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Literatur

Aktuell

Hailer 2013

Frank Hailer, Verena E. Kutschera, Björn M. Hallström, Steven R. Fain, Jennifer A. Leonard, Ulfur Arnason & Axel Janke, *Response to Comment on "Nuclear Genomic Sequences Reveal that Polar Bears Are an Old and Distinct Bear Lineage"*. science **339** (2013), 1522.

Nakagome et al. reanalyzed some of our data and assert that we cannot refute the mitochondrial DNA–based scenario for polar bear evolution. Their single-locus test statistic is strongly affected by introgression and incomplete lineage sorting, whereas our multilocus approaches are better suited to recover the true species relationships. Indeed, our sister-lineage model receives high support in a Bayesian model comparison.

Hall 2012

Lars Hall, Petter Johansson & Thomas Strandberg, *Lifting the Veil of Morality: Choice Blindness and Attitude Reversals on a Self-Transforming Survey*. PLoS ONE **7** (2012), e45457. DOI:10.1371/journal.pone.0045457.

Every day, thousands of polls, surveys, and rating scales are employed to elicit the attitudes of humankind. Given the ubiquitous use of these instruments, it seems we ought to have firm answers to what is measured by them, but unfortunately we do not. To help remedy this situation, we present a novel approach to investigate the nature of attitudes. We created a self-transforming paper survey of moral opinions, covering both foundational principles, and current dilemmas hotly debated in the media. This survey used a magic trick to expose participants to a reversal of their previously stated attitudes, allowing us to record whether they were prepared to endorse and argue for the opposite view of what they had stated only moments ago. The result showed that the majority of the reversals remained undetected, and a full 69 % of the participants failed to detect at least one of two changes. In addition, participants often constructed coherent and unequivocal arguments supporting the opposite of their original position. These results suggest a dramatic potential for flexibility in our moral attitudes, and indicates a clear role for self-attribution and post-hoc rationalization in attitude formation and change.

Hall 2013

Lars Hall, Thomas Strandberg, Philip Pärnamets, Andreas Lind, Betty Tärning & Petter Johansson, *How the Polls Can Be Both Spot On and Dead Wrong: Using Choice Blindness to Shift Political Attitudes and Voter Intentions*. PLoS ONE **8** (2013), e60554. DOI:10.1371/journal.pone.0060554.

Political candidates often believe they must focus their campaign efforts on a small number of swing voters open for ideological change. Based on the wisdom of opinion polls, this might seem like a good idea. But do most voters really hold their political attitudes so firmly that they are unreceptive to persuasion? We tested

this premise during the most recent general election in Sweden, in which a left- and a right-wing coalition were locked in a close race. We asked our participants to state their voter intention, and presented them with a political survey of wedge issues between the two coalitions. Using a sleight-of-hand we then altered their replies to place them in the opposite political camp, and invited them to reason about their attitudes on the manipulated issues. Finally, we summarized their survey score, and asked for their voter intention again. The results showed that no more than 22 % of the manipulated replies were detected, and that a full 92 % of the participants accepted and endorsed our altered political survey score. Furthermore, the final voter intention question indicated that as many as 48 % (69.2 %) were willing to consider a left-right coalition shift. This can be contrasted with the established polls tracking the Swedish election, which registered maximally 10 % voters open for a swing. Our results indicate that political attitudes and partisan divisions can be far more flexible than what is assumed by the polls, and that people can reason about the factual issues of the campaign with considerable openness to change.

Hannah 2013

Lee Hannah et al., *Climate change, wine, and conservation*. PNAS **110** (2013), 6907–6912.

Lee Hannah, Patrick R. Roehrdanz, Makihiko Ikegami, Anderson V. Shepard, M. Rebecca Shaw, Gary Tabor, Lu Zhi, Pablo A. Marquet & Robert J. Hijmans
Climate change is expected to impact ecosystems directly, such as through shifting climatic controls on species ranges, and indirectly, for example through changes in human land use that may result in habitat loss. Shifting patterns of agricultural production in response to climate change have received little attention as a potential impact pathway for ecosystems. Wine grape production provides a good test case for measuring indirect impacts mediated by changes in agriculture, because viticulture is sensitive to climate and is concentrated in Mediterranean climate regions that are global biodiversity hotspots. Here we demonstrate that, on a global scale, the impacts of climate change on viticultural suitability are substantial, leading to possible conservation conflicts in land use and freshwater ecosystems. Area suitable for viticulture decreases 25 % to 73 % in major wine producing regions by 2050 in the higher RCP 8.5 concentration pathway and 19 % to 62 % in the lower RCP 4.5. Climate change may cause establishment of vineyards at higher elevations that will increase impacts on upland ecosystems and may lead to conversion of natural vegetation as production shifts to higher latitudes in areas such as western North America. Attempts to maintain wine grape productivity and quality in the face of warming may be associated with increased water use for irrigation and to cool grapes through misting or sprinkling, creating potential for freshwater conservation impacts. Agricultural adaptation and conservation efforts are needed that anticipate these multiple possible indirect effects.
vinecology | wildlife | ecosystem services

Hansen 2013

James Hansen, Makiko Sato & Reto Ruedy, *Human-made role in local temperature extremes, Reply to Stone et al.* PNAS **110** (2013), E1544.

We cannot reliably predict where the hot spots will occur next summer. However, regarding any place experiencing a $+3\sigma$, we can say with high confidence that it is a consequence of global warming.

Kassin 2013

Saul M. Kassin, Itiel E. Dror & Jeff Kukucka, *The forensic confirmation bias, Problems, perspectives, and proposed solutions*. Journal of Applied Research in Memory and Cognition **2** (2013), 42–52.

As illustrated by the mistaken, high-profile fingerprint identification of Brandon Mayfield in the Madrid Bomber case, and consistent with a recent critique by the National Academy of Sciences (2009), it is clear that the forensic sciences are subject to contextual bias and fraught with error. In this article, we describe classic psychological research on primacy, expectancy effects, and observer effects, all of which indicate that context can taint people's perceptions, judgments, and behaviors. Then we describe recent studies indicating that confessions and other types of information can set into motion forensic confirmation biases that corrupt lay witness perceptions and memories as well as the judgments of experts in various domains of forensic science. Finally, we propose best practices that would reduce bias in the forensic laboratory as well as its influence in the courts.

Keywords: Context effects | Expectancy effects | Confirmation bias

Nakagome 2013

Shigeki Nakagome, Shuhei Mano & Masami Hasegawa, *Comment on "Nuclear Genomic Sequences Reveal that Polar Bears Are an Old and Distinct Bear Lineage"*. science **339** (2013), 1522.

Based on nuclear and mitochondrial DNA, Hailer et al. (Reports, 20 April 2012, p. 344) suggested early divergence of polar bears from a common ancestor with brown bears and subsequent introgression. Our population genetic analysis that traces each of the genealogies in the independent nuclear loci does not support the evolutionary model proposed by the authors.

