D and Müller-Karpe's Ha A1 in central Europe (Period III in northern Europe). The later Penard phase (Ffynhonnau) is believed to be contemporary with Wilburton in southeast England and St.-Brieuc-des-Iffs in Brittany, all of which have to be aligned to Ha A2 and Ha B1 in central Europe and Period IV in northern Europe. Burgess's late Wilburton or Needham's early Ewart Park, i.e. the Blackmoor horizon, is aligned to Muller-Karpe's discarded Ha B2, whereas the classic Ewart Park phase including the Carp's Tongue complex should correspond to Müller-Karpe's original Ha B3 and Period V in northern Europe. Period V should also incorporate the newly established Ha C0/C1a (Gündlingen horizon), whereas Period VI has to be assigned to Kossack's remaining Ha C (now Ha C1/C1b and C2). In common with the revised Ha C, the Llyn Fawr phase, conventionally aligned with Kossack's traditional Ha C ought to include an early horizon (possibly called Boyton-Ferring) and be parallel to the new Ha C0/C1a, as both are characterized by some identical forms, i.e. Gündlingen swords, winged chapes and single-edged razors, all of which seem to be indigenous Atlantic, rather than central European types as commonly believed. Boyton-Ferring should date from the very end of the 9th to the later 8th century EC and includes surviving Carp's Tongue and Ewart forms. The later horizon(s?) of Llyn Fawr (later 8th to late 7th century) are marked by the eponymous Llyn Fawr and Sampling hoards, the former including continental forms of the new Ha C1/Ha C1b, the latter of the traditional Ha C2.

Keywords: Bronze Age, Reinecke, Chronology

Energie

KÜPPERS 2014

Christian Küppers, Lothar Hahn, Volker Heinzel & Leopold Weil, *Der Versuchsreaktor AVR – Entstehung, Betrieb und Störfälle, Abschlussbericht der AVR-Expertengruppe, Kurzfassung*. (Jülich 2014). http://www.fz-juelich.de/portal/DE/UeberUns/selbstverstaendnis/verantwortung/avr/Aktuelles/bericht-avr-expertengruppe_kurz.pdf (2014-10-26).

KÜPPERS 2014

Christian Küppers, Lothar Hahn, Volker Heinzel & Leopold Weil, *Der Versuchsreaktor AVR – Entstehung, Betrieb und Störfälle, Abschlussbericht der AVR-Expertengruppe*. (Jülich 2014). http://www.fz-juelich.de/portal/DE/UeberUns/selbstverstaendnis/verantwortung/avr/Aktuelles/bericht-avr-expertengruppe_lang.pdf (2014-10-26).

In einigen Zonen des Cores des AVR haben deutlich höhere Gastemperaturen geherrscht, als nach Berechnungen erwartet worden war. Die vorhandene Instrumentierung ließ eine Erfassung von Temperaturhöhe und -verteilung im Core des AVR nicht zu. Basierend auf den Ergebnissen der dritten Messreihe 1986 müssten Temperatureffekte so ausgeprägt gewesen sein, dass sie etwa 15 % des Cores betrafen. Ein Mechanismus, der die alleinige Ursache darstellen könnte, konnte nicht identifiziert werden. Es ist daher anzunehmen, dass sich mehrere Ursachen überlagert haben.

Die Expertengruppe hält die Ursachen für die in den Jahren 1974 bis 1976 stark angestiegene Primärkreisaktivität im AVR nicht für geklärt. Da die Mehrzahl der einschlägigen Publikationen von einer starken Temperaturabhängigkeit der Spaltproduktfreisetzung aus den HTR-Brennelementen ausgeht, ist es für die Expertengruppe naheliegend, dass die Temperaturerhöhung und die überhöhten Temperaturen im AVRCore – mindestens beim Einsatz der wenig robusten Brennelemente der ersten Generation – ursächlich für die hohe Primärkreiskontamination des AVR sind.

Der stattgefundenen Dampferzeugerstörfall war noch deutlich von Bedingungen entfernt, wie sie beim AVR im Sinne eines Auslegungsstörfalls zulässig waren. Es trat kein unzulässiger Druckaufbau auf, eine Gasbildung oder Steigerung der Reaktivität wurde nicht beobachtet, ein Abblasen des Primärkreisinhalts in den Mischkühler war nicht erforderlich und es wurden keine strukturellen Schäden an Brennelementen und Coreeinbauten festgestellt.

Unabhängig von der Einhaltung [der] Vorgaben des Strahlenschutzrechts liegen aber keine Hinweise auf eine mögliche Überschreitung der damaligen Dosisgrenzwerte (30 mrem-Konzept) in der Umgebung vor.

Grabung

BAR-YOSEF 1986

0. Bar-Yosef, *The Walls of Jericho: An Alternative Interpretation*. *Current Anthropology* **27** (1986), 157–162.

Given all the available data, it seems that a plausible alternative interpretation for the Neolithic walls of Jericho is that they were built in stages as a defense system against floods and mudflows. The PPNA inhabitants of Jericho chose to live near a copious spring on a sloping plain which was subject to mudflows and sheetwash. Their response was to build a wall and then, when necessary, dig a ditch. The necessity for better protection on the western side would explain the varying thickness of the wall, which during Stages IV-VI was ca. 3.5 m in the west but remained only 1.4-1.6 m in the north and the south. The dangers of erosion are evident in the destruction of the wall on the northern edge of Jericho at the end of the PPNA or before. Later, in PPNB days, the tell was presumably high enough to stand above the floods, and such protection as may have been necessary was provided by a simple terrace revetment. Moreover, this terrace wall could have been just a structural device to provide sound foundations for houses on the top level above it and at its base.

