

## References

### Afrika

HILDEBRAND 2003

Elisabeth Anne Hildebrand, *Motives and opportunities for domestication, An ethnoarchaeological study in southwest Ethiopia*. [Journal of Anthropological Archaeology](#) **22** (2003), 358–375.

Farmers of southwest Ethiopia are currently transplanting yams (*Dioscorea cayenensis*) from wild contexts to home gardens. Ethnoarchaeological study of this practice can inform considerations of agricultural origins in prehistoric times by revealing motives and opportunities that shape decisions to adopt wild-growing plants. In one part of the study area, case studies demonstrate that decisions to manipulate yams may arise mainly among individuals of a particular gender or household composition. Comparisons across the study area illustrate the effects of slight variations in environment and human mobility upon adoption of wild-growing yams. The social and environmental factors that favor or impede manipulation of yams are highly specific and nuanced, and operate on both intra- and inter-community levels.

Keywords: Agriculture | Yams | Dioscorea | Domestication | Africa | Ethiopia | Sheko | Gender

### Aktuell

WAGER 2016

Stefan Wager, Wenfei Du, Jonathan Taylor & Robert J. Tibshirani, *High-dimensional regression adjustments in randomized experiments*. [PNAS](#) **113** (2016), 12673–12678.

We study the problem of treatment effect estimation in randomized experiments with high-dimensional covariate information and show that essentially any risk-consistent regression adjustment can be used to obtain efficient estimates of the average treatment effect. Our results considerably extend the range of settings where highdimensional regression adjustments are guaranteed to provide valid inference about the population average treatment effect. We then propose cross-estimation, a simple method for obtaining finitesample –unbiased treatment effect estimates that leverages highdimensional regression adjustments. Our method can be used when the regression model is estimated using the lasso, the elastic net, subset selection, etc. Finally, we extend our analysis to allow for adaptive specification search via cross-validation and flexible nonparametric regression adjustments with machine-learning methods such as random forests or neural networks.

Keywords: high-dimensional confounders | randomized trials | regression adjustment

Significance: As datasets get larger and more complex, there is a growing interest in using machine-learning methods to enhance scientific analysis. In many settings, considerable work is required to make standard machine-learning methods useful for specific scientific applications. We find, however, that in the case of treatment effect estimation with randomized experiments, regression adjustments

via machine-learning methods designed to minimize test set error directly induce efficient estimates of the average treatment effect. Thus, machine-learning methods can be used out of the box for this task, without any special-case adjustments.

## Altpaläolithikum

KEY 2016

Alastair J. M. Key, Tomos Proffitt, Elena Stefani & Stephen J. Lycett, *Looking at handaxes from another angle, Assessing the ergonomic and functional importance of edge form in Acheulean bifaces*. [Journal of Anthropological Archaeology 44 \(2016\), 43–55](#).

JAnthArch44-043-Supplement.jpg

Edge angle is widely considered to be a morphological attribute that influences the functional performance of lithic technologies. However, the comparative performance capabilities of handaxes that vary in terms of edge angles has never been investigated under experimental conditions. Similarly, detailed accounts of Acheulean handaxe angle variation from archaeological examples have not been reported in the literature. Consequently, it has not previously been possible to assess the extent to which Palaeolithic individuals adhered to specific edge angle ranges during handaxe production or whether resultant artifactual properties may have been in response to varying rates of utility. Here, using a substantial experimental program (n = 500 handaxes), we investigate the impact that edge angle variation has on the cutting efficiency of handaxes at a “whole tool” and “edge-point localized” level. We then examine edge angles in a temporally and geographically wide range of handaxes (n = 643) and assess the extent to which hominins were likely altering tool production choices in response to functional pressures. Our experimental results demonstrate that, up to a certain value, higher edge angles in handaxes can actually increase functional performance. Furthermore, results indicate that edges in the proximal portion of handaxes have the greatest influence over efficiency rates. Combined with examination of archaeological specimens, these results suggest that hominins actively pursued the production of more obtuse edges in the proximal (butt) portion of handaxes in order to increase ergonomic features that facilitated greater efficiency during use. Edge angle values in the proximal portion of the archaeological handaxes were, however, consistently found to be below an efficiency threshold identified at  $\approx 70$  degrees, above which, an edge’s ability to effectively be applied to cutting tasks decreases markedly. This further suggests that the proximal edges of handaxes, at least occasionally, were required as a functional working edge.