Stone 2013

Dáithí A. Stone, Christopher J. Paciorek, Prabhat, Pardeep Pall & Michael Wehner, *Inferring the anthropogenic contribution to local temperature extremes*. PNAS **110** (2013), E1543.

In that light, we find the conclusion of Hansen et al. (1) that "the extreme summer climate anomalies in Texas in 2011, in Moscow in 2010, and in France in 2003 almost certainly would not have occurred in the absence of global warming" to be unsubstantiated by their analysis.

Wexler 2013

Mark Wexler, Andrew Glennerster, Patrick Cavanagh, Hiroyuki Ito & Takeharu Seno, *Default perception of high-speed motion*. PNAS **110** (2013), 7080–7085.

When human observers are exposed to even slight motion signals followed by brief visual transients—stimuli containing no detectable coherent motion signals—they perceive large and salient illusory jumps. This visually striking effect, which we call "high phi," challenges well-entrenched assumptions about the perception of motion, namely the minimal-motion principle and the breakdown of coherent motion perception with steps above an upper limit called dmax.Our experiments with transients, such as texture randomization or contrast reversal, show that the magnitude of the jump depends on spatial frequency and transient duration—but not on the speed of the inducing motion signals—and the direction of the jump depends on the duration of the inducer. Jump magnitude is robust across jump directions and different types of transient. In addition, when a texture is actually

displaced by a large step beyond the upper step size limit of dmax, a breakdown of coherent motion perception is expected; however, in the presence of an inducer, observers again perceive coherent displacements at or just above dmax. In summary, across a large variety of stimuli, we find thatwhen incoherentmotion noise is preceded by a small bias, instead of perceiving little or no motion— as suggested by the minimal-motion principle—observers perceive jumps whose amplitude closely follows their own dmax limits.
vision | illusion

Amerika

Gonçalves 2013

Vanessa Faria Gonçalves et al., *Identification of Polynesian mtDNA haplogroups in remains of Botocudo Amerindians from Brazil*. PNAS **110** (2013), 6465–6469.

Vanessa Faria Gonçalves, Jesper Stenderup, Cláudia Rodrigues-Carvalho, Hilton P. Silva, Higgor Gonçalves-Dornelas, Andersen Líryo, Toomas Kivisild, Anna-S-apfo Malaspinas, Paula F. Campos, Morten Rasmussen, Eske Willerslev & Sergio Danilo J. Pena

There is a consensus that modern humans arrived in the Americas 15,000–20,000 y ago during the Late Pleistocene, most probably from northeast Asia through Beringia. However, there is still debate about the time of entry and number of migratory waves, including apparent inconsistencies between genetic and morphological data on Paleoamericans. Here we report the identification of mitochondrial sequences belonging to haplogroups characteristic of Polynesians in DNA extracted from ancient skulls of the now extinct Botocudo Indians from Brazil. The identification of these two Polynesian haplogroups was confirmed in independent replications in Brazil and Denmark, ensuring reliability of the data. Parallel analysis of 12 other Botocudo individuals yielded only the well-known Amerindian mtDNA haplogroup C1. Potential scenarios to try to help understand these results are presented and discussed. The findings of this study may be relevant for the understanding of the pre-Columbian and/or post-Columbian peopling of the Americas.
ancient DNA | human migration | mitochondrial DNA | South America | Paleoindians

Anthropologie

Boesch 1991

Christophe Boesch, *Teaching among wild chimpanzees*. Animal Behaviour **41** (1991), 530–532.

Boesch 1993

Christophe Boesch, *Aspects of transmission of tool-use in wild chimpanzees*. In: Kathleen R. Gibson & Tim Ingold (Hrsg.), *Tools, Language and Cognition in Human Evolution*. (Cambridge 1993), 171–183.

The question addressed by this volume is how human beings have evolved as creatures who can make and use more complex tools, communicate in more complex ways, and engage in more complex forms of social life, than any other species in the animal kingdom. Leading researchers from fields as diverse as biological and

social anthropology, archaeology, linguistics, psychology, neurology and ethology, have come together to present a uniquely interdisciplinary study of this central problem in human evolution.

Esposito 2013

Gianluca Esposito et al., *Infant Calming Responses during Maternal Carrying in Humans and Mice*. Current Biology (2013), preprint, 1–7. DOI:10.1016/j.cub.2013.03.041.

CurrBiol18-preprint-Supplement0419.mp4

Gianluca Esposito, Sachine Yoshida, Ryuko Ohnishi, Yousuke Tsuneoka, Maria del Carmen Rostagno, Susumu Yokota, Shota Okabe, Kazusaku Kamiya, Mikio Hoshino, Masaki Shimizu, Paola Venuti, Takefumi Kikusui, Tadafumi Kato & Kumi O. Kuroda

Background: Mother-infant bonding is the earliest and most critical social relationship of mammalian infants. To promote this bond, infants have innate behaviors to seek maternal proximity and protest upon separation via communication with the mother vocally and through body movement. However, the physiological mechanisms regulating these infant behaviors remain largely undefined.

Results: Here we show a novel set of infant cooperative responses during maternal carrying. Infants under 6 months of age carried by a walking mother immediately stopped voluntary movement and crying and exhibited a rapid heart rate decrease, compared with holding by a sitting mother. Furthermore, we identified strikingly similar responses in mouse pups as defined by immobility and diminished ultrasonic vocalizations and heart rate. Using pharmacologic and genetic interventions in mouse pups, we identified the upstream and downstream neural systems regulating the calming response. Somatosensory and proprioceptive input signaling are required for induction, and parasympathetic and cerebellar functions mediate cardiac and motor output, respectively. The loss of the calming response hindered maternal rescue of the pups, suggesting a functional significance for the identified calming response.

Conclusions: Our study has demonstrated for the first time that the infant calming response to maternal carrying is a coordinated set of central, motor, and cardiac regulations and is a conserved component of mammalian mother-infant interactions. Our findings provide evidence for and have the potential to impact current parenting theory and practice, since unsoothable crying is the major risk factor for child abuse.

Gunz 2013

Philipp Gunz, Simon Neubauer, Lubov Golovanova, Vladimir Doronichev, Bruno Maureille & Jean-Jacques Hublin, *A uniquely modern human pattern of endocranial development, Insights from a new cranial reconstruction of the Neandertal newborn from Mezmaiskaya*. Journal of Human Evolution **62** (2013), 300–313.

The globular braincase of modern humans is distinct from all fossil human species, including our closest extinct relatives, the Neandertals. Such adult shape differences must ultimately be rooted in different developmental patterns, but it is unclear at which point during ontogeny these group characteristics emerge.