BAR-YOSEF 1991

Ofer Bar-Yosef, Avi Gopher, Eitan Tchernov & Mordechai E. Kislev, *Netiv Hagdud, An Early Neolithic Village Site in the Jordan Valley. Journal of Field Archaeology* **18** (1991), 405–424.

Netiv Hagdud is an Early Neolithic village site in the Lower Jordan Valley. Systematic excavations exposed a 500-sq m surface, which included several oval and circular houses. Carbonized plant remains, animal bones, and a wealth of lithic assemblages were the primary materials recovered from the houses and the fill. The seeds indicate that barley cultivation was practiced, along with the continuous gathering of wild fruits and seeds. Gazelle hunting and trapping of migratory waterfowl provided the major meat sources. Evidence concerning distribution of subsistence activities indicates that the site was occupied during at least nine months each year. Domestic activities are expressed in a variety of grinding and pounding tools, a few bone objects, and numerous flint tools. The lithic industry, classified as Sultanian, is characterized by the presence of Khiam points, sickle blades, and tranchet (Tahunian) axes, and is similar to that uncovered in Jericho. Flexed burials, the removal of adult skulls, and a few male figurines are the only sources of information concerning on-site symbolic activities. The report discusses the primary finds from the excavations and places the site within the context of other Early Neolithic sites in the southern Levant.

BAR-YOSEF 1997

Ofer Bar-Yosef & Avi Gopher, *Discussion*. In: OFER BAR-YOSEF & AVI GOPHER (Hrsg.), *An Early Neolithic Village in the Jordan Valley, Part I: The Archaeology of Netiv Hagdud*. American School of Prehistoric Research Bulletin 43 (Cambridge 1997), 247–266.

In this chapter we try to evaluate the environmental and archaeological information gathered during the Netiv Hagdud project which, as mentioned in the introduction, formed part of an ongoing research project in the Lower Jordan Valley. As the excavations both at Netiv Hagdud and Salibiya IX were of limited scope, the excavations at Gilgal I (Noy 1989) provided additional information on a site located less than one km from Netiv Hagdud. The data accumulated thus far allows us to reconstruct the local environment during at least part of the Early Neolithic period (see Chapters 8 and 9 of this part), and to discuss subsistence patterns, suggesting avenues for further research.

We begin this chapter with a paleoclimatic reconstruction, followed by a discussion of the place of Netiv Hagdud and Salibiya IX among other Jordan Valley sites,

a comparison of these and other PPNA sites in the southern Levant, and we then conclude with a brief discussion of sites beyond the region in order to provide a wider view of the Early Neolithic of the Levant.

EDWARDS 2001

Phillip C. Edwards et al., *Archaeology and environment of the Dead Sea Plain: Preliminary results of the first season of investigations by the joint La Trobe University/Arizona State University project*. [Annual of the Department of Antiquities of Jordan 45 \(2001\), 135–157.](#)

Phillip C. Edwards, Steven E. Falconer, Patricia L. Fall, Ilya Berelov, Caroline Davies, John Meadows, Cathryn Meegan, Mary C. Metzger & Ghattas Sayej

EDWARDS 2002

Phillip C. Edwards, John Meadows, Ghattas Sayej & Mary C. Metzger, *Zahrat Adh-Dhra' 2, A New Pre-Pottery Neolithic A Site on the Dead Sea Plain in Jordan*. [Bulletin of the American Schools of Oriental Research 327 \(2002\), 1–15.](#)

Previously, archaeological exemplars of the Pre-Pottery Neolithic A (PPNA) period that heralded the advent of agrarian societies in the Levant were very rare east of the Jordan River. Those that were known did not include any examples of the larger hamlets, usually buried under alluvial fans, which are known from the Jordan Valley. This situation has changed significantly in the past few years, with the discovery of three PPNA hamlets in the arid southern reaches of the Dead Sea Basin in Jordan. This paper introduces the small mound of Zahrat adh-Dhrac 2 (ZAD 2), the most recently discovered of the trio. ZAD 2, dating to 9,500 radiocarbon years, lies east of the Lisan Peninsula on the southeastern shore of the Dead Sea. The well-dated site contains architectural units comprising stone-built oval huts bonded with mortar. It has a rich lithic assemblage of local flint, but it has also yielded several exotic materials attesting to long-distance exchange, and significant botanical remains including cereals, legumes, and nuts.

EDWARDS 2002

Phillip C. Edwards, John Meadows, Mary C, Metzger & Ghattas Sayej, *Results From the First Season at Zahrat adh-Dhra' 2, A New Pre-Pottery Neolithic A Site on the Dead Sea Plain in Jordan*. [Neolithics 2002, i, 11–16.](#)

The archaeobotanical assemblage from ZAD 2 appears as essentially a subset of those recovered at Netiv Hagdud (Kislev 1997), where remains were very well preserved, permitting the identification of seventy-five taxa, mostly to species level. Contrary to Hopfs (1983) interpretation of the PPNA plant remains from Jericho, the Netiv Hagdud remains do not support the contention that domestic varieties of wheat and barley were cultivated in the PPNA. Barley rachis internodes with domestic-type disarticulation scars made up only a small minority of the total, and it was shown experimentally that a similar percentage of 'domestic' types could be obtained by harvesting a crop of wild barley. The wheat grains found at Netiv Hagdud could apparently all be assigned to the wild ancestor of emmer, *Triticum dicoccoides*.

KISLEV 1997

Mordechai E. Kislev, *Early Agriculture and Paleoecology of Netiv Hagdud*. In: OFER BAR-YOSEF & AVI GOPHER (Hrsg.), *An*

Early Neolithic Village in the Jordan Valley, Part I: The Archaeology of Netiv Hagdud. American School of Prehistoric Research Bulletin 43 (Cambridge 1997), 209–236.

