

## References

### Aktuell

KEMP 2014

Christopher Kemp, *University sued by creationist*. [nature 515 \(2014\), 20](#).

Microscopist's wrongful-dismissal case faces long odds.

The lawsuit also claims that Armitage excelled in his job, receiving numerous letters of commendation. "I'm not a microscopist but as far as I could tell, Armitage was a good one," Paul Wilson, a biologist at CSUN, told Nature.

Armitage freely admits that he often engaged students in conversations, giving his opinion on issues such as the age of the remarkably well preserved cells in the triceratops horn. "To me, the obvious conclusion is they're young. They can't be 68 million years old," he says.

MAXWELL 2014

Toby M. Maxwell, Lucas C.R. Silva & William R. Horwath, *Using multielement isotopic analysis to decipher drought impacts and adaptive management in ancient agricultural systems*. [PNAS 111 \(2014\), E4807–E4808](#).

In contemporary systems, site-specific conditions such as soil fertility and relative humidity are known to cause significant variation in D13C (d13C normalized for changes in atmospheric CO2 concentration). For barley, it has been shown that a switch in the predominant form of soil nitrogen causes changes in leaf D13C as large as 2.6 ‰.

Fig. 1 shows that D13C alone cannot distinguish between variation in nitrogen and water availability. Water status can be affected either by changes in photosynthetic rate or water availability. In the absence of actual yields, which could attest for net differences in photosynthesis, a more intricate model including d15N and oxygen isotopes (d18O) would be required to separate these confounding effects. This is possible because d18O is controlled entirely by fractionation of leaf water, regardless of photosynthetic responses, and d15N by N source, which influences D13C by changing photosynthetic rates.

RIEHL 2014

Simone Riehl & Konstantin E. Pustovoytov, *Stable isotopes and their potential for interpreting archaeobotanical remains*, *Reply to Maxwell et al.* [PNAS 111 \(2014\), E4809](#).

These data have been obtained from greenhouse plants. In contrast, field experiments in the Near East demonstrated that the carbon isotope ratios in cereal grain and pulse seeds are largely unaffected by manuring.

Although oxygen is a useful physiological proxy in modern plants, it suffers from strong fractionation during charring of the plant remains. This is decisive for the applicability of the method, as more than 90% of the plant remains in archaeological sites are preserved through charring.

## Amerika

RADEMAKER 2014

Kurt Rademaker et al., *Paleoindian settlement of the high-altitude Peruvian Andes*. [science 346](#) (2014), 466–469.

[s346-0466-Supplement.pdf](#)

Kurt Rademaker, Gregory Hodgins, Katherine Moore, Sonia Zarrillo, Christopher Miller, Gordon R. M. Bromley, Peter Leach, David A. Reid, Willy Yépez Jilvarez & Daniel H. Sandweiss

Study of human adaptation to extreme environments is important for understanding our cultural and genetic capacity for survival. The Pucuncho Basin in the southern Peruvian Andes contains the highest-altitude Pleistocene archaeological sites yet identified in the world, about 900 meters above confidently dated contemporary sites. The Pucuncho workshop site [4355 meters above sea level (masl)] includes two fishtail projectile points, which date to about 12.8 to 11.5 thousand years ago (ka). Cuncaicha rock shelter (4480 masl) has a robust, well-preserved, and well-dated occupation sequence spanning the past 12.4 thousand years (ky), with 21 dates older than 11.5 ka. Our results demonstrate that despite cold temperatures and low-oxygen conditions, hunter-gatherers colonized extreme high-altitude Andean environments in the Terminal Pleistocene, within about 2 ky of the initial entry of humans to South America.

## Anthropologie

BALAFOUTAS 2014

Loukas Balafoutas, Nikos Nikiforakis & Bettina Rockenbach, *Direct and indirect punishment among strangers in the field*. [PNAS 111](#) (2014), 15924–15927.

Many interactions in modern human societies are among strangers. Explaining cooperation in such interactions is challenging. The two most prominent explanations critically depend on individuals' willingness to punish defectors: In models of direct punishment, individuals punish antisocial behavior at a personal cost, whereas in models of indirect reciprocity, they punish indirectly by withholding rewards. We investigate these competing explanations in a field experiment with real-life interactions among strangers. We find clear evidence of both direct and indirect punishment. Direct punishment is not rewarded by strangers and, in line with models of indirect reciprocity, is crowded out by indirect punishment opportunities. The existence of direct and indirect punishment in daily life indicates the importance of both means for understanding the evolution of cooperation.

cooperation | field experiment | indirect reciprocity | punishment | social norms

GIBBONS 2014

Ann Gibbons, *How we tamed ourselves—and became modern*. [science 346](#) (2014), 405–406.

'Self-domestication' turned humans into the cooperative species we are today.

The team analyzed the projection of the brow ridge, facial shape, and cranial volume of 13 early Homo sapiens that lived before 80,000 years ago; 41 modern humans that lived 38,000 to 10,000 years ago; and skulls from a global sample of 1367 recent humans. They found that brow ridges shrank and faces shortened during the past 80,000 years, as our ancestors began to exhibit symbolic behavior and spread around the world. Cranial volume also diminished, particularly after the invention of agriculture about 10,000 years ago.

V LASSOVA 2014

Alexandra Vlassova, Chris Donkin & Joel Pearson, *Unconscious information changes decision accuracy but not confidence*. *PNAS* **111** (2014), 16214–16218.