Here we compared internal shape changes of the braincase from birth to adulthood in Neandertals (N = 10), modern humans (N = 62), and chimpanzees (N = 62). Incomplete fossil specimens, including the two Neandertal newborns from Le Moustier 2 and Mezmaiskaya, were reconstructed using reference-based estimation methods. We used 3D geometric morphometrics to statistically compare shapes of

virtual endocasts extracted from computed-tomographic scans. Throughout the analysis, we kept track of possible uncertainties due to the missing data values and small fossil sample sizes. We find that some aspects of endocranial development are shared by the three species. However, in the first year of life, modern humans depart from this presumably ancestral pattern of development. Newborn Neandertals and newborn modern humans have elongated braincases, and similar endocranial volumes. During a 'globularization-phase' modern human endocasts change to the globular shape that is characteristic for Homo sapiens. This phase of early development is unique to modern humans, and absent from chimpanzees and Neandertals.
Our results support the notion that Neandertals and modern humans reach comparable adult brain sizes via different developmental pathways. The differences between these two human groups are most prominent directly after birth, a critical phase for cognitive development.
Keywords: Le Moustier 2 | Procrustes | Geometric morphometrics | Semilandmarks | Endocast | Brain evolution | Mezmaiskaya

McGrew 1987

W. C. McGrew, *Tools to get food: The subsistants of Tasmanian aborigines and Tanzanian chimpanzees compared*. Journal of Anthropological Research **43** (1987), 247–258.
Tools used to get food are compared between wild chimpanzees in western Tanzania and aboriginal Tasmanians at the time of European contact. Systematic qualitative and quantitative comparison is enabled by use of Oswalt's taxonomy of subsistence technology. The results show surprising similarity in the number of items in the tool kit, raw materials used, proportion of tools made versus those used unchanged, extent of complexity, type of prey, etc. Key contrasts also emerge: only human tools have more than one type of component and are made using other tools. Overall, however, the gap between the most technically diverse nonhuman tool kit and the simplest human material culture seems narrow.

Steklis 1976

Horst D. Steklis & Stevan R. Harnad, *From hand to mouth: Some critical stages in the evolution of language*. Annals of the New York Academy of Sciences **907** (1976), 445–455.

Toth 1993

Nicholas Toth, Kathy D. Schick, E. Sue Savage-Rumbaugh, Rose A. Sevcik & Duane M. Rumbaugh, *Pan the Tool-Maker: Investigations into the Stone Tool-Making and Tool-Using Capabilities of a Bonobo (Pan paniscus)*. Journal of Archaeological Science **20** (1993), 81–91.
Beginning in May 1990, a long-term collaborative investigation between palaeolithic archaeologists and cognitive psychologists has focused upon the stone tool-making and tool-using abilities of a captive bonobo (Pan paniscus). To date, this bonobo (named Kanzi) has acquired the basic skills required to produce usable flakes and fragments by hard-hammer percussion (as well as by his own innovation of throwing), although his skills in flaking stone are not yet as well developed as those exhibited by the earliest known tool-making hominids of the Oldowan industry. This research strategy allows direct comparisons and contrasts to be made between the products of modern human stone tool-makers, prehistoric proto-human tool-makers and non-human primates that have not evolved a flaked stone technology in the wild. This enables us to investigate what possible cognitive and

biomechanical conditions of pre-adaptation for lithic technology may be present in extant apes. The bonobo's stone tool-making abilities are compared to those evident among early hominids in order to understand the complexities of this derived behaviour pattern in the earliest stone tool-makers. The possible evolutionary implications of this study are discussed.
Keywords: bonobo, chimpanzee, experimental archaeology, Oldowan, primate technology, stone tools, technology

Wynn 1989

T. Wynn & W. C. McGrew, *An Ape's View of the Oldowan*. Man, New Series **24** (1989), 383–398.
When in human evolution did our ancestors cease behaving like apes? In this article we address this question by interpreting the earliest known archaeological evidence, the Oldowan, in light of what primatologists know about modem apes, especially the chimpanzee (Pan troglodytes). Our analyses consider aspects of Oldowan tools and tool-making and those aspects of Oldowan subsistence that can be reconstructed from artefacts. We conclude that all the behaviour that can be inferred from Oldowan tools and sites falls within the range of the ape adaptive grade. There is nothing exclusively human-like about this oldest known archaeological evidence. However, the Oldowan did include two specific behavioural patterns that, while still within the ape adaptive grade, are almost unknown for modern apes and which point in the direction of adaptations found later in hominid evolution. These are carrying tools or food for thousands of metres and competing with large carmvores for animal prey.

Yang 2013

Charles Yang, *Ontogeny and phylogeny of language*. PNAS **110** (2013), 6324–6327.
How did language evolve? A popular approach points to the similarities between the ontogeny and phylogeny of language. Young children's language and nonhuman primates' signing both appear formulaic with limited syntactic combinations, thereby suggesting a degree of continuity in their cognitive abilities. To evaluate the validity of this approach, as well as to develop a quantitative benchmark to assess children's language development, I propose a formal analysis that characterizes the statistical profile of grammatical rules. I show that very young children's language is consistent with a productive grammar rather than memorization of specificword combinations from caregivers' speech. Furthermore, I provide a statistically rigorous demonstration that the sign use of Nim Chimpsky, the chimpanzee who was taught American Sign Language, does not show the expected productivity of a rule-based grammar. Implications for theories of language acquisition and evolution are discussed.
computational linguistics | linguistics | primate cognition | psychology

Biologie

Jürgens 2013

Norbert Jürgens, *The Biological Underpinnings of Namib Desert Fairy Circles*. science **339** (2013), 1618–1621.
s339-1618-Supplement.pdf, s339-1618-Supplement1.xml, s339-1618-Supplement2.txt
The sand termite Psammotermes allocerus generates local ecosystems, so-called fairy circles, through removal of short-lived vegetation that appears after rain,

leaving circular barren patches. Because of rapid percolation and lack of evapotranspiration, water is retained within the circles. This process results in the formation of rings of perennial vegetation that facilitate termite survival and locally increase biodiversity. This termite-generated ecosystem persists through prolonged droughts lasting many decades.

Datierung

Bronk Ramsey 2004

Christopher Bronk Ramsey, Sturt W. Manning & Mariagrazia Galimberti, *Dating the volcanic eruption at Thera*. Radiocarbon **46** (2004), 325–344.

The eruption of the volcano at Thera (Santorini) in the Aegean Sea undoubtedly had a profound influence on the civilizations of the surrounding region.The date of the eruption has been a subject of much controversy because it must be linked into the established and intricate archaeological phasings of both the prehistoric Aegean and the wider east Mediterranean. Radiocarbon dating of material from the volcanic destruction layer itself can provide some evidence for the date of the eruption, but because of the shape of the calibration curve for the relevant period, the value of such dates relies on there being no biases in the data sets. However, by dating the material from phases earlier and later than the eruption, some of the problems of the calibration data set can be circumvented and the chronology for the region can be resolved with more certainty.
In this paper, we draw together the evidence we have accumulated so far, including new data on the destruction layer itself and for the preceding cultural horizon at Thera, and from associated layers at Miletos in western Turkey. Using Bayesian models to synthesize the data and to identify outliers, we conclude from the most reliable 14C evidence (and using the INTCAL98 calibration data set) that the eruption of Thera occurred between 1663 and 1599 BC.

Bronk Ramsey 2006

Christopher Bronk Ramsey, Caitlin E. Buck, Sturt W. Manning, Paula Reimer & Hans van der Plicht, *Developments in radiocarbon calibration for archaeology*. Antiquity **80** (2006), 783–798.