During the three seasons of excavations at Netiv Hagdud, more than 17,000 charred fruit and seed remnants were recovered. Excavated soil was removed from building floors for flotation and sieved through 0.5 mm mesh. A few plant remains were collected by hand from the soil. Fifty-eight samples were collected from 8 loci for archaeobotanical examination and were fully analyzed. The samples that came to the laboratory were variable in both concentration and quantity but generally were well preserved. Although some retained their hairs, others were found puffed and spongy or broken and unrecognizable. The relatively good preservation states might be explained by assuming that the site was covered by alluvial soil soon after it was abandoned.

The site and its plant remains have been dated by wood charcoal to 9400 ± 180 to 9970 ± 150 uncalibrated years B.P. (Bar-Yosef et al. 1991). Some 75 taxa were recognized, most of them identified to the species level. (See table 8.1 on pp. 231–32.) Sometimes, as was the case with many legume seeds, incomplete preservation, especially the absence of the testa, prevented a full identification. This was the case with the seeds of many species of the Viciae group, which are heteromorphic on one side and overlap in shape on the other side. Since the publication of the preliminary results a few years ago, some remains have been reidentified and a few mistakes have been corrected (compare table 8.1 in this chapter to Bar-Yosef et al. 1991: table 5).

MOORE 1991

A. M. T. Moore, *Abu Hureyra 1 and the Antecedents of Agriculture on the Middle Euphrates*. In: OFER BAR-YOSEF & FRANÇOIS R. VALLA (Hrsg.), *The Natufian Culture in the Levant*. Archaeological Series 1 (Ann Arbor 1991), 277–294.

The aim of this article is twofold: to describe briefly the main features of the late Epipalaeolithic or Mesolithic settlement of Abu Hureyra 1 in Syria, and to compare its culture and economy with those of contemporary sites elsewhere in the Levant. This will increase our understanding of the kinds of adaptation that preceded the switch to farming in this region of indigenous agricultural development.

STORDEUR 1996

D. Stordeur, B. Jammous, D. Helmer & G. Willcox, *Jerf el-Ahmar, A New Mureybetian Site (PPNA) on the Middle Euphrates*. *Neo-Lithics* 1996, ii, 1–2.

The two campaigns at Jerf al-Ahmar have reinforced our knowledge of the Mureybetian and its cultural and regional cohesion. The area excavation is providing a plan of the juxtaposition and evolution of several houses. Deep soundings are providing a rich sample for environmental work. New finds such as the engraved stone objects offer new insights into cultural developments for the period. It is hoped that the 1997 (final) campaign will provide an equally rich array of data for this important but still little-known period.

VAN ZEIST 1982

W. van Zeist & J. A. H. Bakker-Heeres, *Archaeobotanical Studies in the Levant 1, Neolithic Sites in the Damascus Basin: Aswad, Ghoraifé, Ramad*. *Palaeohistoria* 24 (1982), 165–256.

In the present study the results of the palaeobotanical examination of the Neolithic sites of Aswad, Ghoraifé and Ramad, in the Damascus basin (fig. 1), are presented. In each of the sites two aceramic phases are distinguished. The time span covered by the pre-pottery Neolithic habitation is radiocarbon dated from c. 7800 B.C. (basal levels of Aswad I) to c. 5950 B.C. (phase II at Ramad). The chronological correlation between the sites is shown in fig. 6. Aswad and Ghoraifé, with mean annual precipitation of less than 200 mm, are situated in the steppe zone. The natural vegetation of the Ramad area, with 250 mm precipitation annually, is an almond-pistachio forest-steppe.

The earliest Neolithic inhabitants of the Damascus basin (Aswad, phase I) grew *Triticum dicoccum* and probably *Hordeum distichum*, *Pisum* and *Lens*. In phase II at Aswad, *Triticum monococcum*, *T. aestivum/durum*, *Hordeum vulgare* var. *coeleste* and probably *Linum* (*usitatissimum*) were added to the crop plant assortment. *Cicer* (chick-pea) appeared later in the charred seed record and remained of minor importance. Emmer wheat was probably the most common cereal. The proportion of free-threshing wheat increased in later periods (phase II at Ghoraife and Ramad). In all three sites, phase 1 levels have markedly higher pulse crop proportions than phase II levels.

VAN ZEIST 1984

W. van Zeist & J. A. H. Bakker-Heeres, *Archaeobotanical Studies in the Levant 3, Late-Palaeolithic Mureybit*. *Palaeohistoria* **26** (1984), 171–199.

Excavations at Tell Mureybit, on the North Syrian Euphrates River, have been carried out by M.N. van Loon (1964, 1965) and J. Cauvin (1971-1974). Four main habitation phases, covering a time span from 8500-6900 B.C. (conventional radiocarbon years), are distinguished. The foundations of round as well as of rectilinear houses were unearthed. The chipped stone industry of the lower levels (subphase IA) is of Natufian tradition. Polished stone axes appear in phase IV. The faunal remains are all of wild animals. The present-day natural vegetation of the uplands in the Mureybit area is a steppe, whereas the Euphrates valley was naturally covered by poplar forest.

From the various habitation levels samples were secured for botanical examination. Information on the Mureybit charred seeds and fruits is presented in section 3 (figs. 5-9). Grains of two-seeded wild einkorn wheat (*Triticum boeoticum* ssp. *thaoudar*) occur in all levels and are quite numerous in phase III samples. Wild barley (*Hordeum spontaneum*) is also well represented. The size class of the lentil seeds corresponds to that of the wild species. The question is discussed whether the cereal grains were collected in the wild or whether already some kind of plant cultivation (proto-agriculture) was practised. The plant remains themselves provide no conclusive evidence in this respect. On the other hand, the vegetable remains and the animal bones point both to a change in the exploitation of food resources in phase III.