The controversial idea that information can be processed and evaluated unconsciously to change behavior has had a particularly impactful history. Here, we extend a simple model of conscious decision-making to explain both conscious and unconscious accumulation of decisional evidence. Using a novel dichoptic suppression paradigm to titrate conscious and unconscious evidence, we show that unconscious information can be accumulated over time and integrated with conscious elements presented either before or after to boost or diminish decision accuracy. The unconscious information could only be used when some conscious decision-relevant information was also present. These data are fit well by a simple diffusion model in which the rate and variability of evidence accumulation is reduced but not eliminated by the removal of conscious awareness. Surprisingly, the unconscious boost in accuracy was not accompanied by corresponding increases in confidence, suggesting that we have poor metacognition for unconscious decisional evidence.

conscious awareness | decision-making | metacognition | continuous flash suppression | binocular rivalry

## Datierung

SCHWENZER 2002

Stefan Schwenzer, *Zur Frage der Datierung der Melzer Stabdolche*. *Prähistorische Zeitschrift* **77** (2002), 76–83.

Der Beitrag befaßt sich mit der naturwissenschaftlichen und der archäologischen Datierung des Hortfundes von Melz II. Typologische Überlegungen legen eine Datierung in die klassische Phase der Aunjetitzer Kultur nahe. Dagegen sprachen bisher die fünf Radiokarbonaten für diesen Fund, die eine Datierung in das 22. und 21. Jahrhundert v.Chr. nahelegten. Eine genauere Betrachtung der datierten Holzproben zeigt jedoch, daß ein Kern- bzw. Altholzeffekt nicht auszuschließen ist. Dadurch kann angenommen werden, daß die <sup>14</sup>C-Daten zu alt ausfallen. Sie widersprechen daher nicht einer Einordnung des Fundensembles in die klassische Phase der Aunjetitzer Kultur, die durch andere absolute Daten in das späte 20., das 19. und das 18. Jahrhundert v.Chr. zu datieren ist.

The article is concerned with the dating of the Melz find by scientific and archaeological methods. A typological analysis dates the hoard to the classical phase of the Unetice Culture, but five radiocarbon dates place it in the 22nd and 21st Century B.C. Closer examination of the dated timber samples shows, however, that a heartwood or old wood effect cannot be ruled out. One may therefore assume that the <sup>14</sup>C dates are too old. Consequently, they do not contravene a classification of the find assemblage to the classical phase of the Unetice Culture, which other absolute dates have dated to the late 20th, 19th and 18th Century B.C.

Deutschland; Frühbronzezeit; Aunjetitzer Kultur; Hortfund von Melz; Stabdolche; <sup>14</sup>C-Daten; absolute Chronologie.

Germany; Early Bronze Age; Unetice Culture; hoard of Melz; ceremonial daggers; carbon-14 dating; absolute chronology.

## Grabung

ROSENBERG 2014

D. Rosenberg, R. Yeshurun, I. Groman-Yaroslavski, H. Winter, A. Zertal, R. Brown-Goodman & D. Nadel, *Huzuq Musa – A Preliminary Report on the Test Excavation at a Final Epipalaeolithic/PPNA Site in the Jordan Valley*. *Paléorient* **36** (2014), ii, 189–204.

The transition from mobile hunter-gatherers to sedentary farmers in the Near East was one of the most crucial steps in human evolution. Several sites belonging to either the Late Epipalaeolithic or the Early Neolithic periods were studied in the Jordan Valley, one of the primary research regions for this important shift. However, occupation sites dating to the transitional phase between these periods are rare. Here we present our reconnaissance investigations at one such site, Huzuq Musa (Jordan Valley). The finds bear both Late/Terminal Epipalaeolithic (Natufian culture) and Pre-Pottery Neolithic A (PPNA) characteristics, attesting to an occupation, which most probably dates to a final stage of the Epipalaeolithic period and/or to the earliest local PPNA period. Highly similar lithic components were previously recognized only at one other site—Nahal Ein Gev II. As such, Huzuq Musa may be one of the better-preserved sites that bridge the gap between the Late/Final Natufian and the PPNA in the Jordan Valley.

Keywords: Final Epipalaeolithic; Jordan Valley; Natufian; PPNA.

## Grundlagen

BARTL 2002

Karin Bartl, *Vorratshaltung – Die spätepipaläolithische und frühneolithische Entwicklung im westlichen Vorderasien, Voraussetzungen, typologische Varianz und sozio-ökonomische Implikationen im Zeitraum zwischen 12,000 und 7,600 BP*. SENEPSE 10 (Berlin 2004). Habilitationsschrift, FU Berlin.

Die vorliegende Arbeit behandelt mit dem Thema Vorratshaltung einen alltäglichen, jedoch wesentlichen Siedlungsaspekt, der in archäologischen Fundorten aller Perioden seit dem Beginn der Sesshaftwerdung von besonderer Bedeutung gewesen sein muss. Für die hier untersuchten Zeiträume des späten Epipaläolithikums und Frühneolithikums wird er zudem häufig als wesentlicher, wenn nicht ausschlaggebender Faktor für den Beginn sozialer Stratifikation gesehen.

Wie bei allen Untersuchungen über einzelne Aspekte dieses Zeitraums, insbesondere des Frühneolithikums, gilt auch hier, dass durch die intensiven Feldforschungen in den hier behandelten Gebieten der südlichen und nördlichen Levante sowie des anatolischen Raumes einerseits Aussagen auf einer bereits relativ breiten Datenbasis möglich sind, diese jedoch andererseits bedingt durch die Forschungsdynamik weitgehend vorläufigen Charakter haben müssen. Eine solche Einschränkung gilt im weiteren Sinne zwar für viele andere Gebiete vorderasiatischer Archäologie, nur in wenigen Forschungsbereichen finden jedoch derart weitreichende Modifikationen von Entwicklungsmodellen statt wie es beispielsweise gegenwärtig hinsichtlich des kulturellen Verhältnisses von südlicher Levante und dem anatolischen Raum im Frühneolithikum der Fall ist. Darüber hinaus deuten die inzwischen ermittelten, hier allerdings nicht behandelten, frühneolithischen Befunde auf Zypern auf noch deutlich komplexere Entwicklungen als bisher vermutet, insbesondere was Aspekte von Technologie- und Wissenstransfer betrifft. Zugleich erschwert die