This update on radiocarbon calibration results from the 19th International Radiocarbon Conference at Oxford in April 2006, and is essential reading for all archaeologists. The way radiocarbon dates and absolute dates relate to each other differs in three periods: back to 12 400 cal BP, radiocarbon dates can be calibrated with tree rings, and the calibration curve in this form should soon extend back to 18 000 cal BP. Between 12 400 and 26 000 cal BP, the calibration curves are based on marine records, and thus are only a best estimate of atmospheric concentrations. Beyond 26 000 cal BP, dates have to be based on comparison (rather than calibration) with a variety of records. Radical variations are thus possible in this period, a highly significant caveat for the dating of middle and lower Paleolithic art, artefacts and animal and human remains.
Keywords: Dating, radiocarbon, calibration, varves, ice-cores, speleothems

Fantuzzi 2007

Tiziano Fantuzzi, *The debate on Aegean high and low chronologies: An overview through Egypt*. Rivista di Archeologia **31** (2007), 53–65.

One of the most important problems which affect the reconstruction of the Aegean Late Bronze Age (LBA), and its significance in the Mediterranean world, is the absolute chronology of the Minoan LM I-II periods, and, in turn, the absolute dating of the mature LM I A Theran eruption, and their relationships with the Egyptian and Cypriote relative chronologies. Since the last three decades, the traditional chronology has been challenged by radiocarbon results obtained from a few key sites, which, during the late 1990's seemed to be confirmed by several other dating techniques. In turn, an impressive amount of new data, often supporting the traditional view, has been obtained from the (re)analysis of the Aegean, Cypriote and Egyptian assemblages, which have yielded good evidence for their chronological correlation. As a consequence, the archaeologists face with an impasse, given that none of the two parts involved in the debate can rely upon conclusive arguments, or be confident of the outcome. However, a slightly modified version of the traditional "Low" chronology might be put forward, maintaining both archaeological and radiocarbon evidence. It is interesting to point out that the radiocarbon results, when individually calibrated, do not seem homogeneous enough to justify a shift of some 120 calendar years in the traditional chronology.

Höflmayer 2009

Felix Höflmayer, *Aegean-Egyptian synchronisms and radiocarbon 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), 187–195.

Based on Aegean material found in Egypt and vice versa, Aegean relative chronological phases can be synchronized with the Egyptian historical chronology. As has been shown above, Minoan and Mycenaean pottery turns up in Egypt in the same sequence as in the Aegean. It can be assumed that these imports are not heirlooms as it would be hard to think that all these goods were exported with more or less the same time-lag of one or two generations after they were in use in the Aegean. On the other hand, it is known that stone vessels were in use for several generations and that these objects might even have been traded as antiques. The case of the re-worked stone vessel from shaft grave V shows that one cannot assume a short interval between production in Egypt and deposition in Mycenae, thus creating an argument for an end date of LM IA well after 1550 or 1524 (beginning of the New Kingdom).

Nonetheless, radiocarbon evidence cannot be put aside in chronological discussion. The work in this field by Sturt Manning, Walter Friedrich and others has stimulated critical reviews of the conventional chronology. Nevertheless the conclusions based on the evidence put forward above make an eruption date in the second half of the 17th century virtually impossible. Neither is an end-date of around 1500 for the LM IB-period likely, whereas the end of LM II and the dates for LH IIIA2 seem compatible with current understanding of archaeology and history of the Eastern Mediterranean.

Today it is still not possible to achieve a consensus regarding the absolute chronology of the early Late Bronze Age. Archaeology and natural sciences still come down to different results. Future work in both fields may shed more light on areas still not so well understood. We still lack sound archaeological arguments for synchronizing MM III with the Egyptian chronology and likewise recent radiocarbon dates for Aegean Middle Bronze periods are insufficient as well. However, such work might be useful in order to establish the point in time where the difference between archaeological interpretation and radiocarbon dating starts and perhaps

to finally solve the debate around the absolute date of the Aegean Late Bronze Age.

Höflmayer 2012

Felix Höflmayer, *The Date of the Minoan Santorini Eruption: Quantifying the "Offset", Proceedings of the 6th International Radiocarbon and Archaeology Symposium*. Radiocarbon **54** (2012), 435–448.
Despite many recent attempts to settle the dispute concerning the absolute date of the Minoan Santorini eruption, there are still differences between some archaeologists and scientists on the absolute dates and the reliability of radiocarbon dating. The recent publication of over 200 new 14C dates for dynastic Egypt rules out a major flaw in the historical chronology of Egypt and proves the reliability of 14C dating in the Nile Valley. Therefore, the student of Aegean archaeology and eastern Mediterranean interconnections is still confronted with an archaeologically based conventional, or "low," chronology and a 14C-backed "high" chronology. New 14C determinations from different sites of the Aegean support the high chronology for the Late Minoan (LM) IA, while recent re-evaluation of LM IB determinations are slightly higher but more or less in agreement with archaeological estimations. The present contribution reviews archaeological and scientific data for the LM IA period and argues that a reduced (≈30 to 50 yr) offset between archaeological and 14C dates for the Minoan Santorini eruption may be possible, thus offering new perspectives for potential solutions for this problem.

Kuniholm 1996

Peter Ian Kuniholm, Bernd Kromer, Sturt W. Manning, Maryanne Newton, Christine E. Latini & Mary Jaye Bruce, *Anatolian tree rings and the absolute chronology of the eastern Mediterranean, 2220-718 BC*. nature **381** (1996), 780–783.
Excellent preservation of wood and charcoal at archaeological sites in Anatolia has allowed the Aegean Dendrochronology Project to build absolute and floating tree-ring sequences. One such floating dendrochronology of 1,503 years includes samples relating to known rulers, sites and cultures of the ancient eastern Mediterranean. If this chronology could be dated precisely, many long-standing questions might be resolved. Here we report 18 high-precision 14C determinations which, when wiggle-matched to the radiocarbon calibration curve, provide a date within narrow limits. Inside this range, we can suggest the probable absolute dating of the dendrochronology because of a remarkable growth anomaly in the seventeenth century BC, for which we propose a correlation with major growth anomalies at 1628/1627 BC in the absolutely dated dendrochronologies of Europe and the United States. Many archaeological sites from several cultures in the eastern Mediterranean can now be dated with fine precision. This chronology has important implications for Old World archaeology and prehistory.

Manning 2002

Sturt W. Manning, Christopher Bronk Ramsey, Christos Doumas, Toula Marketou, Gerald Cadogan & Charlotte L. Pearson, *New evidence for an early date for the Aegean Late Bronze Age and Thera eruption*. Antiquity **76** (2002), 733–744.
The authors report on radiocarbon data derived from carefully selected organic material from Late Minoan IA and IB contexts. The results suggest that the accepted chronology of the period should be revised by 100 years and that the eruption of Thera/Santorini most likely occurred c. 1650–1620 BC.