Marked differences in mean seed and fruit frequencies occur not only between habitation phases but between different areas of the site within one phase. Most of the plant taxa demonstrated for Mureybit could have formed part of the upland steppe. In addition, various species from the river-valley vegetation are represented. The latter must have been of considerable economic importance because of the wood (poplar, tamarisk). It is impossible to determine to what extent the steppe vegetation was exploited by the inhabitants of the site. *Pistacia* fruits must have been collected rather intensively.

Keywords: Mureybit, late-Palaeolithic, wild einkorn wheat, wild barley, proto-agriculture, steppe environment, river-valley forest.

Grundlagen

HAFNER 2010

Albert Hafner, *Ufersiedlungen mit Palisaden am Bielersee, Hinweise auf Verteidigungssysteme in neolithischen und bronzezeitlichen Pfahlbauten*. In: IRENÄUS MATUSCHIK ET AL. (Hrsg.), *Vernetzungen – Aspekte siedlungsarchaologischer Forschung, Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. (Freiburg 2010), 357–376.

Irenäus Matuschik, Christian Strahm, Beat Eberschweiler, Gerhard Fingerlin, Albert Hafner, Michael Kinsky, Martin Mainberger & Gunter Schöbel (Hrsg.)

Die Frage, ob Pfahlbausiedlungen zu bestimmten Zeiten befestigt waren, ist mit dieser Zusammenstellung, die mehr ein Hinweis auf das Thema sein soll, sicher nicht beantwortet. Sie soll helfen, das Augenmerk auf konstruktive Elemente in Siedlungen zu lenken, die geeignet sind, Aufschluss über soziale Phänomene wie Konflikte, Gewalt und Krieg in neo-lithischen und bronzezeitlichen Gesellschaften zu geben. Für die Zukunft wird es interessant sein, Fragestellungen zu entwickeln, die demographische und klimatologische Faktoren mit dem Aufkommen von Befestigungsanlagen in Verbindung bringen.

Isotope

CARLSON 2014

Bryce A. Carlson & John D. Kingston, *Chimpanzee isotopic ecology, A closed canopy C3 template for hominin dietary reconstruction*. *Journal of Human Evolution* **76** (2014), 107–115.

JHumEvo076-0107-Supplement.csv, JHumEvo076-0107-Supplement.wk1

The most significant hominin adaptations, including features used to distinguish and/or classify taxa, are critically tied to the dietary environment. Stable isotopic analyses of tooth enamel from hominin fossils have provided intriguing evidence for significant C4/CAM (crassulacean acid metabolism) resource consumption in a number of Plio-Pleistocene hominin taxa. Relating isotopic tooth signatures to specific dietary items or proportions of C3 versus C4/CAM plants, however, remains difficult as there is an ongoing need to document and quantify isotopic variability in modern ecosystems. This study investigates the ecological variables responsible for carbon isotopic discrimination and variability within the C3-dominated dietary niche of a closed canopy East African hominoid, *Pan troglodytes*, from Ngogo, Kibale National Park, Uganda.

$\delta^{13}\text{C}$ values among C3 resources utilized by Ngogo chimpanzees were highly variable, ranging over 13 ‰. Infrequent foraging on papyrus (the only C4 plant consumed by chimpanzees at the site) further extended this isotopic range. Variation was ultimately most attributable to mode of photosynthesis (C3 versus C4), food type, and elevation, which together accounted for approximately 78 % of the total sample variation. Among C3 food types, bulk carbon values ranged from -24.2 ‰ to -31.1 ‰ with intra-plant variability up to 12.1 ‰. Pith and sapling leaves were statistically more ^{13}C depleted than pulp, seeds, flowers, cambium, roots, leaf buds, and leaves from mature trees. The effect of elevation on carbon variation was highly significant and equivalent to an approximately 1 ‰ increase in $\delta^{13}\text{C}$ for every 150 m of elevation gain, likely reflecting habitat variability associated with topography. These results indicate significant $\delta^{13}\text{C}$ variation attributable to food type and elevation among C3 resources and provide important data for hominin dietary interpretations based on carbon isotopic analyses.

Keywords: Stable isotope | Carbon | *Pan troglodytes* | Uganda | Paleodiet

Jungpaläolithikum

HUSSAIN 2014

Shumon T. Hussain & Harald Floss, *The role of river courses in organizing the cultural space of the Upper Paleolithic, Examples from the Rhine, Rhône, Danube and Garonne*. In: MARCEL OTTE & FONI LE BRUN-RICALES (Hrsg.), *Modes de contacts et de déplacements au Paléolithique eurasiatique, Colloque international de la commission 8 (Paléolithique supérieur) de l'UISPP, Université de Liège, 28–31 mai 2012*. (Mersch 2014), 307–320.

In order to understand human spatial behavior in the Paleolithic and related processes such as dispersal and mobility, it is urgently imperative to focus on a finer grained analysis of human-environment interactions than usually provided. Recent studies tend to overlook the explanatory value of single natural features establishing important anchor points for Paleolithic hunter-gatherer groups. Rivers are good candidates constituting such important natural features. We thus explore the role of salient rivers in the construction of Upper Paleolithic cultural landscapes through time. It is argued that rivers indeed played a crucial role, either as axes of communication and displacement or as referential frontier features in space. On the other hand, it seems clear that human river engagement was never static, but highly dynamic and variable both through space and time, because it is partly shaped by cultural conceptualizations and embedded in semantic webs. We finish our survey with the observation that in the Early Upper Paleolithic, rivers were mainly used to facilitate the flow of people and information, whereas the spatial consolidation after the colonization of Europe was accompanied by a tendency of conceptualizing rivers as frontiers or even boundaries. Only the Central European Magdalenian is again characterized by the use of rivers as spatial trajectories.