zunehmende Datenfülle die Definition allgemein verbindlicher Modelle für Großregionen, während Entwicklungen in Kleinregionen für einige Perioden inzwischen deutlicher zu erkennen sind. Generell ist allerdings die sehr differente Datenlage für die einzelnen Subperioden des Gesamtzeitraums zu berücksichtigen. Während für PPNA und EPPNB nach wie vor nur sehr wenige, durch Ausgrabungen erfasste Komplexe vorliegen, sind MPPNB und v.a. LPPNB regional vergleichsweise gut erforscht. Die geringe Anzahl untersuchter Fundorte dieses Zeitraums im anatolischen Raum lässt jedoch auch hier bisher nur partiell gültige Verallgemeinerungen zu. Die in der vorliegenden Arbeit entwickelten Hypothesen zum Themenkomplex Subsistenz und Vorratshaltung sind daher als eine auf dem gegenwärtigen Kenntnisstand basierende Zwischenbilanz zu verstehen, für die spätere Modifikationen denkbar und wahrscheinlich sind.

Die Ermittlung von auf Vorratshaltung deutenden funktionalen Einheiten im archäologischen Befund erfordert zunächst die Definition des möglichen formalen Spektrums. Unter Verwendung ethnologischer und ethnoarchäologischer Studien, die für das hier behandelte Untersuchungsgebiet Vorderasien vorliegen, wurde daher zunächst eine Typologie subrecenter und recenter Speichereinrichtungen im ländlichen Raum erstellt. In einem zweiten Arbeitsschritt wurde dann versucht, entsprechende typologische Einheiten im archäologischen Kontext der wichtigsten Fundorte aus dem Zeitraum zwischen 12.000 und 6.000 v. Chr. (kalibrierte Daten) zu erfassen und zu interpretieren.

#### HOLZER 2010

A. Holzer, U. Avner, N. Porat & L. K. Horwitz, *Desert kites in the Negev desert and northeast Sinai, Their function, chronology and ecology*. [Journal of Arid Environments 74 \(2010\), 806–817](#).

Desert kites are stone-built, funnel-shaped installations comprising two long and low stone-built walls ('arms') converging on an enclosure or pit at the apex. They are found in the deserts of the Near East, and are generally accepted as representing game traps to catch herds of wild ungulates. Their chronology is debated but some desert kites appear to have functioned as early as the 7th millennium BC. The largest number of these structures is recorded in the deserts of eastern Jordan where they often form chains of up to 60 km long. In contrast, in the Negev (Israel) and Sinai (Egypt) deserts, the desert kites are few in number and occur as small, individual installations.

This paper presents the results of archaeological surveys and excavations of 16 desert kites from the Negev desert and northeast Sinai. We present radiocarbon dates, infrared stimulated luminescence ages and chronology of material culture to show that desert kites in this region were established in the late 4th–early 3rd millennia BC and ceased to function by the mid-2nd millennium BC. The size, shape and location of the desert kites fits the physical conditions of the terrain and also the ethology and ecology of the prey species hunted.

Keywords: Desert kites | Equids | Gazelle | IRSL ages | Negev desert | Northeast Sinai | Radiocarbon

#### KEMPE 2013

Stephan Kempe & Ahmad Al-Malabeh, *Desert kites in Jordan and Saudi Arabia, Structure, statistics and function, a Google Earth study*. [Quaternary International 297 \(2013\), 126–146](#).

Google Earth offers the opportunity to study "desert kites", large, presumably Neolithic, gazelle-hunting structures, shaped like children's kites in their final building stages. Kites occur throughout the Near East where large stones and boulders were available, e.g. in the Harrat (lava deserts). The most prominent kites

typically consist of kilometer-long guiding walls, ending in a hectare-sized enclosure. In Jordan, at least 550 kites are counted, and another 252 in Saudi Arabia (SA). The Jordanian and the 45 northern SA kites are of a different type ("star-shaped" and arranged in chains) than the 207 in the Harrat Khaybar in Central SA ("barbed" and individual). Size statistics are presented; relative stratigraphy and kite function are discussed.

#### NADEL 2010

Dani Nadel, Guy Bar-Oz, Uzi Avner, Elisabetta Boaretto & Dan Malkinson, *Walls, ramps and pits, The construction of the Samar Desert kites, southern Negev, Israel*. [Antiquity 84 \(2010\), 976–992](#).

Archaeological investigations of 'desert kites' in south Israel show them to have been animal traps of considerable sophistication and capacity, constructed in the Early Bronze Age or earlier. Extensive stone-wall arms gather in gazelles from their habitual trails and canalise them into a sunken enclosure, cunningly hidden from view of the galloping herd until it was too late . . .

Keywords: Israel, Levant, Early Bronze Age, hunting, trapping, animal management

#### NADEL 2013

Dani Nadel, Guy Bar-Oz, Uzi Avner, Dan Malkinson & Elisabetta Boaretto, *Ramparts and walls, Building techniques of kites in the Negev Highland*. [Quaternary International 297 \(2013\), 147–154](#).

Remarkably, the largest archaeological game traps ever recorded in the Near East are found in arid landscapes, both on plains and in hilly terrains. This paper describes the construction methods used on steep slopes in the Negev Highland. Apparently, in some cases a massive rampart (rather than a freestanding wall) was built around the trap's head. The details reflect careful planning and heavy-duty work, including leveling and then using more than 100 t of stone for the rampart construction. New 14C data date the Sayarim site to the Early Bronze Age (minimum age), and the Pitam site to pre-Late Bronze Age.

#### SANDERS 1984

Guy D. R. Sanders, *Reassessing Ancient Populations*. [Annual of the British School at Athens 79 \(1984\), 251–262](#).