Keywords: radiocarbon, Late Bronze Age, Thera, Late Minoan, chronology

Manning 2006

Sturt W. Manning,* Christopher Bronk Ramsey, Walter Kutschera, Thomas Higham, Bernd Kromer, Peter Steier & Eva M. Wild, *Chronology for the Aegean Late Bronze Age 1700–1400 B.C.* science **312** (2006), 565–569.

s312-0565-Supplement.pdf

Radiocarbon (carbon-14) data from the Aegean Bronze Age 1700–1400 B.C. show that the Santorini (Thera) eruption must have occurred in the late 17th century B.C. By using carbon-14 dates from the surrounding region, cultural phases, and Bayesian statistical analysis, we established a chronology for the initial Aegean Late Bronze Age cultural phases (Late Minoan IA, IB, and II). This chronology contrasts with conventional archaeological dates and cultural synthesis: stretching out the Late Minoan IA, IB, and II phases by ≈100 years and requiring reassessment of standard interpretations of associations between the Egyptian and Near Eastern historical dates and phases and those in the Aegean and Cyprus in the mid–second millennium B.C.

Pearson 2005

Charlotte Pearson, Sturt W. Manning, Max Coleman & Kym Jarvis, *Can tree-ring chemistry reveal absolute dates for past volcanic eruptions?* Journal of Archaeological Science **32** (2005), 1265–1274.

Discussion of the significance of volcanically induced impacts on human history, the natural environment, and climate through the Holocene, has frequently stalled because of controversy concerning certain key volcanic eruptions and their precise relationships with the archaeological/environmental record. A major stumbling block in such debates is a failure to obtain precise and accurate dates for many of these key volcanic events. Most existing dates currently float against archaeological, historical, environmental, and climate data. A potential means to resolution lies with tree rings: these can be dated precisely by dendrochronology, are available from a wide range of loci around the world, and can record global climatic influences. It has been suggested that certain growth anomalies in dendrochronological sequences could offer "proxy" absolutely dated records of major, climatically effective, volcanic eruptions. However, this assertion has been widely disputed given the lack of a direct, positive, causal connection. The hypothesis that the required connection may be chemically encoded in individual annual growth rings from dated sequences is explored here both via review of existing literature on dendrochemical techniques, and by LA-ICP-MS chemical analysis of two tree ring sequences. It is concluded that dendrochemistry provides a promising means by which absolute dates may one day be attributed to key volcanic eruptions of pre-modern times.

Keywords: Dendrochronology; Dendrochemistry; Tree-rings; Dating volcanic eruptions; LA-ICP-MS

Wiener 2001

Malcolm H. Wiener, *The White Slip I of Tell el-Dab'a and Thera: Critical Challenge for the Aegean Long Chronology.* In: Vassos Karageorghis (Hrsg.), *The White Slip Ware of Late Bronze Age Cyprus*, *Proceedings of an International Conference in Honour of Malcolm Wiener, Nicosia 29th–30th October 1998.* Denkschriften der Gesamtakademie 20 (Wien 2001), 195–202.

In order to accommodate a 1628 BC date for the WS I bowl in the Volcanic Destruction Level at Thera, the Aegean Long Chronology would still require: (1) the deposit of the stratified PWS bowl from a Dab'a D/2 tomb (together with the other nine examples of PWS from that stratum) near the beginning of the time period encompassed by stratum D/2; (2) the production of the PWS bowl fifty years prior to the date of its deposition in Egypt, together with all of the PWS and WS I fragments found in D/2 and C respectively (unless they are survivals from earlier strata in which no such examples, but large numbers of MB Cypriote wares, were found); (3) the arrival of one of the earliest pieces of WS I at Thera not long before the eruption (notwithstanding some evidence that the bowl in question was repaired in antiquity, as noted by Merrillees, this volume); and (4) the existence of significant chronological overlap between PWS/WSI and White Painted V at least, if not the Pendent Line and Cross Line Styles of White Painted III/IV as well, notwithstanding the fact that such an overlap is not observable at any site in Cyprus, the eastern Mediterranean or the Nile Delta, and goes against the evidence at Toumba tou Skourou, Tell el-Ajjul and Tell el-Dab'a (Eriksson, this volume; Oren, this volume; Bergoffen, this volume; Bietak and Hein, this volume).
Each of these four propositions is individually unlikely, and the chance of all of them obtaining is slim indeed. The White Slip pottery from Tell el-Dabca and Thera accordingly presents a most critical challenge to the proposed 1628 BC date for the eruption of Thera and to the Aegean Long Chronology.

Wiener 2003

Malcolm H. Wiener, *Time Out: The Current Impasse in Bronze Age Archaeological Dating*. In: Karen Polinger Foster & Robert Laffineur (Hrsg.), *METRON: Measuring the Aegean Bronze Age, Proceedings of the 9th International Aegean Conference New Haven, Yale University, 18–21 April 2002*. Aegaeum 24 (Liège 2003), 363–399.

This paper attempts to survey and critique both the current state of dating by Egyptian and Babylonian/Assyrian historical and astronomical chronologies and the current state of science-based dating by radiocarbon measurements, tree rings and ice cores. The discussion will focus on the ongoing controversy concerning the date of the eruption of the volcano on Thera (Santorini). Proponents of the Egypto-archaeologically based Aegean Short Chronology place the event between 1560 and 1480 B.C. (at the outermost limits, with some preferring a date before 1530). Leading advocates of the Aegean Long Chronology now place the eruption between 1650 and 1643 B.C., in place of their previous advocacy of 1628 B.C. The 1650–43 B.C. range results from the area of overlap between the Manning et al. dendro-radiocarbon date range for the anomaly in the Porsuk section of the Anatolian floating tree-ring sequence of 1650 +4/-7 B.C. and the Hammer et al. ice-core date of 1645±4 B.C. (1645 +4 = 1649 B.C., with a year of leeway to 1650 B.C. to allow for the possibility of an eruption in the year prior to the year of the putative arrival of its ejected glass shards in the Greenland ice).
This paper thus addresses both the chronology of prehistory and the prehistory of chronology. The interrelated chronologies of Egypt, the Levant, Anatolia and the Aegean are considered against the background of emerging scientific methods of dating and the efforts of prehistorians trained in art history, classics, ancient history and/or anthropology to assess the contributions and limitations of scientific methods of dating and to incorporate appropriately the data provided. Of course interdisciplinary research requires informed communication between disciplines.