Klima

LAMBECK 2014

Kurt Lambeck, Hélène Rouby, Anthony Purcell, Yiyang Sun & Malcolm Sambridge, *Sea level and global ice volumes from the Last Glacial Maximum to the Holocene*. *PNAS* **111** (2014), 15296–15303.

The major cause of sea-level change during ice ages is the exchange of water between ice and ocean and the planet's dynamic response to the changing surface load. Inversion of $\approx 1,000$ observations for the past 35,000 y from localities far from former ice margins has provided new constraints on the fluctuation of ice volume in this interval. Key results are: (i) a rapid final fall in global sea level of ≈ 40 m in $< 2,000$ y at the onset of the glacial maximum $\approx 30,000$ y before present (30 ka BP); (ii) a slow fall to 134 m from 29 to 21 ka BP with a maximum grounded ice volume of $\approx 52 \cdot 10^6$ km³ greater than today; (iii) after an initial short duration rapid rise and a short interval of near-constant sea level, the main phase of deglaciation occurred from ≈ 16.5 ka BP to ≈ 8.2 ka BP at an average rate of rise of 12 m*ka⁻¹ punctuated by periods of greater, particularly at 14.5–14.0 ka BP at ≥ 40 mm*y⁻¹ (MWP-1A), and lesser, from 12.5 to 11.5 ka BP (Younger Dryas), rates; (iv) no evidence for a global MWP-1B event at ≈ 11.3 ka BP; and (v) a progressive decrease in the rate of rise from 8.2 ka to ≈ 2.5 ka BP, after which ocean volumes remained nearly constant until the renewed sea-level rise at 100–150 y ago, with no evidence of oscillations exceeding ≈ 15 –20 cm in time intervals ≥ 200 y from 6 to 0.15 ka BP.

LANGGUT 2013

Dafna Langgut, Israel Finkelstein & Thomas Litt, *Climate and the Late Bronze Collapse, New Evidence from the Southern Levant*. [Tel Aviv: Archaeology 40 \(2013\), 149–175](#).

A core drilled from the Sea of Galilee was subjected to high resolution pollen analysis for the Bronze and Iron Ages. The detailed pollen diagram (sample/ \approx 40 yrs) was used to reconstruct past climate changes and human impact on the vegetation of the Mediterranean zone of the southern Levant. The chronological framework is based on radiocarbon dating of short-lived terrestrial organic material. The results indicate that the driest event throughout the Bronze and Iron Ages occurred \approx 1250–1100 BCE—at the end of the Late Bronze Age. This arid phase was identified based on a significant decrease in Mediterranean tree values, denoting a reduction in precipitation and the shrinkage of the Mediterranean forest/maquis. The Late Bronze dry event was followed by dramatic recovery in the Iron I, evident in the increased percentages of both Mediterranean trees and cultivated olive trees.

Archaeology indicates that the crisis in the eastern Mediterranean at the end of the Late Bronze Age took place during the same period—from the mid-13th century to ca. 1100 BCE. In the Levant the crisis years are represented by destruction of a large number of urban centres, shrinkage of other major sites, hoarding activities and changes in settlement patterns. Textual evidence from several places in the Ancient Near East attests to drought and famine starting in the mid-13th and continuing until the second half of the 12th century. All this helps to better understand the ‘Crisis Years’ in the eastern Mediterranean at the end of the Late Bronze Age and the quick settlement recovery in the Iron I, especially in the highlands of the Levant.

Keywords: Climate change, Paleoclimate, Pollen, Late Bronze collapse, Crisis years, Sea of Galilee, Levant, Hatti, Ugarit, 20th Dynasty

Kultur

BYRD 1994

Brian F. Byrd, *Public and private, domestic and corporate, The emergence of the Southwest Asian village*. [American Antiquity 59 \(1994\), 639–666](#).

Despite extensive research on the transition from semimobile hunters and gatherers to sedentary, food-producing villagers in Southwest Asia, associated changes in community organization remain unexplored. Undoubtedly new social and economic mechanisms were necessary to facilitate the success of these larger permanent settlements. The emergence of novel intrasite organizational patterns can be elucidated in the archaeological record through analysis of the built environment. This paper presents an interpretation of temporal transformations in community organization utilizing the results from the detailed analysis of Beidha, one of the most extensively excavated early Neolithic villages in Southwest Asia. It is proposed that the emergence of Neolithic farming villages in Southwest Asia was characterized by two parallel and interrelated organizational trends: a more restricted social network for sharing production and consumption activities, and the development of more formal and institutionalized mechanisms for integrating the community as a whole.

FLANNERY 1972

Kent V. Flannery, *The origins of the village as a settlement type in Mesoamerica and the Near East, A comparative study*. In: PETER J. UCKO, RUTH TRINGHAM & G. W. DIMBLEBY (Hrsg.), *Man, settlement and urbanism, Proceedings, Research Seminar in Archaeology and Related Subjects, Institute of Archaeology, London University, 1970*. ([London 1972](#)), 23–53.

The village—one of the most widespread settlement types in the world today—seems to have been unknown during the first two million years of the human career. The first steps toward truly sedentary life may have been taken by hunter-gatherers in Europe during the Late Pleistocene, but the archaeological evidence is still ambiguous and the trend seems to have broken down at the end of the Würm glaciation. Unmistakeable villages appeared, apparently independently, in several different parts of the world after the close of the Pleistocene epoch. By 7500 B.C. in the Near East, by 2500 B.C. in the Andes, by 1500 B.C. in Mesoamerica, villages were not only widespread but architecturally diversified. In some the houses were of wattle-and-daub, in others of mud or mud-brick, in still others of stone masonry, with or without mortar.

