

References

Aktuell

CAPRILES 2016

José M. Capriles, Calogero M. Santoro & Tom D. Dillehay, *Harsh Environments and the Terminal Pleistocene Peopling of the Andean Highlands*. [Current Anthropology](#) **57** (2016), 99–100.

In our opinion, the few artifacts and informal features reported from Cuncaicha are insufficient to substantiate an intense or year-round occupation. A diverse and complete lithic reduction sequence comes from the surface of the workshops and not from the occupied rock shelter, where only a portion of the sequence traditionally associated with permanent subsistence and related activities is represented.

ELLSWORTH 2016

Ryan M. Ellsworth, *Reply to Weight and Keefe*. [Current Anthropology](#) **57** (2016), 98.

[S]econdary fathers are secondary fathers precisely because they had prior sexual relations with a child's mother. In contrast to the young male baboons that the authors describe, who affiliate with a female and her infant to increase their opportunity to mate with that female in the future, Ache secondary fathers are affiliated with a woman's offspring because they have previously mated with that woman shortly before or during her pregnancy.

MATTHEWS 2016

Gillian A. Matthews et al., *Dorsal Raphe Dopamine Neurons Represent the Experience of Social Isolation*. [Cell](#) **164** (2016), 617–631.

[Cell164-0617-Supplement.pdf](#)

Gillian A. Matthews, Edward H. Nieh, Caitlin M. Vander Weele, Sarah A. Halbert, Roma V. Pradhan, Ariella S. Yosafat, Gordon F. Globler, Ehsan M. Izadmehr, Rain E. Thomas, Gabrielle D. Lacy, Craig P. Wildes, Mark A. Ungless, & Kay M. Tye

The motivation to seek social contact may arise from either positive or negative emotional states, as social interaction can be rewarding and social isolation can be aversive. While ventral tegmental area (VTA) dopamine (DA) neurons may mediate social reward, a cellular substrate for the negative affective state of loneliness has remained elusive. Here, we identify a functional role for DA neurons in the dorsal raphe nucleus (DRN), in which we observe synaptic changes following acute social isolation. DRN DA neurons show increased activity upon social contact following isolation, revealed by in vivo calcium imaging. Optogenetic activation of DRN DA neurons increases social preference but causes place avoidance. Furthermore, these neurons are necessary for promoting rebound sociability following an acute period of isolation. Finally, the degree to which these neurons modulate behavior is predicted by social rank, together supporting a role for DRN dopamine neurons in mediating a loneliness-like state.

RADEMAKER 2016

Kurt Rademaker et al., *Cuncaicha Rockshelter, a Key Site for Understanding Colonization of the High Andes, Reply to Capriles et al.* [Current Anthropology 57 \(2016\), 101–103.](#)

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

We reported no hearths. Sediment micromorphology identified probable anthropogenic ashes in TP sediments. Carbonized plant remains are also present (Rademaker et al. 2014:468, Materials and Methods 4, 5, figs. S5b, S6). We chose not to date these fragments because of the potential for translocation via bioturbation (Rademaker et al. 2014:467, 468) and old-wood effects.

We dated faunal remains because these were abundant, well-preserved, introduced into Cuncaicha via clear human agency, and in direct association with unequivocal artifacts (Rademaker et al. 2014:467). The inherent molecular information content of bone is much higher than that of charred plant remains.² Modern collagen ultrapurification methods consistently lead to accurate AMS ages (Jull, Burr, and Hodgins 2012) and are especially reliable when multiple statistically consistent ages constrain events of interest.

WEIGHT 2016

Michael D. Weight & Earl Keefe, *Partible Paternity and Female Choice, Comment on Ellsworth et al.* [Current Anthropology 57 \(2016\), 96–97.](#)

We suggest co-paternal care is mating, not parenting, effort of secondary fathers following a comparison between nonhuman primates (NHPs) and co-father behavior. The fitness benefits to caring co-fathers from increased future mating opportunities are distinct from the fitness consequences of co-paternal care to mothers and their offspring. We use the NHP comparison to illustrate that these fitness consequences to mothers from co-paternal care should not be used to inform the evolution of co-paternal care.