As part of a study of the later settlements on the island of Melos from the Fourth Crusade until the early nineteenth century, a close examination of the island's agricultural potential was necessary to help illuminate the reasons for the growth, location, and distribution of the settlements. As a basis for this work, a valuable study examining present agricultural exploitation, and speculating on past 'subsistence strategies' on Melos was used. The model, published by Wagstaff, Augustson, and Gamble in *An Island Polity*, attempted to reconstruct the 'subsistence strategies' open to the populations of Phylakopi in the Late Bronze Age and the town of Melos in the fourth century B.C., and to determine the supportive capacities of the sites' catchment areas.' When such an analysis was applied to the settlements of the island between 1470 and 1848 it was apparent that the model was flawed. For instance the model indicated that for the maximum population of over 5,000 in the late seventeenth century, 41 per cent of the island's surface area would have been required in cereals and vegetables alone. This is in marked contrast to the total area under cultivation in 1938 and 1961, which consisted of 12 per cent and 20 per cent of the surface area respectively.

Figures for the early nineteenth century and a tax survey of 1670 for Melos confirm that the *Island Polity* model does not work for the period covered by

my research. From the seventeenth century evidence, it is possible to calculate that instead of the 61.5 km<sup>2</sup> suggested by the model, only 9.5 km<sup>2</sup> were needed to support the population of around 5,000 at a time when agricultural methods were relatively unsophisticated and the political administration discouraged innovations. This paper attempts to identify problems with the original model and to adjust it so that it more accurately reflects the agricultural potential of Melos.

## Klima

CLARK 2014

Peter U. Clark & Lev Tarasov, *Closing the sea level budget at the Last Glacial Maximum*. [PNAS 111 \(2014\), 15861–15862](#).

We consider three other possible solutions to the case of missing LGM ice. First, it is becoming increasingly clear that the effective radial profile of the Earth's viscosity structure has lateral dependence that needs to be quantified. Second, the interpretation of many paleo-sea level proxies relies on observed living depth ranges. These ranges, however, are likely sensitive to ocean conditions (acidity, nutrient levels, temperature, and transmissivity of solar insolation) that could have changed significantly under glacial conditions, requiring a careful reevaluation of potential uncertainties of the living ranges of sea level proxies. Finally, newly discovered records from the Arctic Ocean suggest that an ice sheet may have grounded on the East Siberian margin.

## Kultur

RONEN 1995

Avraham Ronen, *Core, Periphery and Ideology in Aceramic Cyprus*. [Quartär 46 \(1995\), 177–206](#).

The enigmatic Aceramic Neolithic of Cyprus is viewed here as a coherent ideological system. This ideology consisted of a code of conduct which clearly opposed the norms of the contemporary mainland Neolithic. It is suggested that insularity was chosen as a means of maintaining cultural isolation, while fending off outside influences. Insularity encouraged, to some extent, a biological isolation as well. Aceramic cultural identity was successfully maintained for some two millennia. Subsequently, changes were introduced and the Aceramic lifeway was gradually undermined until its final demise in the Early Bronze Age. The evidence at hand indicates that the colonizers came to Cyprus with their ideological system fully developed. It follows that the settlers must have been a cultural isolate, practicing their particular beliefs prior to settling in Cyprus. It is suggested that the settlers emerged in their homeland as an opposition group which countered the socio-political and ideological transformations concomitant with the onset of food production in the Early Holocene. The newly emerging order was opposed by adherence to the old norms, or fundamentalism. Aceramic Cypriots thus constitute the oldest religious sect, and the oldest sociopolitical opposition known in human history.

Keywords: Cyprus, Early Holocene, Aceramic Neolithic, Sectarianism, Religion.

SANDERS 2014

Guy D. R. Sanders, *Did Ordinary People Own Pottery? Some Household Belongings of the Richest and Poorest Echelons of Society*. [Το Βυζάντιο χωρίς λάμψη \(2014\), preprint, 1–14](#).



Archaeologists tend to assume that because ceramics are so ubiquitous in the archaeological record, they were inexpensive and that ordinary people had plenty of pots. Thus scatters of potsherds found in the fields are frequently identified as the household remains of an isolated peasant farmstead. The presence of Byzantine glazed pottery in these scatters in Boeotia led Joanita Vroom to conclude that they were mass-produced and “mass-consumed”.

I believe that this perception needs to be challenged. Firstly, most pottery is the product of skilled craftsmen. The process of wood firing clay into ceramic was a labor intensive process a large step beyond using the raw materials themselves. Secondly, most scholars have not considered actually what it meant to be poor, let alone what proportion of past populations lived on a very low income. As a consequence, there seems to be a misconception that truly poor people had sufficient income to afford “cheap” pottery. I think we can safely say that most everyday objects of the Byzantine poor were made of perishable materials. They poor did not have pithoi, they stored in wicker bins and cooked in iron or copper kettles. If the poor had any pottery, it was perhaps a stamnos to keep their drinking water cool. Whitelaw et. al. seem to be in error assuming that everybody had lots of pots – ceramics may have been produced in large quantities but not used by the masses.

## Kupfer

KIENLIN 2007

Tobias L. Kienlin, *Von den Schmieden der Beile, Zu Verbreitung und Angleichung metallurgischen Wissens im Verlauf der Frühbronzezeit. Prähistorische Zeitschrift* **82** (2007), 1–22.