**Keywords:** Cutting efficiency | Biface use | Acheulean | Stone tool morphology | Functional design

MARTINEZ 2016

Kenneth Martinez & Joan Garcia Garriga, *On the origin of the European Acheulian*. [Journal of Anthropological Archaeology 44 \(2016\), 87–104](#).

The Mode 1 to Mode 2 transition in Europe has become a key research debate on early hominins. In this paper, the available data are used to propose a new interpretation of the origin of the Acheulian by analysing the transition through the lithic industry at key circum-Mediterranean sites with Early-Middle Pleistocene chronology: Vallparadis, Gran Dolina TD6, Barranc de la Boella, and Caune de l’Arago ‘P’ levels. Regarding these lithic records, we propose here the hypothesis based on an evolution of new technological behaviours in Europe before 0.5 Myr

carried out from autochthonous populations with Mode 1 industries, combined with external adaptive and technological influences. We interpret the chronology and lithic assemblages of these sites within the transition process towards Acheulian, in which structural continuity of Mode 1 is complemented with the gradual appearance of some foreign innovations (bifacial technology). This technological transition is envisaged as a historical process: the outcome of the cultural evolution resulted from contacts and exchanges between hominin groups from western Eurasia with different social and technological adaptations, in contact and competition with each other. This historical process would explain the time lag between Africa, Levant, and Europe in the spread of the Acheulian, as well as a technological evolution of the European Mode 1 and the gradual expansion of the Acheulian across Europe.

**Keywords:** Mode 1 | Acheulian | Technological transition | Early Middle Pleistocene

## Archäologie

PARKER PEARSON 1999

Mike Parker Pearson, *The Archaeology of Death and Burial*. (Stroud 2009).

The archaeology of death and burial is central to our attempts to understand vanished societies. Through the remains of funerary rituals we can learn not only about the attitudes of prehistoric people to death and the afterlife, but also about their way of life, their social organisation and their view of the world. This ambitious new book reviews the latest research in this huge and important field, and describes the sometimes controversial interpretations that have led to rapid advances in our understanding of life and death in the distant past. It provides a unique overview and synthesis of one of the most revealing fields of research into the past, It creates a context for several of archaeology's most breath-taking discoveries, from Tutankhamen to the Ice Man, and will find a keen market among archaeologists, historians and others who have a professional interest in, or general curiosity about, death and burial.

## Bibel

CROSS 1973

Frank Moore Cross, *Canaanite Myth and Hebrew Epic, Essays in the History of the Religion of Israel*. (Cambridge 1997).

Directed toward a synthesis of the history of the religion of Israel, the essays in this volume address key aspects of Israelite religious development. Cross traces the continuities between early Israelite religion and the Canaanite culture from which it emerged; explores the tension between the mythic and the historical in Israel's religious expression; and examines the reemergence of Canaanite mythic material in the apocalypticism of early Christianity and the Dead Sea Scrolls.

## Biologie

LI 2016

Kun Li, Miho Nakajima, Ines Ibañez-Tallon & Nathaniel Heintz, *A Cortical Circuit for Sexually Dimorphic Oxytocin-Dependent Anxiety Behaviors*. [Cell](#) **167** (2016), 60–72.

Cell167-0060-Supplement1.xlsx, Cell167-0060-Supplement2.xlsx

### **In Brief**

A population of oxytocin-responsive neurons blocks anxiety-related behaviors in male, but not female, mice, suggesting a basis for sex-specific differences observed in some emotional disorders.

### **Highlights**

- Activation of OxtRINs is anxiolytic in males and prosocial in females
- OxtRINs specifically express CRHBP, an inhibitor of the stress hormone CRH
- CRHBP blocks activation of layer 2/3 pyramidal cells by CRH only in males
- OxtRINs in the mPFC coordinate sexually dimorphic social/ emotional behaviors

### **Summary**

The frequency of human social and emotional disorders varies significantly between males and females. We have recently reported that oxytocin receptor interneurons (OxtRINs) modulate female sociosexual behavior. Here, we show that, in male mice, OxtRINs regulate anxiety-related behaviors. We demonstrate that corticotropin-releasing-hormone-binding protein (CRHBP), an antagonist of the stress hormone CRH, is specifically expressed in OxtRINs. Production of CRHBP blocks the CRH-induced potentiation of postsynaptic layer 2/3 pyramidal cell activity of male, but not female, mice, thus producing an anxiolytic effect. Our data identify OxtRINs as critical for modulation of social and emotional behaviors in both females and males and reveal a molecular mechanism that acts on local medial prefrontal cortex (mPFC) circuits to coordinate responses to OXT and CRH. They suggest that additional studies of the impact of the OXT/OXTR and CRHBP/CRH pathways in males and females will be important in development of gender-specific therapies.