Amerika

BUCHANAN 2016

Briggs Buchanan, Marcus J. Hamilton,, J. David Kilby & Joseph A. M. Gingerich, *Lithic networks reveal early regionalization in late Pleistocene North America.* [Journal of Archaeological Science 65 \(2016\), 114–121.](#)

JAS065-0114-Supplement1.xlsx, JAS065-0114-Supplement2.docx

North America was colonized by huntergatherer populations during the late Pleistocene, and the Clovis culture is the earliest well-documented evidence of this event. Long-standing questions about the colonization process persist, including the extent to which low-density populations maintained contact across the continent and if foraging territories overlapped or were spatially-discrete. Here, we use a network approach to examine the spatial structure of land use associated with the earliest hunter-gatherer populations in North America. In particular, we examine the co-occurrence of raw materials used for stone tool manufacture at archaeological sites across the continent. Using a database of 84 Clovis assemblages we show that there are three large isolated, mostly spatially-discrete, lithic exploitation networks across the continent. These regions closely correspond to previously identified differences in Clovis point form, suggesting that Clovis populations were

becoming regionally distinct. This process of cultural diversification that begins in the late Pleistocene, continues to develop into the Holocene.

Keywords: Paleoindian | Clovis | Late Pleistocene | Lithics | Network analysis | Regionalization

Anthropologie

SCHURR 2016

Amos Schurr & Ilana Ritov, *Winning a competition predicts dishonest behavior*. *PNAS* **113** (2016), 1754–1759.

Winning a competition engenders subsequent unrelated unethical behavior. Five studies reveal that after a competition has taken place winners behave more dishonestly than competition losers. Studies 1 and 2 demonstrate that winning a competition increases the likelihood of winners to steal money from their counterparts in a subsequent unrelated task. Studies 3a and 3b demonstrate that the effect holds only when winning means performing better than others (i.e., determined in reference to others) but not when success is determined by chance or in reference to a personal goal. Finally, study 4 demonstrates that a possible mechanism underlying the effect is an enhanced sense of entitlement among competition winners.

Keywords: competition | behavioral ethics | behavioral economics | decision making | corruption

Significance: Competition is prevalent. People often resort to unethical means to win (e.g., the recent Volkswagen scandal). Not surprisingly, competition is central to the study of economics, psychology, sociology, political science, and more. Although we know much about contestants' behavior before and during competitions, we know little about contestants' behavior after the competition has ended. Connecting postcompetition behaviors with preceding competition experience, we find that after a competition is over winners behave more dishonestly than losers in an unrelated subsequent task. Furthermore, the subsequent unethical behavior effect seems to depend on winning, rather than on mere success. Providing insight into the issue is important in gaining understanding of how unethical behavior may cascade from exposure to competitive settings.

YOUN 2016

Hyejin Youn, Logan Sutton, Eric Smith, Cristopher Moore, Jon F. Wilkins, Ian Maddieson, William Croft & Tanmoy Bhattacharya, *On the universal structure of human lexical semantics*. *PNAS* **113** (2016), 1766–1771.

How universal is human conceptual structure? The way concepts are organized in the human brain may reflect distinct features of cultural, historical, and environmental background in addition to properties universal to human cognition. Semantics, or meaning expressed through language, provides indirect access to the underlying conceptual structure, but meaning is notoriously difficult to measure, let alone parameterize. Here, we provide an empirical measure of semantic proximity between concepts using crosslinguistic dictionaries to translate words to and from languages carefully selected to be representative of worldwide diversity. These translations reveal cases where a particular language uses a single “polysemous” word to express multiple concepts that another language represents using distinct words. We use the frequency of such polysemies linking two concepts as a measure of their semantic proximity and represent the pattern of these linkages by a weighted network. This network is highly structured: Certain concepts are far

more prone to polysemy than others, and naturally interpretable clusters of closely related concepts emerge. Statistical analysis of the polysemies observed in a subset of the basic vocabulary shows that these structural properties are consistent across different language groups, and largely independent of geography, environment, and the presence or absence of a literary tradition. The methods developed here can be applied to any semantic domain to reveal the extent to which its conceptual structure is, similarly, a universal attribute of human cognition and language use.

Keywords: polysemy | human cognition | semantic universals | conceptual structure | network comparison

Significance: Semantics, or meaning expressed through language, provides indirect access to an underlying level of conceptual structure. To what degree this conceptual structure is universal or is due to properties of cultural histories, or to the environment inhabited by a speech community, is still controversial. Meaning is notoriously difficult to measure, let alone parameterize, for quantitative comparative studies. Using cross-linguistic dictionaries across languages carefully selected as an unbiased sample reflecting the diversity of human languages, we provide an empirical measure of semantic relatedness between concepts. Our analysis uncovers a universal structure underlying the sampled vocabulary across language groups independent of their phylogenetic relations, their speakers' culture, and geographic environment.