Here is a situation made to order for comparative studies, and its potential did not escape the eyes of the multilineal evolutionists who have contributed so much to anthropological theory over the last two decades. Struck by the apparent contemporaneity of early villages and the Neolithic revolution, the evolutionists came up with a by-now familiar reconstruction: “once agriculture had freed man from the eternal food quest he was able to give up his ceaseless wandering and settle in villages where he perfected pottery making, loom weaving, and all the hallmarks of sedentary life”.

Archaeological discoveries over the last ten years have not been kind to this reconstruction. From the Near East came the discovery of fully sedentary communities dating to 8000 B.C., yet lacking all evidence of domestic animals or phenotypically domestic cereals. From Mesoamerica came the discovery of prehistoric groups who cultivated four or five species of plants by 5000 B.C., yet were still nomadic—and remained so for the next 3500 years in spite of substantial increases in the number and variety of cultivars.

HASTORF 1998

Christine A. Hastorf, *The cultural life of early domestic plant use*. [Antiquity 72 \(1998\)](#), 773–782.

To what extent was gender an important factor in plant domestication? How much of the domestication process can be considered as cultural rather than biological? Christine Hastorf considers these and many associated questions in this topical essay about plants and people.

Keywords: agriculture, domestication, South America, women, gatherers, hunters, exchange, kinship

Kupfer

RADIVOJEVIĆ 2014

Miljana Radivojević, Thilo Rehren, Julka Kuzmanović-Cvetković & Marija Jovanović, *Why are there tin bronzes in the 5th millennium bc Balkans?* In: SELENA VITEZOVIĆ & DRAGANA ANTONOVIĆ

(Hrsg.), *Archaeotechnology, Studying technology from prehistory to the Middle Ages*. (Belgrade 2014), 235–256.

The appearance of the earliest tin bronze artefacts is traditionally linked to the copper-tin alloying practice in the 3rd millennium BC Near Eastern Bronze Age settlements. Advocates of this model argue that tin for alloying may have come from deposits located in central Asia or southwest Iran; however, finding evidence for tin bronze production remains a challenge for archaeologists. Here we present a piece of tin bronze foil discovered in the Vinca culture site of Pločnik in Serbia, and securely dated to c. 4650 BC, which makes it the earliest known tin bronze artefact anywhere in the world. Compositional analysis links it to smelting a complex copper-tin ore, such as chalcopyrite intergrown with stannite and/or fahlerz, while metallographic analysis indicates its intentional production and understanding of material properties of the newly acquired metal. These results initiated a reassessment of the fourteen previously discovered and analysed artefacts of similar compositional pattern as the Pločnik foil. The rise of tin bronze metallurgy in the Balkans is also discussed in the light of the concurrent appearance of other colourful metal objects in this region.

Keywords: tin bronze, Vinca culture, Pločnik, Balkans, Chalcolithic

Mesolithikum

ANDERSON 1991

Patricia C. Anderson, *Harvesting of Wild Cereals During the Natufian as seen from Experimental Cultivation and Harvest of Wild Einkorn Wheat and Microwear Analysis of Stone Tools*. In: OFER BAR-YOSEF & FRANÇOIS R. VALLA (Hrsg.), *The Natufian Culture in the Levant*. Archaeological Series 1 (Ann Arbor 1991), 521–556.

Recent research in various fields has opened new avenues of investigation into the evolution of subsistence strategies concerning exploitation of plants in the Levant (for example, Anderson in press and Hillman and Harris 1989). Our discussion of one aspect of this, wild cereal exploitation, will be based on the microscopic analysis of use-traces on Natufian flint blades and bladelets in light of data from our experiments in cultivating, harvesting, and threshing wild cereals in progress since 1985 at the Institut de Préhistoire Orientale at Tautain (France). The sites where the tools studied came from contain wild cereal remains and include, in the Northern Levant, Abu Hureyra (our sample is from Epipaleolithic II and III, 10th–9th millennium bc, Moore, personal communication and this volume) and Mureybet (Final Natufian and, for comparison, the directly ensuing Epi-Natufian, each lasting one or two hundred years of the latter half of the 9th millennium bc, Cauvin 1977, M-C. Cauvin, this vol.) and in the Southern Levant, the Final Natufian of Hayonim Terrace (10th–9th millennium bc, Valla, personal communication and Valla et al., this volume).

In the course of our large-scale experimental observations of wild cereals, we have been able to replicate traces found on some of the prehistoric tools from these levels in experiments using similar tools hafted to form the cutting edge of sickles and harvesting knives, (see Anderson-Gerfaud 1988, Anderson-Gerfaud et al. in press, Willcox in press). We interpret their use by observing a combination of macroscopic and microscopic traces (corresponding to variables such as: reaping one or many stems at a time; motion and angle of penetration into stems; humidity, hardness and siliceous nature of the stems; proximity of soil abrasives to the tool during harvesting, etc), which our experiments have shown correspond to particular conditions in harvesting wild cereals as opposed to other plants. In view of

this data, we discuss the likelihood of various strategies of wild cereal exploitation during the Natufian, with or without cultivation.

UNGER-HAMILTON 1991

Romana Unger-Hamilton, *Natufian Plant Husbandry in the Southern Levant and Comparison with that of the Neolithic Periods, The Lithic Perspective*. In: OFER BAR-YOSEF & FRANÇOIS R. VALLA (Hrsg.), *The Natufian Culture in the Levant*. Archaeological Series 1 (Ann Arbor 1991), 483–520.