Metallographische Gefügeuntersuchungen an Randleistenbeilen des Sächsischen Typs und solchen des Typs Langquaid zeigen, daß im Verlauf der Frühbronzezeit eine Vereinheitlichung der Schmiedetechnik auftritt. Diese ist nicht allein auf die regelhafte Verwendung hochprozentiger Zinnbronze ab der entwickelten Frühbronzezeit zurückzuführen. Vielmehr faßt man eine Stabilisierung der Herstellungsprozesse insgesamt, eine Angleichung metallurgischen Wissens und eine intensivere, überregionale Kommunikation. Ausgehend von diesem Befund wird nach handwerklicher Spezialisierung und der gesellschaftlichen Einbettung frühbronzezeitlicher Metallurgie gefragt. Indem wir Metallobjekte als Prestigegüter betrachten, deren Herstellung und Verwendung von einer entstehenden Oberschicht kontrolliert wurde, überschätzen wir das Organisationsniveau des frühbronzezeitlichen Metallhandwerks und die soziale Differenzierung der entsprechenden Gesellschaften. Denn im Siedlungs- und Bestattungswesen der Frühbronzezeit fehlen weitgehend die Belege für die Existenz stabiler gesellschaftlicher Hierarchien. Zu fragen ist also, wie die Zinnbronze auf einem eher niedrigen gesellschaftlichen Organisationsniveau allgemeine Akzeptanz finden und sich mit den Beilen des Typs Langquaid zudem eine deutliche Stabilisierung der Schmiedetechnik einstellen konnte. Unter Rückgriff auf ethnographische Analogien wird vorgeschlagen, daß Abstammungsgruppen als grundlegende Organisationseinheit vorstaatlicher Bevölkerungen auch für die Vermittlung und Angleichung metallurgischen Wissens entscheidende Bedeutung zukam.

Metallographic analyses show that during the Early Bronze Age of the Northalpine region of Central Europe existed distinct traditions of early metallurgy. With flanged axes of the Saxon type, for example, we witness a certain instability and transformation of metallurgical knowledge related to the spread of tin bronze. This only comes to an end with the Langquaid axes (BA A2), which show a standardization of cold-working and stabilisation of manufacturing processes in general. Seen in a wider context this finding confirms the well-established



conclusion that the actual transition to the age of metal takes place in BA A2. Furthermore it is supposed that during this period metallurgy had considerable societal impact and led to the formation of new elites. From this perspective our results – a standardization of metallurgical knowledge in BA A2 – would imply centralization of production processes and increasing control of elites over specialised metalworkers, the practice of metallurgy, access to copper and tin and the distribution of metal objects. However, a closer look at burials, settlements and what little evidence remains of metallurgical workshops implies that the socio-economic importance of EBA metallurgy, craft specialization and social hierarchies might be generally overestimated. By drawing on ethnographic data an alternative model is therefore presented, which accounts for a more intensive participation of local producers in cross-regional communication. It is proposed that largely without elite control a kinship-based organisation of EBA metallworking allowed the spread and standardization of metallurgical knowledge evident in the metallographic data.

Frühbronzezeit; metallographische Gefügeuntersuchungen; Randleistenbeile; Guß- und Schmiedetechnik; handwerkliche Spezialisierung; gesellschaftlicher Kontext der frühbronzezeitlichen Metallurgie.

Early Bronze Age; metallography; flanged axes; casting and forging techniques; craft specialisation; EBA society.

## Mesolithikum

### BOCQUENTIN 2014

Fanny Bocquentin & Ofer Bar-Yosef, *Early Natufian remains: evidence for physical conflict from Mt. Carmel, Israel*. [Journal of Human Evolution](#) **47** (2014), 19–23.

Prior to the establishment of farming communities direct physical evidence for human conflict was rarely reported from archaeological contexts. Here we present a case of an Early Natufian (14.500–13.000 cal B.P.) projectile, classified as Helwan lunate, embedded inside the seventh or eighth thoracic vertebra sequence of a mature middle age adult male. Due to calcareous concretion four vertebrae were still in anatomical connection when uncovered by F. Turville-Petre, during his excavations at Kebara cave (Mt. Carmel) in 1931.

Keywords: Early Natufian; Kebara Cave; Lunate projectile; Fatal wounding

### SAVARD 2006

Manon Savard, Mark Nesbitt & Martin K. Jones, *The role of wild grasses in subsistence and sedentism, New evidence from the northern Fertile Crescent*. [World Archaeology](#) **38** (2006), 179–196.

Sedentism is usually regarded as a pre-condition for the development of crop husbandry in Southwest Asia and, consequently, sedentary pre-agrarian sites are an important focus of research on the origins of agriculture. It is often assumed that wild grasses were as important for huntergatherers as domesticated cereals were for early farmers, and that wild grass exploitation may therefore have had a critical role in enabling sedentism. Results from the analysis of archaeobotanical assemblages from Hallan Çemi, Demirköy, Qermez Dere and M'lefaat, and comparison with those of other sedentary pre-agrarian sites in Southwest Asia, challenge the role often attributed to the exploitation of grasses at this time. Archaeobotanical and ethnographical evidence instead suggests that hunter-gatherers took an opportunistic approach to the resources available and their subsistence strategies were not necessarily centred on grasses and 'wild cereals'.

Keywords: Neolithic; Epipalaeolithic; Natufian; domestication; foraging; hunter-gatherers.

## Methoden

KENNEDY 2011

David Kennedy & M. C. Bishop, *Google earth and the archaeology of Saudi Arabia, A case study from the Jeddah area*. [Journal of Archaeological Science](#) **38** (2011), 1284–1293.

Archaeologically, Saudi Arabia is one of the least explored parts of the Middle East. Now, thanks to Google Earth satellite imagery, a number of high-resolution ‘windows’ have been opened onto the landscape. Initial investigations already suggest large parts of the country are immensely rich in archaeological remains and most of those identified are certainly pre-Islamic and probably several thousand years old. Detailed interpretation of one ‘window’ east of Jeddah forms the basis for illustrating the richness of the heritage and how the satellite imagery can be exploited to shed important light on the character and development of the human landscape. Through this ‘window’ we set out a proposed methodology for future work and where it may lead.