Bibel

FINKELSTEIN 2014

Israel Finkelstein & Thomas Römer, *Comments on the Historical Background of the Jacob Narrative in Genesis*. [Zeitschrift für die Alttestamentliche Wissenschaft](#) **126** (2014), 317–338.

The authors deploy archaeological, geographical and exegetical considerations in order to reconstruct the development of the Jacob Cycle in Genesis. The earliest material seems to have originated from the Israelite population in the Gilead in the early phases of the Iron Age; it dealt mainly with the construction of the temple of El at Penuel and with the delineation of the settlement border between Israelites and Arameans in Transjordan. In the 8th century BCE the Jacob tradition was “transported” to the west of the Jordan, to the area of Bethel-Shechem, and put in writing. This was probably done in conjunction with Jeroboam II's reorganization of the cult of the Northern Kingdom, including the promotion of the worship of Yhwh and his temples. The article then discusses later layers in the Jacob Cycle: the merging of the northern Jacob narrative with the southern Abraham and Isaac narratives, the Priestly work and post-Priestly redactions of the cycle.

Die Autoren präsentieren archäologische, geographische und exegetische Überlegungen, um die Entstehung des Jakobzyklus in der Genesis zu rekonstruieren. Das früheste Material scheint von der israelitischen Bevölkerung in Gilead aus der frühen Eisenzeit zu stammen, es beschäftigte sich vor allem mit dem Bau des El-Tempels in Pnuel und mit der Beschreibung der Siedlungsgrenze zwischen den Israeliten und Aramäern in Transjordanien. Im 8. Jh. v. Chr. wurde die Jakobtradition in das Gebiet westlich des Jordans “transportiert”, in die Gegend von Bethel und Sichem, und dort schriftlich fixiert. Dies wurde wahrscheinlich im Zusammenhang der Reorganisation des Kultes im Nordreich unter Jerobeam II. veranlasst, einschließlich der Förderung der Jhwh-Verehrung und seines Tempels. Der Artikel diskutiert nachfolgend die späteren Schichten des Jakobzyklus: Die Verschmelzung der Jakoberzählung des Nordreiches mit den Abraham- und Isaakerzählungen des

Südreichs, die Priesterschrift und die nachpriesterschriftlichen Redaktionen des Zyklus.

Datierung

FISCHER 2009

Peter M. Fischer, *The chronology of Tell el-'Ajjul, Gaza, Stratigraphy, Thera, pumice and radiocarbon dating*. In: DAVID A. WARBURTON (Hrsg.), *Time's Up! Dating the Minoan eruption of Santorini, Acts of the Minoan Eruption Chronology Workshop, Sandbjerg November 2007*. Monographs of the Danish Institute at Athens 10 (Århus 2009), 253–266.

Cross links between Tell el-'Ajjul and other sites and areas have been discussed at length in several publications.⁵³ As far as the evidence from Tell el-Dabca is concerned, Bietak (pers. comm.) pointed out that certain vessels of Egyptian origin or Egyptianizing vessels from H5A at Tell el-'Ajjul⁵⁴ belong to the Tuthmoside period (no further precision), viz. from around 1500 bc or later. Hein⁵⁵ again classified an Egyptian shallow bowl from H7 at Tell el-'Ajjul as belonging to the Hyksos period, which is in line with our observation deduced from a juglet in H8 that has parallels from the first half of the Hyksos period at Tell el-Dabca (see above).

Another very important piece of information which does not usually receive the necessary attention in archaeological reports and discussions concerns the temporal aspects of the lengths of various layers of occupation. In order to meet the radiocarbon results one would have to adapt and possibly “stretch” the lengths of the occupational horizons at Tell el-'Ajjul. Let us assume a theoretical occupational length of 30 years for each of the cultural horizons at Tell el-'Ajjul.⁵⁶ Let us put the end of H5A, from which there are (almost) complete Egyptian imports, around 1500 bc (give or take a few decades).⁵⁷ H5B would then last from 1560-1530 bc, and H6 from 1590-1560 bc. This hypothetical back-counting would lead us fairly close to the radiocarbon-based chronology of the Thera eruption which is obviously not acceptable to our Egyptian colleagues, in particular.

There is hardly anyone in the two opposing “camps” who would deny the importance of Tell el-'Ajjul in connection with chronological discussions because of the unparalleled amount of imported material and numerous inds of Thera pumice. It is the hope of the author (and all the others involved in this discussion) that the excavations at Tell el-'Ajjul can be resumed shortly.

FOSTER 1996

Karen Polinger Foster & Robert K. Ritner, *Texts, Storms, and the Thera Eruption*. *Journal of Near Eastern Studies* 55 (1996), 1–14.