Wild 2010
E. M. Wild, W. Gauß, G. Forstenpointner, M. Lindblom, R. Smetana, P. Steier, U. Thanheiser & F. Weninger, *^{14}C dating of the Early to Late Bronze Age stratigraphic sequence of Aegina Kolonna, Greece*. Nuclear Instruments and Methods in Physics Research B **268** (2010), 1013–1021.
Aegina Kolonna, located in the center of the Saronic Gulf in the Aegean Mediterranean (Greece), is one of the major archaeological sites of the Aegean Bronze Age with a continuous stratigraphic settlement sequence from the Late Neolithic to the Late Bronze Age. Due to its position next to the maritime cross roads between central mainland Greece, the northeast Peloponnese, the Cyclades and Crete, the island played an important role in the trade between these regions. In the course of new excavations, which focused on the exploration of the Early, Middle and Late Bronze Age at Kolonna, several short lived samples from different settlement phases have been 14C-dated with the AMS method at the VERA laboratory. Bayesian sequencing of the 14C data according to the stratigraphic position of the samples in the profile was performed to enable estimates of the transition time between the cultural phases. The Aegina Kolonna 14C sequence is one of the longest existing so far for the Aegean Bronze Age, and therefore of major importance for the absolute Bronze Age chronology in this region. Preliminary results indicate that the Middle Helladic period seems to have started earlier and lasted longer than traditionally assumed. Further, at the present stage of our investigation we can give also a very tentative time frame for the Santorini volcanic eruption which seems to be in agreement with the science derived VDL date.
Keywords: Radiocarbon dating | Aegina | Aegean Bronze Age | Bayesian sequencing

Grabung

Hawkins 1963
Gerald S. Hawkins, *Stonehenge decoded*. nature **200** (1963), 306–308.

Hawkins 1964
Gerald S. Hawkins, *Stonehenge: A Neolithic computer*. nature **202** (1964), 1258–1261.

Solecki 1995
Rose L. Solecki & Ralph S. Solecki, *The Mousterian Industries of Yabroud Shelter I, A reconsideration*. In: Harold L. Dibble & Ofer Bar-Yosef (Hrsg.), *The Definition and Interpretation of Levallois Technology*. Monographs in World Archaeology 23 (Madison 1995), 381–397.

Jungpaläolithikum

Craig 2013
O. E. Craig et al., *Earliest evidence for the use of pottery*. nature **496** (2013), 351–354.
n496-0351-Supplement1.pdf

O. E. Craig, H. Saul, A. Lucquin, Y. Nishida, K. Taché, L. Clarke, A. Thompson, D. T. Altoft, J. Uchiyama, M. Ajimoto, K. Gibbs, S. Isaksson, C. P. Heron & P. Jordan

Pottery was a hunter-gatherer innovation that first emerged in East Asia between 20,000 and 12,000 calibrated years before present1,2 (cal BP), towards the end of the Late Pleistocene epoch, a period of time when humans were adjusting to changing climates and new environments. Ceramic container technologies were one of a range of late glacial adaptations that were pivotal to structuring subsequent cultural trajectories in different regions of the world, but the reasons for their emergence and widespread uptake are poorly understood. The first ceramic containers must have provided prehistoric hunter-gatherers with attractive new strategies for processing and consuming foodstuffs, but virtually nothing is known of how early pots were used. Here we report the chemical analysis of food residues associated with Late Pleistocene pottery, focusing on one of the best-studied prehistoric ceramic sequences in the world, the Japanese Jo»mon. We demonstrate that lipids can be recovered reliably from charred surface deposits adhering to pottery dating from about 15,000 to 11,800 cal BP (the Incipient Jomon period), the oldest pottery so far investigated, and that in most cases these organic compounds are unequivocally derived from processing freshwater and marine organisms. Stable isotope data support the lipid evidence and suggest that most of the 101 charred deposits analysed, from across the major islands of Japan, were derived from high-trophic-level aquatic food. Productive aquatic ecotones were heavily exploited by late glacial foragers3, perhaps providing an initial impetus for investment in ceramic container technology, and paving the way for further intensification of pottery use by hunter-gatherers in the early Holocene epoch. Now that we have shown that it is possible to analyse organic residues from some of the world's earliest ceramic vessels, the subsequent development of this critical technology can be clarified through further widespread testing of hunter-gatherer pottery from later periods.

Kaner 2013

Simon Kaner, *A potted history of Japan.* nature **496** (2013), 302–303.

The discovery of lipids on ceramic fragments from the Japanese Jomon period provides the earliest evidence for the use of pottery for cooking and may prompt a rethink of some aspects of human innovation.

Our knowledge that ceramic containers were being made and used by hunter-gatherers in the Late Pleistocene in various parts of East Asia — from Japan to far eastern Russia and north and south China — means that pottery usage among hunter-gatherers is no longer seen as anomalous in the Old World. In fact, there may be evidence for routes of the introduction of pottery into Europe that are not associated with the introduction of farming.

Yet many questions remain about how and why pottery was invented. For example, the earliest known ceramics are not containers at all, but fragments of figurines, such as those dating to 29,000 years ago from the Dolní Vestonice site in the Czech Republic.

Klima

Christidis 2013

Nikolaos Christidis, Peter A. Stott, Gabriele C. Hegerl & Richard A. Betts, *The role of land use change in the recent warming of daily*

extreme temperatures. Geophysical Research Letters **40** (2013), 589–594.
GeoResLet40-00589-Supplement1.eps, GeoResLet40-00589-Supplement1.pdf, GeoResLet40-00589-Supplement2.txt
Understanding how temperature extremes respond in a climate forced by human activity is of great importance, as extreme temperatures are detrimental to health and often responsible for mortality increases. While previous detection and attribution studies demonstrated a significant human influence on the recent warming of daily extremes, contributions of individual anthropogenic forcings like changes in land use have not yet been investigated in such studies. Here we apply an optimal fingerprinting technique to data from observations and experiments with a new earth system model to examine whether changing land use has led to detectable changes in daily extreme temperatures on a quasi-global scale. We find that loss of trees and increase of grassland since preindustrial times has caused an overall cooling trend in both mean and extreme temperatures which is detectable in the observed changes of warm but not cold extremes. The warming in both mean and extreme temperatures due to anthropogenic forcings other than land use is detected in all cases, whereas the weaker effect of natural climatic forcings is not detected in any. This is the first formal attribution of observed climatic changes to changing land use, suggesting further investigations are justified, particularly in studies of warm extremes.

Geirsdóttir 2013

Áslaug Geirsdóttir, Gifford H. Miller, Darren J. Larsen & Sædís Ólafsdóttir, *Abrupt Holocene climate transitions in the northern North Atlantic region recorded by synchronized lacustrine records in Icela*. Quaternary Science Reviews **70** (2013), 48–62.
Two high-sediment-accumulation-rate Icelandic lakes, the glacial lake Hvítárvatn and the non-glacial lake Haukadalsvatn, contain numerous tephra layers of known age, which together with highresolution paleomagnetic secular variations allow synchronization with a well-dated marine core from the shelf north of Iceland. A composite standardized climate record from the two lakes provides a single time series that efficiently integrates multi-proxy data that reflect the evolution of summer temperatures through the Holocene. The first-order trends in biogenic silica (BSi), d13C, and C:N rise relatively abruptly following deglaciation, reaching maximum values shortly after 8 ka following a complex minimum between 8.7 and 8.0 ka. The Holocene Thermal Maximum (HTM) in the lakes is marked by all proxies, with a sharp transition out of the 8 ka cold event into peak summer warmth by 7.9 ka, and continuing warm with some fluctuations until 5.5 ka. Decreasing summer insolation after the HTM is reflected by incremental cooling, initially ≈5.5 ka, with subsequent cold perturbations recorded by all proxies 4.3 to 4.0 ka and 3.1 to 2.8 ka. The strongest disturbance occurred after 2 ka with initial summer cooling occurring between 1.4 and 1.0 ka, followed by a more severe drop in summer temperatures after 0.7 ka culminating between 0.5 and 0.2 ka. Following each late Holocene cold departure, BSi re-equilibrated at a lower value independent of the sediment accumulation rate. Some of the abrupt shifts may be related to Icelandic volcanism influencing catchment stability, but the lack of a full recovery to pre-existing values after the perturbation suggests increased periglacial activity, decreased vegetation cover, and glacier growth in the highlands of Iceland. The similarity in timing, direction and magnitude of our multi-proxy records from glacial and non-glacial lakes, and from the adjacent marine shelf, suggests that our composite record reflects large-scale shifts in ocean/atmosphere circulation throughout the northern North Atlantic.