Keywords: Saudi Arabia | Remote sensing | Neogeography | Google earth (GE) | Prehistory | Death and burial

KENNEDY 2011

David Kennedy, *The “Works of the Old Men” in Arabia, Remote sensing in interior Arabia*. [Journal of Archaeological Science](#) **38** (2011), 3185–3203.

In the 1920s pilots overflying the Transjordan panhandle discovered thousands of enigmatic stone-built structures which the beduin called “The Works of the Old Men”. We now know these works are several thousand years old, extend from Syria to Yemen and probably number a million or more, making them far older and significantly more extensive than Peru’s Nazca Lines. Like the latter they are often unseen and seldom intelligible at ground level. Now an aerial reconnaissance programme in Jordan and high-resolution satellite imagery from Google Earth for large areas of Arabia is vastly expanding the database bringing transformation and opportunity. Despite regional and diachronic variations, these works are plainly parts of an immense prehistoric cultural continuum surviving as hunting traps, funerary/ religious sites and seasonal camps. Extensive sampling and test-mapping show patterns and associations which suggest methodologies for developing a remote sensing programme to record, map and begin analysis for interior Arabia as a whole. On such foundations may be built interdisciplinary collaboration to interpret and explain this little-known human landscape on the fringes of the Fertile Crescent.

Keywords: Saudi Arabia | Jordan | Stone structures | Remote sensing | Google Earth (GE) | Prehistory | Pre-Islamic

## Neolithikum

GORING-MORRIS 2014

Adrian Nigel Goring-Morris & Anna Belfer-Cohen, *The Neolithic in the Southern Levant, Yet another ‘unique’ phenomenon . . .*. In: JEAN

GUILAINE, CLAIRE MANEN & THOMAS PERRIN (Hrsg.), *La transition néolithique en Méditerranée, Actes du colloque Transitions en Méditerranée, Muséum de Toulouse, 14–15 avril 2011. (Paris 2014), 59–75.*

#### MANNING 2010

Sturt W. Manning, Carole McCartney, Bernd Kromer & Sarah T. Stewart, *The earlier Neolithic in Cyprus, Recognition and dating of a Pre-Pottery Neolithic A occupation. Antiquity* **84** (2010), 693–706.

Intensive survey and initial excavations have succeeded in pushing back the Neolithic human occupation of Cyprus to the earlier ninth millennium cal BC. Contemporary with PPNA in the Levant, and with signs of belonging to the same intellectual community, these were not marginalised foragers, but participants in the developing Neolithic project, which was therefore effectively networked over the sea.

Keywords: Cyprus, early Neolithic, PPNA, ochre, figurine, shaft-straightener, arrowheads, pigs

#### MARTINOLI 2003

Daniele Martinoli & Mark Nesbitt, *Plant stores at pottery Neolithic Höyücek, southwest Turkey. Anatolian Studies* **53** (2003), 17–32.

Eleven samples comprising an estimated 39,000 plant remains were analysed from a burnt destruction level at the pottery Neolithic site of Hoyuicek, southwest Turkey (radiocarbon dated 7550-7350 uncalibrated bp, 6400-6100 calibrated BC). Large stores of emmer (*Triticum dicoccum*), free threshing wheat (*Triticum aestivum/durum*), lentils (*Lens culinaris*), bitter vetch (*Vicia ervilia*) and chickpea (*Cicer arietinum*) were identified and these plants were interpreted as crops. The low levels of weeds and crop processing by-products suggest most of the samples were remains of stores of human food. Two samples in which wild components (for example, *Triticum boeoticum*, *Medicago*, *Aegilops*) dominated were interpreted as crop processing by-products, presumably stored for fodder. The presence of these stores in a structure interpreted as having a religious function shows that domestic activities also took place there. Comparison with other Neolithic and Chalcolithic sites of west central Turkey demonstrates a good correspondence in the range of crops. The poor representation of barley at Hoyuicek doubtless reflects the small number of samples from the site.

#### NEEF 1997

Reinder Neef, *Status and Perspectives of Archaeobotanical Research in Jordan*. In: HANS GEORG K. GEBEL, ZEIDAN KAFABI & GARY O. ROLLEFSON (Hrsg.), *The Prehistory of Jordan II, Perspectives from 1997. SENEPSSE 4 (Berlin 32006), 601–609.*

#### NESBITT 2004

Mark Nesbitt, *Can We Identify a Centre, a Region, or a Supra-Region for Near Eastern Plant Domestication? Neo-Lithics* **2004**, i, 38–40.

We can not be complacent in assuming we understand the PPNA – recent high-quality archaeobotanical evidence challenges traditional views on the (southern Levantine) location and (PPNA) dating of plant domestication.

The quality of the new evidence, combined with new DNA studies, means that subsistence changes and domestication events in the PPNA can now be studied at a regional level.

At present, evidence from weeds and grain size suggests that cultivation may have been taking place in both the western and northern Fertile Crescent in the PPNA.

It might be time to stop using the term Levant for an area of agricultural origins that many now delineate as encompassing Israel, Palestine, Jordan, western Syria, southeast Turkey and northern Iraq. The term western Fertile Crescent (if agreed to define the same area) might avoid giving the impression of spatial and cultural homogeneity which might obscure regional variations.

Evidence from the occurrence of domesticates, and the late development of a consistent crop package, points to independent domestication (and agricultural origins) in different regions. It's difficult to say if that is because of rapid spread of ideas, or because of similar pressures operating on hunter-gatherer communities across different regions.

Settlement evidence supports the notion of a fundamental shift to an agricultural economy at some point in the early PPNB. This might have had a strong effect on regional interactions.

In answer to the question in my title, the evidence currently supports Gebel's view of a polycentric evolution. But I'm sorry to miss the opportunity of discussing these views at the meeting!