Many have posed this question: if the Thera eruption was so cataclysmic, why is there no mention of it in texts from neighboring literate areas? As many have answered, the problem is that in both Mesopotamia and Egypt, the eruption occurred inopportunistically during periods for which there is a dearth of historical documentation. Nevertheless, later Mesopotamian omen texts may provide us with indirect glimpses of the spectacular atmospheric phenomena that must have been engendered by Thera. More directly, Ahmose's Tempest Stele of about 1530 B.c., with its straightforward description of storms, darkness, noise, and damage throughout Egypt, may very well stand as an eyewitness account of the Thera eruption. If so, Ahmose not only expelled the Hyksos and founded the Eighteenth

Dynasty, but also led Egypt through the greatest volcanic event of the Bronze Age world.

FOSTER 2009

Karen Polinger Foster, Johannes H. Sterba, Georg Steinhauser & Max Bichler, *The Thera eruption and Egypt, Pumice, texts, and chronology*. In: DAVID A. WARBURTON (Hrsg.), *Time's Up! Dating the Minoan eruption of Santorini, Acts of the Minoan Eruption Chronology Workshop, Sandbjerg November 2007*. Monographs of the Danish Institute at Athens 10 ([Århus 2009](#)), 171–180.

Our INAA results with respect to the pumice from Maiyana and the Tomb of Maket are entirely consistent with the sourcing picture that has emerged from the Thera Ashes project, namely, that Minoan eruption material is not present in pre-Dyn. XVIII contexts, from palatial complexes to modest graves. At the same time, our re-examination of the Tempest Stele of Ahmose raises anew the question of its relevance and significance. An eruption date falling exactly within the chronological horizon of the stele finds support in archaeological and analytical evidence that is highly suggestive but still inconclusive.

Our work has raised many questions, of which we pose here three. How would an Ahmoside eruption date aid our understanding of the Aegeanizing items connected with his reign, such as the ceremonial weapons he gave his mother, Queen Ah-hotep? What is the meaning of her unparalleled title, “Mistress of the Littoral”? And what relation is there between the artists and workshops responsible for the Thera frescoes and those who painted the walls of early Dyn. XVIII palaces at the former Hyksos capital? We look forward to further investigations with keen anticipation.

HEINEMEIER 2009

Jan Heinemeier, Walter L. Friedrich, Bernd Kromer & Christopher Bronk Ramsey, *The Minoan eruption of Santorini radiocarbon dated by an olive tree buried by the eruption*. In: DAVID A. WARBURTON (Hrsg.), *Time's Up! Dating the Minoan eruption of Santorini, Acts of the Minoan Eruption Chronology Workshop, Sandbjerg November 2007*. Monographs of the Danish Institute at Athens 10 ([Århus 2009](#)), 285–293.

In 2006 we published a radiocarbon dating, 1613 bc, for the Minoan eruption on Santorini with an unparalleled precision of ± 13 calendar years.¹ It was based on the unique find in the caldera wall of Santorini of a branch of an olive tree that had been buried and preserved in an upright, life, position by the pumice of the eruption. 72 tree rings were identified by X-ray tomography, and the high precision was achieved by wiggle matching the ^{14}C results of the time series of four contiguous sections of tree rings to the radiocarbon calibration curve. Since the trees were growing at an altitude of 150 m above sea level and at a distance of more than 2.5 km from the active volcanic zone on Santorini, it is unlikely that the radiocarbon values published in 2006 could have been affected by old CO_2 . Because of the clear association of the tree and its outermost growth ring with the geological/archaeological event of the eruption, the date represents the best combination of directness and precision in any attempt so far of a science based chronology of the Minoan eruption.

While in broad agreement with other science dating attempts, there are some who claim that it is completely irreconcilable with the traditional archaeological

dates of the late 16th century bc, or later, based on cultural linkage (pottery typology) and Egyptian Chronology. To resolve the conflict, we need to take a careful look at the implicit and explicit underlying assumptions in the two methods. As we do not possess the expertise to evaluate the results of the archaeological approach, this paper will deal with the details of the find of the olive branch and its radiocarbon dating by wiggle matching as well as a balanced assessment of the possible sources of error.

HUNGER 2009

Hermann Hunger, *How uncertain is Mesopotamian chronology?* In: DAVID A. WARBURTON (Hrsg.), *Time's Up! Dating the Minoan eruption of Santorini, Acts of the Minoan Eruption Chronology Workshop, Sandbjerg November 2007*. Monographs of the Danish Institute at Athens 10 ([Århus 2009](#)), 145–152.