Keywords: Iceland | Lake sediment | Holocene paleoclimate | Abrupt climate transitions | 8.2 Event | Holocene Thermal Maximum | Neoglaciation | Medieval warm period | Little Ice Age

Jasechko 2013

Scott Jasechko, Zachary D. Sharp, John J. Gibson, S. Jean Birks, Yi Yi & Peter J. Fawcett, *Terrestrial water fluxes dominated by transpiration*. nature **496** (2013), 347–350.

n496-0347-Supplement1.pdf, n496-0347-Supplement2.xls

Renewable fresh water over continents has input from precipitation and losses to the atmosphere through evaporation and transpiration. Global-scale estimates of transpiration from climate models are poorly constrained owing to large uncertainties in stomatal conductance and the lack of catchment-scale measurements required for model calibration, resulting in a range of predictions spanning 20 to 65 per cent of total terrestrial evapotranspiration (14,000 to 41,000 km3 per year) (refs 1–5). Here we use the distinct isotope effects of transpiration and evaporation to show that transpiration is by far the largest water flux from Earth's continents, representing 80 to 90 per cent of terrestrial evapotranspiration. On the basis of our analysis of a global data set of large lakes and rivers, we conclude that transpiration recycles 62,00068,000km3 of water per year to the atmosphere, using half of all solar energy absorbed by land surfaces in the process. We also calculate CO2 uptake by terrestrial vegetation by connecting transpiration losses to carbon assimilation using water-use efficiency ratios of plants, and show the global gross primary productivity to be 129632 gigatonnes of carbon per year, which agrees, within the uncertainty, with previous estimates6. The dominance of transpiration water fluxes in continental evapotranspiration suggests that, from the point of view of water resource forecasting, climate model development should prioritize improvements in simulations of biological fluxes rather than physical (evaporation) fluxes.

Petersen 2013

S. V. Petersen, D. P. Schrag & P. U. Clark, *A new mechanism for Dansgaard-Oeschger cycles*. Paleoceanography (2013), preprint, 1–7. DOI:10.1029/2012PA002364, 2013.

We present a new hypothesis to explain the millennial-scale temperature variability recorded in ice cores known as Dansgaard-Oeschger (DO) cycles. We propose that an ice shelf acted in concert with sea ice to set the slow and fast timescales of the DO cycle, respectively. The abrupt warming at the onset of a cycle is caused by the rapid retreat of sea ice after the collapse of an ice shelf. The gradual cooling during the subsequent interstadial phase is determined by the timescale of ice-shelf regrowth. Once the ice shelf reaches a critical size, sea ice expands, driving the climate rapidly back into stadial conditions. The stadial phase ends when warm subsurface waters penetrate beneath the ice shelf and cause it to collapse. This hypothesis explains the full shape of the DO cycle, the duration of the different phases, and the transitions between them and is supported by proxy records in the North Atlantic and Nordic Seas.

Soulet 2013

Guillaume Soulet et al., *Abrupt drainage cycles of the Fennoscandian Ice Sheet*. PNAS **110** (2013), 6682–6687.

pnas110-06682-Supplement1.doc, pnas110-06682-Supplement2.doc, pnas110-06682-Supplement3.doc, pnas110-06682-Supplement4.doc

Guillaume Soulet, Guillemette Ménot, Germain Bayon, Frauke Rostek, Emmanuel Ponzevera, Samuel Toucanne, Gilles Lericolais & Edouard Bard
Continental ice sheets are a key component of the Earth's climate system, but their internal dynamics need to be further studied. Since the last deglaciation, the northern Eurasian Fennoscandian Ice Sheet (FIS) has been connected to the Black Sea (BS) watershed, making this basin a suitable location to investigate former icesheet dynamics. Here, from a core retrieved in the BS, we combine the use of neodymium isotopes, high-resolution elemental analysis, and biomarkers to trace changes in sediment provenance and river runoff. We reveal cyclic releases of meltwater originating from Lake Disna, a proglacial lake linked to the FIS during Heinrich Stadial 1. Regional interactions within the climate–lake–FIS system, linked to changes in the availability of subglacial water, led to abrupt drainage cycles of the FIS into the BS watershed. This phenomenon raised the BS water level by ≈100 m until the sill of the Bosphorus Strait was reached, ooding the vast northwestern BS shelf and deeply affecting the hydrology and circulation of the BS and, probably, of the Marmara and Aegean Seas.
ice dynamics | meltwater routing | European hydrographic network

Kupfer

Bartelheim 1996

Martin Bartelheim & Elke Niederschlag, *Bronzezeitliche Zinngewinnung im Erzgebirge?* Archäologie aktuell im Freistaat Sachsen **4** (1996), 61–66.

Metallzeiten

McNeal 1972

R. A. McNeal, *The Greeks in history and prehistory*. Antiquity **46** (1972), 19–28.
Professor R. A. McNeal, of the Department of Classics, University of California, Riverside, apologizes that his article is 'largely negative since the message is a prohibition'. We think that it needs no apology and that his plea to scholars to unscramble the confusion that has arisen from unwarranted muddling of different kinds of evidence in the interpretation of Greek history and prehistory might well upset some received theories and bring a welcome breath of fresh air into the thinking of some of us. Professor McNeal prefaces his words with those of Goethe: 'Das Höchste wäre zu begreifen, daß alles Faktische schon Theorie ist.' (The most important thing to understand is that everything factual is already theory.)