### SAVARD 2003

M. Savard, M. Nesbitt & R. Gale, *Archaeobotanical evidence for Early Neolithic diet and subsistence at M'lefaat (Iraq)*. [Paléorient 29 \(2003\), i, 93–106.](#)

The archaeobotanical assemblage of the Aceramic Neolithic site of M'lefaat, dated to the beginning of the 10th millennium uncal. BP, is dominated by legumes, especially Viciaeae, Lathyrus/Vicia, Vicia ervilia and Lens, and by grasses, such as *Hordeum spontaneum/distichon*, *Aegilops cylindrica/tauschii/speltooides* ssp. *speltooides* and *Triticum boeoticum/Secale*. Other taxa such as *Gypsophila pilosa* type and *Bellevalia* type, also count for a significant part of the assemblage. Taxa associated with a riverine environment dominate the charcoal assemblage.

The archaeobotanical results of other contemporary steppic sites of the northern Fertile Crescent (Qermez Dere, Abu Hureyra, Mureybet and Jerf el Ahmar), were compared to those of M'lefaat. The results are quite similar: legumes, especially Vicia and Lens, and grasses, especially *Hordeum spontaneum/distichon* and *Triticum boeoticum/Secale*, dominate. A distinctive trait of the M'lefaat assemblage is the abundance of *Aegilops*. Although it is impossible to rule out domestication or cultivation, there is no positive evidence for this at the site. Archaeobotanical results from M'lefaat and other steppic sites suggest that wetter conditions and a moist-steppe vegetation and/or forest-steppe, with good availability of grasses, were in place by 10,000 BP.

**Keywords:** Archaeobotany, Charcoal, Seeds, Environment, PPNA, Aceramic Neolithic, Proto-Neolithic.

### TANNO 2006

Ken-ichi Tanno & George Willcox, *The origins of cultivation of *Cicer arietinum* L. and *Vicia faba* L. Early finds from Tell el-Kerkh, north-west Syria, late 10th millennium B.P.* [Vegetation History and Archaeobotany 15 \(2006\), 197–204.](#)

*Cicer arietinum* L. (chickpea) and *Vicia faba* L. (faba bean, broad bean or horse bean) were found in late 10th millennium b.p. levels at Tell el-Kerkh, in north-west Syria. They are the earliest well preserved archaeobotanical finds of these two

species. Over a hundred *C. arietinum* specimens were recovered which showed a wide morphological diversity varying from *C. arietinum* ssp. *reticulatum* to the more rounded shape as seen in cultivated varieties. For *Vicia faba*, 29 complete and 119 half seeds, as well as many fragments were recovered. Tell el-Kerkh is one of the few early PPNB Near Eastern sites situated in the Mediterranean zone which could have been the habitat of the unknown wild progenitor of the faba bean. The wild progenitor of chickpea, *C. a. reticulatum*, is found in a limited area of southeast Turkey, at a considerable distance from Tell el-Kerkh. These finds suggest that the use and domestication of these pulses is perhaps earlier than was previously supposed.

Keywords: *Cicer arietinum* | *Vicia faba* | Domestication | Neolithic | Near East

#### VIGNE 2007

Jean-Denis Vigne & Daniel Helmer, *Was milk a “secondary product” in the Old World Neolithisation process? Its role in the domestication of cattle, sheep and goats.* *Anthropozoologica* **42** (2007), ii, 9–40.

Beginning with a critical presentation of Sherratt’s model of the “secondary products” revolution, the authors review the most recent biochemical, isotopic and palaeogenetic evidence for early Neolithic milk exploitation in Europe. They suggest that there was a wide development of dairying which occurred much earlier than the “secondary products” revolution. Then they focus particularly on the osteoarchaeological evidence for the Near East and Mediterranean Europe. Using recent improvements in archaeozoological techniques for constructing and interpreting slaughtering age profiles which reflect animal management strategies, they analyse 36 sheep and goat and 17 cattle harvest profiles. They provide clear evidence for milk exploitation of sheep and goats as early as the first advances of the Neolithic in both regions, and strongly suggest that special management practices existed for cattle dairying. Altogether, these data indicate that dairy products were already part of the diet at the very beginning of the Neolithic process, and therefore should have played a role in the earliest Near Eastern domestication processes and in their spread to the Mediterranean basin. This evidence and its interpretation suggest that the Pre-Pottery (PPNB) Neolithic villagers were able to develop special technical innovations for the exploitation of early domestic animals as early as the mid 9th millennium BC, when they were still “stock-keeping hunter-cultivators” rather than true farmers. This leads the authors to argue against the image of the last hunters having a low level of technical skills for animal management. Although still partly valid, the “secondary products” revolution hypothesis should be thoroughly revised. The terms “primary products” and “secondary products” should themselves be questioned: the authors propose to replace them with “final products” and “ante mortem (life time) products”, respectively.

Keywords: Neolithic | milk exploitation | dairying | “secondary products” | slaughtering profiles | Near East | Mediterranean Europe | PPNB.

#### WILLCOX 2004

George Willcox, *Measuring grain size and identifying Near Eastern cereal domestication, Evidence from the Euphrates valley.* *Journal of Archaeological Science* **31** (2004), 145–150.

Cereal grains recovered from recent excavations at two early Neolithic tenth millennium (BP non cal.) sites on the Euphrates were measured. The results presented as scatter diagrams showed that there was an increase in grain size between early and later levels. This led to the question of whether or not the changes were due to the effects of domestication. The data provided an opportunity to evaluate the use of measurements as a method to identify morphological domestication from

early farming sites. Results were compared to domesticated specimens from a site dating to the end of the seventh millennium situated in the same geographical area and it was found that the upper size range from the Neolithic levels corresponded well with domesticated grains. Data from some published sites was also plotted. The factors affecting grain size such as morphological domestication, charring, environmental factors and crop processing are discussed in relation to the results.

Keywords: Domestication; Grain size; Near East; Cereals; Neolithic; Chalcolithic

## Ozeanien

### LAWLER 2014

Andrew Lawler, *Epic pre-Columbian voyage suggested by genes*. [science 346 \(2014\), 406](#).