Most scholars are convinced that Mesopotamian chronology of the second millennium bc is uncertain. I shall try to present the so-called foundations of this chronology, which I think are reliable. I shall then go beyond this and describe the less reliable parts which concern the second millennium. Mesopotamian chronology is conventionally based on texts: eponym lists; king lists; dated documents; synchronisms; royal inscriptions; etc.

In conclusion I regret to say that there is conflicting evidence for Mesopotamian chronology: pottery development suggests a relatively Low Chronology, tree rings (assuming they are correctly interpreted) a somewhat higher, and astronomy (if P. Huber is correct) a very high one. At the moment, a decision seems to me impossible, but I hope for better data.

KRAUSS 2009

Rolf Krauss & David A. Warburton, *The basis for the Egyptian dates*. In: DAVID A. WARBURTON (Hrsg.), *Time's Up! Dating the Minoan eruption of Santorini, Acts of the Minoan Eruption Chronology Workshop, Sandbjerg November 2007*. Monographs of the Danish Institute at Athens 10 ([Århus 2009](#)), 125–144.

Dead-reckoning, supplemented by the synchronisms, the kinglists, the archaeological data, and lunar dates allows us to conclude that the conquest of Avaris and the defeat of the Hyksos by the first king of Dyn. XVIII took place around the end of the 16th century bc. The end of Dyn. XII can be estimated as having been at least two centuries earlier.

The Sothic date from Illahun allowed us to estimate that year 7 of the reign of Sesostri III fell between 1881 and 1826 bc. The lunar dates from the Illahun papyri mean that year 1 of Sesostri was 1837/36 bc. Thus the year 7 Sothic date of Sesostri III can be pinpointed at 1830 bc. Dyn. XII would have ended around 1760 bc.

The relationship between the Illahun Sothic date and the Sothic date in the calendar of P. Ebers allows the regnal year 9 of that papyrus to be placed in the years 1506 to 1498 bc. Taking account of the lunar date, this regnal year 9 must be 1506 bc. If year 1 of Thutmose III was 1468 bc, then dead reckoning means that this year 9 cannot be that of Amenhotep I, as this cannot have fallen before 1490 bc. It follows that we revive the doubts about the reading of the royal name (as that of Amenhotep I), and instead read this as the throne name of the last Hyksos king.

The end of Dyn. XIII and the beginning of the Hyksos Dyn. XV would have been around 1650 bc. The elimination of the Hyksos would have taken place

roughly 1504 bc. The year 1613 bc would lie towards the beginning of the Hyksos period.

KUTSCHERA 2012

Walter Kutschera et al., *The Chronology of Tell El-Daba, A Crucial Meeting Point of ¹⁴C Dating, Archaeology, and Egyptology in the 2nd Millennium BC*. *Radiocarbon* **54** (2012), 407–422.

Walter Kutschera, Manfred Bietak, Eva Maria Wild, Christopher Bronk Ramsey, Michael Dee, Robin Golser, Karin Kopetzky, Peter Stadler, Peter Steier, Ursula Thanheiser & Franz Weninger

Radiocarbon dating at the Tell el-Daba site in the Nile Delta has created an enigma for many years. Despite great efforts, the difference of about 120 yr between the chronology based on ¹⁴C dates and the one based on archaeological evidence linked to the Egyptian historical chronology has not been solved. In order to foster open discussions on this discrepancy, we present here the results of 40 ¹⁴C accelerator mass spectrometry (AMS) measurements on short-lived plant material assigned to 14 different phases of the Tell el-Daba excavation, spanning 600 yr (about 2000–1400 BC). On the one hand, the recently established agreement between ¹⁴C dates and dynastic Egypt (Bronk Ramsey et al. 2010) makes it unlikely that the problem lies in the ¹⁴C dates and/or the Egyptian historical chronology. On the other hand, the extensive archaeological evidence from Tell el-Daba linked to many different cultures in the eastern Mediterranean and to the Egyptian historical chronology provides strong evidence for an absolute chronology shifted by about 120 yr with respect to the ¹⁴C dates.

MACGILLIVRAY 2009

J. Alexander MacGillivray, *Thera, Hatshepsut, and the Keftiu, Crisis and response in Egypt and the Aegean in the mid-second millennium bc*. In: DAVID A. WARBURTON (Hrsg.), *Time's Up! Dating the Minoan eruption of Santorini, Acts of the Minoan Eruption Chronology Workshop, Sandbjerg November 2007*. Monographs of the Danish Institute at Athens 10 (Århus 2009), 155–170.