Which plants were harvested with the lustered “sickle” blades from the Natufian levels (ca. 10,800 to 8000 BC [see Weinstein 1984]) has been the subject of long debate. Some scholars thought that the blades had been used to harvest cultivated cereals (e.g. Neuville 1934; Garrod and Bate 1937), others thought that they indicated a trend towards the exploitation of cereals (Harlan unpublished manuscript; Henry 1981), while others thought that they had been used for the harvest of other plants, such as grasses or reeds (Vita-Finzi and Higgs 1970). The dearth of archaeobotanical evidence for this period in the southern Levant is well known (e.g. Buxo i Capdevila in press), so it is appropriate to deal with this problem through lithic analysis (Unger-Hamilton 1988 and 1989).

Metallzeiten

HARDING 2013

Anthony Harding, *World Systems, Cores, and Peripheries in Prehistoric Europe*. *European Journal of Archaeology* 16 (2013), 378–400.

The paper reviews the rise and utility of World Systems Theory in archaeology, with particular reference to Europe and the Bronze Age. After a consideration of its origins in the 1970s and 1980s, the main aspects of the theory are discussed. The evidence that shows that the Bronze Age world was highly interconnected is presented, and the implications of a World Systems view of the period considered. In an attempt to work towards a new narrative of the European Bronze Age, a brief discussion of network methods is introduced, since these offer an alternative, ‘bottom-up’, approach to the period which, it is argued, is more appropriate to the data than the World Systems approach.

Keywords: World Systems Theory, World-Systems Analysis, Core-Periphery Theory, Bronze Age, Europe, network analysis

KNAPP 1999

Ilona Knapp, *Fürst oder Häuptling? Eine Analyse der herausragenden Bestattungen der frühen Bronzezeit*. *Archäologische Informationen* 22 (1999), ii, 261–268.

Die in neolithischer Tradition errichteten Gräber der Aunjetitzer Kultur zeigen in direkter Weise die Vermittlung traditioneller Werte durch ein bestimmtes Individuum, sie zeigen auch deutlich dessen Berufung auf Deszendenzlinien im Gegensatz zur ‘Restbevölkerung’, die in nichtneolithischer Weise bestattet wurde; ihr scheinen die Abstammungsrechte abgesprochen oder zumindest nur für eine kurze Deszendenzlinie zugesprochen worden zu sein. Dieser Umstand rechtfertigt die Belegung der Gräber mit dem Begriff Häuptlingsgräber, da sie den legitimen, politischen Machtanspruch durch Vermittlung und Sukzession traditioneller Werte und traditionellem Wissen veranschaulichen und das in ihnen bestattete Individuum dadurch als Häuptling auszeichnen. Insofern können die ‘Häuptlingsgräber’, aber

auch die neolithische Steinaxtbeigabe, als Materialisation der ‘neolithischen’ Ideologie der aunjetitzer Gesellschaft angesehen werden, die zusätzlich, belegt durch die Metallbeigaben, neue Elemente, z.B. die Idee der Metallurgie, in sich aufnimmt. Daß bestimmte Bereiche, vor allem der Güteraustausch, durch den Häuptling und dessen Positionsgefüge kontrolliert wurden, dokumentiert die Errichtung der Grabanlagen in direktem Bezug zu Handelswegen.

Aufgrund genannter Tatsachen wird für die Aunjetitzer Kultur ein Häuptlingstum angenommen und die Befunde folglich mit dem Begriff ‘Häuptlingsgräber’ belegt.

Neolithikum

BYRD 2000

Brian F. Byrd, *Households in Transition, Neolithic Social Organization within Southwest Asia*. In: IAN KUIJT (Hrsg.), *Life in Neolithic Farming Communities, Social Organization, Identity, and Differentiation*. Fundamental Issues in Archaeology (New York 2002), 63–98.

These theoretical constructions provide additional insight into understanding how changes in domestic structures and the households that inhabited them correspond to developments on the community level during the Middle PPNB. The transition to food production in the southern Levant appears to be characterized by a corporate pathway that included public construction, group rituals and areas to conduct them, and little evidence of variation in individual or household wealth. If the nuclear families that composed these early villages controlled or owned plots of land that were the focus of plant resource exploitation, then these were inherently unequal in their yield. In addition, the more restricted sharing of resources between households and the greater household control over access and information increased the probability of jealousy and conflict between households. At the same time community and/or lineage level power and authority may have grown. This may have been the impetus for the similarity in size and outward appearance of PPNB domestic structures and uniformity in mortuary practices which reiterated a community-wide egalitarian ethos (Kuijt 1995, 1996). Standardization and elaboration of internal domestic structures in the PPNB aided household autonomy but also reinforced social order within and between households. Elders may have controlled prestige goods, postmarital residence choices, and other items, including marriage costs (Blanton 1995). Thus, the pathway that hunter-gatherers in the southern Levant took in becoming some of the earliest food producers was both novel and conservative. There was a tendency to try and reinforce community social order through the efforts of community leadership while the fundamental social units—households—became more autonomous and more unequal in their ability to perpetuate themselves.

HILLMAN 2001

Gordon Hillman, Robert Hedges, Andrew Moore, Susan Colledge & Paul Pettitt, *New evidence of Lateglacial cereal cultivation at Abu Hureyra on the Euphrates*. *The Holocene* 11 (2001), 383–393.