South American DNA found in Easter Islanders.

In this week's issue of *Current Biology*, researchers argue that the genes point to contact between Native Americans and Easter Islanders before 1500 C.E., 3 centuries after Polynesians settled the island also known as Rapa Nui, famous for its massive stone statues. Although circumstantial evidence had hinted at such contact, this is the first direct human genetic evidence for it.

“Our studies strongly suggest that Native Americans most probably arrived [on Rapa Nui] shortly after the Polynesians,” says team member Erik Thorsby, an immunologist at the University of Oslo. He thinks that could support the controversial theory, posited by Norwegian adventurer Thor Heyerdahl more than a half-century ago, that Native Americans had the skills to move west across the Pacific.

### MALASPINAS 2014

Anna-Sapfo Malaspinas et al., *Two ancient human genomes reveal Polynesian ancestry among the indigenous Botocudos of Brazil*. [Current Biology 24 \(2014\), R1035–R1037](#).

[CurrBiol24-R1035-Supplement.pdf](#)

Anna-Sapfo Malaspinas, Oscar Lao, Hannes Schroeder, Morten Rasmussen, Maanasa Raghavan, Ida Moltke, Paula F. Campos, Francisca Santana Sagredo, Simon Rasmussen, Vanessa F. Gonçalves, Anders Albrechtsen, Morten E. Allentoft, Philip L. F. Johnson, Mingkun Li, Silvia Reis, Danilo V. Bernardo, Michael DeGiorgio, Ana T. Duggan, Murilo Bastos, Yong Wang, Jesper Stenderup, J. Victor Moreno-Mayar, Søren Brunak, Thomas Sicheritz-Ponten, Emily Hodges, Gregory J. Hannon, Ludovic Orlando, T. Douglas Price, Jeffrey D. Jensen, Rasmus Nielsen, Jan Heinemeier, Jesper Olsen, Claudia Rodrigues-Carvalho, Marta Mirazón Lahr, Walter A. Neves, Manfred Kayser, Thomas Higham, Mark Stoneking, Sergio D. J. Pena & Eske Willerslev

All the genetic data point towards two individuals with Polynesian ancestry and no detectable Native American ancestry.

When calibrating the 14C dates with the Southern Hemisphere curve [3], the 95 % highest posterior density regions (HPD) were 1452–1510 AD and 1579–1620 AD for Bot15 (bimodal distribution), and 1419– 1477AD for Bot17. While there is a general lack of baseline isotope data for the relevant areas and from archaeological remains, the combined evidence from the d13C, d15N and d34S values when compared to Brazilian fauna and flora, as well as archaeological and modern human bone samples, suggests that a marine reservoir effect cannot be fully excluded (Supplemental information). The 95 % HPDs of the marine corrected dates are 1479–1708 AD and 1730–1804 AD for Bot15, and 1496–1842 AD for Bot17.



Whether brought by Europeans or the result of the Polynesian expansion, the fact remains that some Brazilian Botocudos carried distinctive Polynesian genetic signatures. We hope that further sampling will provide a more definitive answer to this intriguing finding.

#### MORENO-MAYAR 2014

J. Víctor Moreno-Mayar et al., *Genome-wide Ancestry Patterns in Rapanui Suggest Pre-European Admixture with Native Americans*. [Current Biology](#) **24** (2014), 2518–2525.

J. Víctor Moreno-Mayar, Simon Rasmussen, Andaine Seguin-Orlando, Morten Rasmussen, Mason Liang, Siri Tennebø Flåm, Benedicte Alexandra Lie, Gregor Duncan Gilfillan, Rasmus Nielsen, Erik Thorsby, Eske Willerslev, & Anna-Sapfo Malaspinas

**Background:** Rapa Nui (Easter Island), located in the easternmost corner of the Polynesian Triangle, is one of the most isolated locations on the planet inhabited by humans. Archaeological and genetic evidence suggests that the island was first colonized by Polynesians around AD 1200, during their eastward expansion. Although it remains contentious whether Polynesians reached South America, suggestive evidence has been brought forward supporting the possibility of Native American contact prior to the European “discovery” of the island in AD 1722.

**Results:** We generated genome-wide data for 27 Rapanui. We found a mostly Polynesian ancestry among Rapanui and detected genome-wide patterns consistent with Native American and European admixture. By considering the distribution of local ancestry tracts of eight unrelated Rapanui, we found statistical support for Native American admixture dating to AD 1280–1495 and European admixture dating to AD 1850–1895.

**Conclusions:** These genetic results can be explained by one or more pre-European trans-Pacific contacts.

#### TYLER-SMITH 2014

Chris Tyler-Smith, *Human Genetics: Pre-Columbian Pacific Contact*. [Current Biology](#) **24** (2014), R1038–R1040.

Large-scale genetic analysis of the native inhabitants of Rapa Nui (Easter Island) reveals the expected combination of Polynesian ancestry with later European admixture, but also a contribution from Native Americans dating to 1280–1495 AD, demonstrating early trans-Pacific contact.

## Story or Book

#### KISER 2014

Barbara Kiser, *Lives in Ruins*. [nature](#) **515** (2014), 35.

*Lives in Ruins: Archaeologists and the Seductive Lure of Human Rubble*. Marilyn Johnson. (Harper 2014)

Archaeology is news, as the cave paintings in Indonesia just dated to 40,000 years ago remind us. In this gem of hands-on reportage, Marilyn Johnson delves into the lives of the pros behind the finds — impossibly dedicated, beset by job insecurity and in love with the hidden and half-decayed. Packed with ace accounts of hard graft featuring the likes of flint-knapping palaeoanthropologist John Shea and forensics specialist Kimberlee Moran, who studies the effects of explosions using pig carcasses.