If we accept that the Thera eruption occurred at the outset of Hatshepsut and Thutmose III's fifth regnal year, the following dates combining the high Egyptian chronology and calibrated ¹⁴C dates for the fifteenth century bc may be proposed:

1572 -beginning of LM IA

1500 -Thera eruption in Mature LM IA

c.1495 -start of LM IB

1483 -Hatshepsut's death

1482 -Battle of Megiddo

1463 -Hatshepsut's proscription begins; – Mycenaean conquest of Knossos and start of LM II there

1450 -death of Thutmose III

1448 -revolt at Knossos; start of LM IIIA1 there.

c.1390 -beginning of LM IIIA2 in Crete

OSSOWSKI LARSSON 2015

Petra Ossowski Larsson & Lars-Åke Larsson, *When was the Minoan eruption of Thera?* unknown (2015), preprint, 1–10. DOI:10.13140/RG.2.1.4942.1287.

The Minoan eruption of the Thera (Santorini) volcano provides an archaeological key marker for the Bronze Age chronology of the Eastern Mediterranean civilizations. However, the exact date for this large eruption is still unknown. Based on published tree ring and ice core chronologies, we investigate the candidates for major volcano eruptions in the middle of the second millennium BC.

Ice core analysis provides indication for the volcanic nature of prominent events which resulted in climatic downturns and which are therefore visible in the tree ring chronologies. Our conclusion is that there are only two candidates for a “supervolcano” eruption in the time range -1675 to -1450. Only one of them has so far been scientifically considered as a candidate for the Thera eruption. Recent investigations seem to indicate it to be less likely that this candidate is Thera. But there is one unexplored candidate left!

The evaluation of which of the two eruption candidates is the most probable, is backed up by a re-investigation of the so called “Ugarit Eclipse”. We also suggest a new synchronization of tree ring and ice core time lines for the time range mentioned.

STERBA 2009

Johannes H. Sterba, Karen Polinger Foster, Georg Steinhauser & Max Bichler, *New light on old pumice, The origins of Mediterranean volcanic material from ancient Egypt*. [Journal of Archaeological Science](#) **36** (2009), 1738–1744.

This paper presents and discusses the Neutron Activation Analysis (NAA) results newly obtained from pumice pieces found decades ago at the Egyptian sites of Maiyana, Sedment, Kahun, and Amarna – now in the collections of the Ashmolean Museum, Oxford, and the Petrie Museum of Egyptian Archaeology, London – which could be successfully related to several volcanic eruptions in the Mediterranean. The work contributes to the constant accumulation of knowledge concerning the first appearance of pumice from the so-called Minoan eruption of the Santorini volcano. In addition, it unexpectedly sheds more light on the long-distance trade of Mediterranean volcanic material in the Bronze Age world by disclosing another connection between Lipari and the Eastern Mediterranean.

Keywords: Neutron Activation Analysis | Pumice | Santorini | Minoan eruption | Bronze Age trade

WIENER 1998

Malcolm H. Wiener & James P. Allen, *Separate Lives, The Ahmose Tempest Stela and the Thera Eruption*. [Journal of Near Eastern Studies](#) **57** (1998), 1–28.

We may summarize by posing the following questions to those who would link the Ahmose Tempest Stela to the Thera eruption:

1. Why is the Stela interpreted as implying an unmentioned earthquake, given the presence of terms indicative of human destruction and neglect?
2. If the earthquake that struck Akrotiri an estimated three months to two years before the eruption also devastated Upper and Lower Egypt as Foster and Ritner appear to suggest, why were this earthquake and the supposed eruption-created tempest perceived as a single event?
3. Why were the tempest and darkness perceived in the west, when Thera lies mostly to the north and the direction of winds carried the tephra strongly to the east?
4. How does the description of the storm and its consequences differ from that which would be expected of a typical monsoon-induced storm and resultant Nile flooding?

5. How do the sections of the Stela describing the support of temples and restoration of order differ significantly from other restoration-of-order texts, so as to make the Stela uniquely a reference to damage from the eruption of Thera?

These questions lack convincing answers. Accordingly, it appears unlikely on balance that the Ahmose Tempest Stela refers to the Thera eruption.

Isotope

BEHEREC 2016

Marc A. Beherec, Thomas E. Levy, O. r. Tirosh, Mohammad Najjar, Kyle A. Knabb & Yigal Erel, *Iron Age Nomads and their relation to copper smelting in Faynan (Jordan), Trace metal and Pb and Sr isotopic measurements from the Wadi Fidan 40 cemetery*. [Journal of Archaeological Science](#) **65** (2016), 70–83.