So far, Abu Hureyra provides the clearest, continuous record anywhere in the world of an in-situ transition from foraging to farming, although eventually other such sites will doubtless be found. The evidence suggests that, on the Middle Euphrates (and almost certainly elsewhere in southwestern Asia), these transformations were set in train before the end of the Pleistocene, in a climatic context different from that supposed hitherto, and among hunter-gatherers who were already

largely sedentary. Here, at least, the primary trigger appears to have been the critically reduced availability of key wild plant staples during the arid conditions of the Younger Dryas climatic episode. This early inception of cultivation then set the scene for the development and rapid spread of integrated agro-pastoral economies in the early Holocene. While the advent of agriculture is often hailed as a triumph in ‘laying the foundations of civilization’, the social, demographic, nutritional and ecological consequences of the ensuing chain-reaction have mostly proved disastrous, and continue to mould almost every aspect of modern life.

KUIJT 2000

Ian Kuijt, *Keeping the Peace, Ritual, Skull Caching, and Community Integration in the Levantine Neolithic*. In: IAN KUIJT (Hrsg.), *Life in Neolithic Farming Communities, Social Organization, Identity, and Differentiation*. Fundamental Issues in Archaeology (New York 2002), 137–164.

In light of the growing body of archaeological evidence for social differentiation within MPPNB communities, as well as the symbolic and physical use of material culture to stress real and fictive affinity within and between individuals, households, and communities, I have argued that MPPNB ritual practices reinforced a collective ethos with the continued use of social mechanisms to encourage social cohesion and solidarity. Consideration of the archaeological record in question, with the almost total absence of grave goods with MPPNB primary and secondary interments and the homogenous design of residential architecture, illustrates a pattern that is consistent with communities attempting to emphasize a real or perceived parity between individuals, and the existence of political and economic cooperation and relationships between households. Archaeological studies provide a number of specific material patterns that inform researchers as to how community members may have dealt with new social and organizational pressures associated with increased population aggregation in early agricultural communities.

Collectively, I believe that consideration of these developments, as well as the limited development of social differentiation in the MPPNB, indicates that future research is facilitated by envisioning MPPNB social systems as organized by a series of complex social rules that reaffirmed the egalitarian values and ethos of general society and at the same time permitted the development of social differentiation that crosscut household and kin-group lines.

[A]vailable evidence indicates that the earliest systematic appearance of social differentiation in the Aceramic Neolithic occurred in the MPPNB, between c. 9,200-8,500bp, in the form of cranial deformation, skull plastering and painting, and the select use of secondary cranial removal and caching to differentially identify some community members over others. This realization is important, for if Bar-Yosef and Meadows (1995:88) are correct in arguing that size reduction in goats had already occurred by the MPPNB and that domesticated wheat and barley first appeared in the PPNA communities of Tel Aswad, Jericho, Gilgal, and Netiv Hagdud (Hillman and Davies 1990), then our most convincing evidence for systematic social differentiation in the Levantine Pre-Pottery Neolithic occurs after the domestication of plants and probably after that of goats as well.

MITHEN 2000

Steven Mithen, Bill Finlayson, Anne Pirie, Denise Carruthers & Amanda Kennedy, *New Evidence for Economic and Technological Diversity in the Pre-Pottery Neolithic A: Wadi Faynan 16*. *Current Anthropology* 41 (2000), 655–663.

The evidence summarized above derives from small-scale excavations at WF16 designed to assess the preservation of the site, acquire absolute dates, and evaluate the significance of the site for area excavation. Even from this work the site has added a new economic dimension to the PPNA and provided support to those who argue that the Khiamian and Sultanian are contemporaneous facies of a single settlement system rather than chronologically consecutive phases of the PPNA. In addition to the chipped stone, animal bone, and plant remains, the site has produced assemblages of human bone, coarse stone artefacts, marine shells, stone beads, worked bone, and enigmatic engraved objects. It is evident, therefore, that WF16 has the potential to contribute substantially to our knowledge of the PPNA and the transition to farming in the Near East. On present evidence, it suggests that the PPNA economy encompassed the hunting of Capra, indicating that this behaviour is not associated with the transition to the PPNB. It has also provided evidence that, while the terms “Khiamian” and “Sultanian” may reflect real variation, they show no consistent chronological pattern and may be functional variants within a single technological PPNA package.

MÜLLER 2010

Johannes Müller, *Zur Rekonstruktion des Mehrproduktes in neolithischen Haushalten*. In: IRENÄUS MATUSCHIK ET AL. (Hrsg.), *Vernetzungen – Aspekte siedlungsarchaologischer Forschung, Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. (Freiburg 2010), 51–62.

Irenäus Matuschik, Christian Strahm, Beat Eberschweiler, Gerhard Fingerlin, Albert Hafner, Michael Kinsky, Martin Mainberger & Gunter Schöbel (Hrsg.)

Erstmals war es möglich, die von Marshall Sahlins vor fast 40 Jahren an ethnographischen Beispielen aufgeführten Rekonstruktionen der “Household mood of production” archäologisch zu verifizieren. Über Artefaktverteilungen und Hausgrößen lassen sich Aussagen zur Bewohnerzahl und zu Produktionsraten treffen. Insbesondere im Bereich der Subsistenzwirtschaft konnten Unterschiede zwischen den Hausstellen nachgewiesen werden. So existieren Haushalte mit einer Überproduktion, andere mit einer Unterproduktion. Wenn auch in der Gesamtbilanz kein Mehrprodukt vorhanden ist, das zur Freistellung einzelner Haushalte aus der Subsistenzwirtschaft ausreicht, haben Haushalte mit einem Getreidemehrprodukt höhere Produktivitäts- und Konsumtionsraten vorzuweisen. Dies ist sicher verbunden mit höherer politischer Macht in der eher egalitär strukturierten Gesellschaft des untersuchten Dorfes. Ob sich diese Unterschiede bereits innerhalb von Verwandtschaftsstrukturen oder zwischen unabhängigen Gruppen von Einwohnern zeigen, wird an anderer Stelle erörtert (Müller u.a.i.Dr.).