Rutter 1993

Jeremy B. Rutter, *Review of Aegean Prehistory II: The Prepalatial Bronze Age of the Southern and Central Greek Mainland*. American Journal of Archaeology **97** (1993), 745–797.
This review of a modest slice of mainland Greek prehistory is designed for twin audiences and has twin goals. On the one hand, it is targeted at archaeologists, ancient historians, Classicists, and others who, though they take an interest in Aegean prehistory and may even have some familiarity with it, hardly consider themselves specialists in this subdiscipline of Old World archaeology. For this audience, the purpose of what follows is to provide an outline, with helpful but by no

means exhaustive references, to the principal discoveries made, questions addressed, and novel research strategies employed in the archaeology of roughly the first three-quarters of the Bronze Age on the southern and central Greek mainland. At the same time, this review is addressed to specialist Aegean prehistorians, not with the aim of making them aware of discoveries or intellectual currents about which they may be ignorant, but rather with the intent of encouraging them, through a consideration of the current state of our field, to take whatever future action they may feel is appropriate to improve upon the present state of our knowledge.
The spatial coverage undertaken for this review includes those portions of the Greek mainland south of a roughly east-west line connecting the mouth of the Spercheios River with the southeast corner of the Gulf of Arta (see below, fig. 3). Epirus, Thessaly, Macedonia, and Thrace are thus omitted from consideration, but Akarnania, Aetolia, the southern half of Eurytania, and the Ionian islands from Lefkas south are included. Also included, aside from the entire Peloponnese and the central Greek nomes of Attica, Boiotia, Phocis, Locris, and the southern half of Phthiotis, are the islands of the Saronic Gulf (most notably Aegina and Salamis), islands located just off the southeastern coast of the Argolid (such as Hydra and Spetses), and islands off the southwest coast of the Cape Malea peninsula (Elaphonisos and Kythera), but the large island of Euboea, since it was covered thoroughly in last year's review, is not considered here.
The period of time surveyed encompasses the entire Early and Middle Bronze Ages (EBA and MBA, respectively), known throughout the area in question as the Early Helladic (EH) and Middle Helladic (MH) periods, as well as the earlier part of the Late Bronze Age (LBA), variously termed the Late Helladic (LH) or Mycenaean period. The terminal date for my chronological coverage is provided by the construction, at some point during the LH IIB or LH IIIA1 periods in the 15th century B.C., of the first Mycenaean architectural complexes generally recognized by the term "palaces" as the administrative seats of centralized kingdoms.

Shelmerdine 2008

Cynthia W. Shelmerdine (Hrsg.), *The Cambridge Companion to the Aegean Bronze Age*. Cambridge Companions Online (Cambridge 2008). DOI:10.1017/CCOL9780521814447.

This book is a comprehensive, up-to-date survey of the Aegean Bronze Age, from its beginnings to the period following the collapse of the Mycenaean palace system. In essays by leading authorities commissioned especially for this volume, it covers the history and the material culture of Crete, Greece, and the Aegean Islands from ca. 3000 to 1100 bce, as well as topics such as trade, religions, and economic administration. Intended as a reliable, readable introduction for university students, it will also be useful to scholars in related fields within and outside classics. The contents of this book are arranged chronologically and geographically, facilitating comparison between the different cultures. Within this framework, the cultures of the Aegean Bronze Age are assessed thematically and combine both material culture and social history.
Cynthia W. Shelmerdine is the Robert M. Armstrong Centennial Professor of Classics at The University of Texas, Austin. A scholar of Aegean Bronze Age archaeology and Mycenaean Greek language, history, and society, she has worked in the field with the University of Minnesota Messenia Expedition, the Pylos Regional Archaeological Project, and currently the Iklaina Archaeological Project. She is the author of many publications on Mycenaean culture.

Neolithikum

Kerig 2003

Tim Kerig, *Von Gräben und Stämmen, Zur Interpretation bandkeramischer Erdwerke.* In: Ulrich Veit, Tobias L. Kienlin, Christoph Kümmel & Sascha Schmidt (Hrsg.), *Spuren und Botschaften, Interpretationen materieller Kultur.* Tübinger Archäologische Taschenbücher 4 (Münster 2003), 225–244.

Bandkeramische Erdwerke gehören zu den seit langem bekannten Kulturerscheinungen des mitteleuropäischen Neolithikums. In den letzten Jahren haben sich Umfang und Qualität des Quellenmaterials dramatisch verändert. Zu einer kurzen Darstellung dieser Befunde werden Arbeiten zur altneolithischen Sozialstruktur in Beziehung gesetzt. Dabei sichtbar werdende Widersprüche sollen in einer neuen Interpretation aufgehoben werden, die die Verbindung von Erdwerken mit Veränderungen der Sozialstruktur betont. Als Argumente dienen gerade die den Erdwerken zugeschriebenen unterschiedlichen Funktionen. Versucht wird, einen Indizienbeweis zu führen: Die Tragfähigkeit eines solchen Schlusses beruht zuerst auf der Gültigkeit der Beobachtungen und dann auf der Gültigkeit der Annahme, diese Beobachtungen verwiesen ihrerseits auf das Vorhandensein weiterer Tatsachen. Der Zusammenhang zwischen dem Beobachteten und dem Erschlossenen muss dabei bekannt sein. Hier wird eine neo-evolutionistische These der amerikanischen Kulturanthropologie als überzeugend angesehen, entliehen und in einem Indizienschluss zur Klärung des Einzelfalles herangezogen. Eine solche Argumentation kann künftig gestützt oder falsifiziert werden. Angestrebt wird eine pragmatische Verbindung von „szientistisch“ kontrollierter Arbeitsweise und der „partikularistischen“ Feststellung historischer Individualität.

Ozeanien

Williams 2013

Alan N. Williams, *A new population curve for prehistoric Australia.* Proc. Royal Society B (2013), preprint, 1–9. DOI:10.1098/rspb.2013.0486.

ProcRSocB2013-preprint-Supplement1.doc, ProcRSocB2013-preprint-Supplement2.xls

This paper presents a newreconstruction of prehistoric population of Australia for the last 50 ka, using the most comprehensive radiocarbon database currently available for the continent. The application of new techniques to manipulate radiocarbon data (including correction for taphonomic bias), gives greater reliability to the reconstructed population curve. This shows low populations through the Late Pleistocene, before a slow stepwise increase in population beginning during the Holocene transition (approx. 12 ka) and continuing in pulses (approx. 8.3–6.6, 4.4–3.7 and 1.6–0.4 ka) through the Holocene. These data give no support for an early saturation of the continent, although the estimated population following initial landfall was probably greater than previously allowed (comparable with the Early Holocene). The greatest increase in population occurred in the Late Holocene, but in contrast to existing intensification models, changes in demography and diversification of economic activities began much earlier. Some demographic changes appear to be in response to major climatic events, most notably during the last glacial maximum, where the curve suggests that population fell by about 60 per cent between 21 and 18 ka. An application of statistical demographic methods

to Australian ethnographic and genetic data suggests that a founding group of 1000–2000 at 50 ka would result in a population high of approximately 1.2 million at approximately 0.5 ka. Data suggests an 8 per cent decline to approximately 770 000–1.1 million at the time of European contact, giving a figure consistent with ethnographic estimates and with historical observations of the impact of smallpox, and other diseases introduced by Macassans and Europeans during and after AD 1788.

Keywords: summed probability plots, radiocarbon data, prehistoric demography, population, growth rates, taphonomic bias

Religion

Faussette 2007

Rich Faussette, *The Book of Genesis from a Darwinian Perspective*. The Occidental Quarterly **7** (2007), ii, 1–20.

Faussette 2012

Richard Faussette, *The fundamental structure and systematic theology of the Torah*. The Occidental Quarterly **12** (2012), i, 1–13.