The Faynan region in southern Jordan is the largest copper ore resource zone in the southern Levant and was exploited for these ores beginning ca. 8000 years BP. We discuss the relationship between nomadic populations and major copper smelting sites during the Iron Age (ca. 1200-500 BCE) based on mortuary excavations and toxic metal analyses at the Wadi Fidan 40 cemetery, the largest Iron Age mortuary complex in southern Jordan. The Iron Age represents the first industrial revolution in this part of the Middle East. The study presented here is the first to employ chemical and isotopic measurements from a systematically excavated Iron Age mortuary population to determine exposure to Cu and Pb pollution and mobility patterns (based on Sr isotopes). We describe a methodology to control for post-depositional diagenetic uptake of chemical elements in human teeth recovered from the cemetery that has not previously been applied in Faynan in ancient pollution studies. The results suggest that most of the excess of Pb and Cu measured in tooth enamel samples were a product of post-depositional diagenetic addition. Our findings suggest that the majority of people buried at the Wadi Fidan 40 cemetery were not exposed to metal pollution during their lives. The few individuals who were exposed to metal pollution exhibited a spectrum of traits indicative of lifestyle and social status. The results bring into question how severe the ancient pollution impacted the lives of the Iron Age population living in Faynan.

Keywords: Mortuary archaeology | Trace metals | Nomads | Pollution | Copper metallurgy

Klima

BRINER 2016

Jason P. Briner, *Ice streams waned as ice sheets shrank*. [nature](#) **530** (2016), 287–288.

It emerges that ice discharge from a major ice sheet did not increase rapidly at the end of the most recent ice age. The finding points to steady, not catastrophic, ice-sheet loss and sea-level rise on millennial timescales.

However, the relevance of these findings to future ice-sheet behaviour is not totally clear, because the Laurentide Ice Sheet is not an exact analogue of today's ice sheets. For example, much of the Laurentide (including the ice streams embedded in it) terminated on land, whereas ice streams within the Greenland and Antarctic ice sheets terminate in the sea. Furthermore, present-day ice streams are largely 'fixed' in space by the mountains through which they pass⁷, and therefore could flow for thousands of years. This differs from the many Laurentide ice

streams that were not confined by the underlying landscape, and thus were typically more ephemeral.

STOKES 2016

C. R. Stokes, M. Margold, C. D. Clark & L. Tarasov, *Ice stream activity scaled to ice sheet volume during Laurentide Ice Sheet deglaciation*. [nature](#) **530** (2016), 322–326.

The contribution of the Greenland and West Antarctic ice sheets to sea level has increased in recent decades, largely owing to the thinning and retreat of outlet glaciers and ice streams^{1–4}. This dynamic loss is a serious concern, with some modelling studies suggesting that the collapse of a major ice sheet could be imminent^{5,6} or potentially underway⁷ in West Antarctica, but others predicting a more limited response⁸. A major problem is that observations used to initialize and calibrate models typically span only a few decades, and, at the ice-sheet scale, it is unclear how the entire drainage network of ice streams evolves over longer timescales. This represents one of the largest sources of uncertainty when predicting the contributions of ice sheets to sea-level rise^{8–10}. A key question is whether ice streams might increase and sustain rates of mass loss over centuries or millennia, beyond those expected for a given ocean–climate forcing^{5–10}. Here we reconstruct the activity of 117 ice streams that operated at various times during deglaciation of the Laurentide Ice Sheet (from about 22,000 to 7,000 years ago) and show that as they activated and deactivated in different locations, their overall number decreased, they occupied a progressively smaller percentage of the ice sheet perimeter and their total discharge decreased. The underlying geology and topography clearly influenced ice stream activity, but—at the ice-sheet scale—their drainage network adjusted and was linked to changes in ice sheet volume. It is unclear whether these findings can be directly translated to modern ice sheets. However, contrary to the view that sees ice streams as unstable entities that can accelerate ice-sheet deglaciation, we conclude that ice streams exerted progressively less influence on ice sheet mass balance during the retreat of the Laurentide Ice Sheet.

Methoden

DITCHFIELD 2016

Kane Ditchfield, *An experimental approach to distinguishing different stone artefact transport patterns from debitage assemblages*. [Journal of Archaeological Science](#) **65** (2016), 44–56.

This paper experimentally demonstrates the ability of a set of indices to distinguish between different stone artefact transport patterns represented in debitage assemblages. Stone artefacts were transported extensively in the past and this is an important component of technological organisation. However, most stone artefacts occur as part of debitage assemblages. From these assemblages, where mostly nontransported artefacts remain, it can be challenging to identify what artefacts, if any, were transported in anticipation of future use. A series of indices; the cortex ratio, volume ratio, flake to core ratio, noncortical to cortical flake ratio and flake/core diminution tests are presented to meet this challenge. These are tested on an experimental assemblage where three different transport scenarios are simulated. Results suggest that the indices are sensitive to artefact transport and are capable of empirically distinguishing between the three transport scenarios, even when raw material form varies. The results also indicate that artefact transport is capable of exerting a significant influence on stone artefact assemblage formation.

Keywords: Stone artefact transport | Technological organisation | Assemblage formation | Experimental archaeology | Cortex ratio | Volume ratio

Religion

JOHNSON 2016

Dominic D. P. Johnson, *Hand of the gods in human civilization*. [nature 530 \(2016\), 285–287](#).

Cross-cultural experiments find that belief in moralistic, knowledgeable and punishing gods promotes cooperation with strangers, supporting a role for religion in the expansion of human societies.

Because the study is correlational, one worry is that some unexamined variable could account for the results — perhaps certain people are disposed to both kindness to strangers and belief in punitive gods, for example. However, Purzycki et al. show that allocations increased for moralistic gods that were punishing and knowledgeable, but not for more locally relevant supernatural agents that were also punishing and knowledgeable. Hence, general conceptions of supernatural agents cannot alone explain the results. Rather, it is moralistic, ‘big’ gods that seem to stimulate generosity towards distant co-religionists.

It is worth emphasizing that the subjects in this experiment were not cooperative with random strangers, only with strangers that shared the same god. We therefore still face the challenge of understanding the promotion of co operation and trust among members of different religions. Purzycki and colleagues’ finding that sharing the same god is key to cooperation suggests that this may be an even harder nut to crack. In fact, one of the most compelling explanations for why individuals may help the group at their own expense is that it aids survival in an environment of inter-group competition. Whenever the threat of exploitation or warfare is present, the best protection is larger and more-cohesive societies, which are better able to deter or defeat rivals. Religion’s positive role in reducing self-interest and promoting co operation may therefore reflect the costs of competition as much as the benefits of generosity.

PURZYCKI 2016

Benjamin Grant Purzycki et al., *Moralistic gods, supernatural punishment and the expansion of human sociality*. [nature 530 \(2016\), 327–330](#).

n530-0327-Supplement1.pdf, n530-0327-Supplement2.csv, n530-0327-Supplement3.csv, n530-0327-Supplement4.csv, n530-0327-Supplement5.xlsx, n530-0327-Supplement6.csv, n530-0327-Supplement7.csv

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Since the origins of agriculture, the scale of human cooperation and societal complexity has dramatically expanded^{1,2}. This fact challenges standard evolutionary explanations of prosociality because well-studied mechanisms of cooperation based on genetic relatedness, reciprocity and partner choice falter as people increasingly engage in fleeting transactions with genetically unrelated strangers in large anonymous groups. To explain this rapid expansion of prosociality, researchers have proposed several mechanisms^{3,4}. Here we focus on one key hypothesis: cognitive representations of gods as increasingly knowledgeable and punitive, and who sanction violators of interpersonal social norms, foster and sustain the expansion of cooperation, trust and fairness towards co-religionist strangers^{5–8}. We tested this

hypothesis using extensive ethnographic interviews and two behavioural games designed to measure impartial rule-following among people ($n = 591$, observations = 35,400) from eight diverse communities from around the world: (1) inland Tanna, Vanuatu; (2) coastal Tanna, Vanuatu; (3) Yasawa, Fiji; (4) Lovu, Fiji; (5) Pesqueiro, Brazil; (6) Pointe aux Piments, Mauritius; (7) the Tyva Republic (Siberia), Russia; and (8) Hadzaland, Tanzania. Participants reported adherence to a wide array of world religious traditions including Christianity, Hinduism and Buddhism, as well as notably diverse local traditions, including animism and ancestor worship. Holding a range of relevant variables constant, the higher participants rated their moralistic gods as punitive and knowledgeable about human thoughts and actions, the more coins they allocated to geographically distant co-religionist strangers relative to both themselves and local co-religionists. Our results support the hypothesis that beliefs in moralistic, punitive and knowing gods increase impartial behaviour towards distant co-religionists, and therefore can contribute to the expansion of prosociality.