## **Energie**

LEVINSON 2016

Arik Levinson, *How Much Energy Do Building Energy Codes Save? Evidence from California Houses*. [American Economic Review](#) **106** (2016), 2867–2898.

[AmEconRev106-2867-Supplement1.pdf](#), [AmEconRev106-2867-Supplement2.zip](#)

Regulations governing the energy efficiency of new buildings have become a cornerstone of US environmental policy. California enacted the first such codes in 1978 and has tightened them every few years since. I evaluate the resulting energy savings three ways: comparing energy used by houses constructed under different standards, controlling for building and occupant characteristics; examining how energy use varies with outdoor temperatures; and comparing energy used by houses of different vintages in California to that same difference in other states. All three approaches yield estimated energy savings significantly short of those projected when the regulations were enacted. (JEL Q48, Q51, Q52)

## **Isotope**

O'REGAN 2016

Hannah J. O'Regan, Angela L. Lamb & David M. Wilkinson, *The missing mushrooms, Searching for fungi in ancient human dietary analysis*. [Journal of Archaeological Science](#) **75** (2016), 139–143.

[JAS075-0139-Supplement.pdf](#)

Fungi are a common part of modern human diets, but are rarely discussed in an archaeological context. Power et al. (2015) published data on bolete spores in human tooth calculus, suggesting that Upper Palaeolithic peoples ate mushrooms. Here we briefly consider the likelihood of mushroom consumption in the past, and examine whether or not stable isotopes may provide a way of seeing this in archaeological populations. We also consider the complexities of fungal stable isotopes using our own data and that from the literature. We conclude that fungi are highly variable isotopically, and are an additional dietary factor that should be considered when trying to interpret ‘terrestrial’ carbon isotope signatures combined with relatively high nitrogen isotope values in humans and other animals. Substantial mushroom ingestion could, in some cases, result in isotope values that may be interpreted as considerable meat consumption.

Keywords: Diet | Fungus | Carbon | Nitrogen | Sulphur | Stable isotope | Protein

## Klima

### CURRY 2016

Andrew Curry, ‘*Green hell*’ has long been home for humans. [science 354 \(2016\), 268–269](#).

By burning trees and tending crops, prehistoric people left a lasting mark on rainforests.

Researchers at the conference argued that slash-and-burn techniques, once thought to be environmentally destructive, were actually sustainable, part of a centuries-long forest management cycle practiced in many tropical forests. Modern Maya “forest gardeners” in Belize and Guatemala farm burn plots for a few years, then manage them for second-growth species like fruit trees, UCSB’s Ford says. She argues that a combination of arboriculture and cyclical agriculture enabled the ancient Maya to support large populations in a sustainable way, and that the practice of burning the forest had begun with the first Native Americans in the area. “They are regularly burning fields, creating a cycle for reforestation,” Ford says. “It’s not that they’re one with nature—they’d been recreating the forest across 8 millennia.”

The implications for modern rainforest management could be profound, as the evidence suggests that human activity helped shape some of today’s supposed wildernesses. “Humans are not by nature incompatible with biological diversity,” says anthropologist William Balée of Tulane University in New Orleans, Louisiana, who was not at the Jena meeting.

But others say the evidence for widespread human settlement in tropical forests has been overstated. “There was such a strong belief beforehand that you couldn’t develop complex societies in the rainforest that when examples started to pop up the field immediately went to the other extreme,” cautions Crystal McMichael, a paleobotanist at the University of Amsterdam who was not at the meeting. “In truth, it’s probably somewhere in the middle.”

### GAUTHIER 2016

Nicolas Gauthier, *The spatial pattern of climate change during the spread of farming into the Aegean*. [Journal of Archaeological Science 75 \(2016\), 1–9](#).

I examine the relationship between the spatial pattern of aridification in the northeastern Mediterranean ca 8600 years ago and the spread of Neolithic farmers into the region surrounding the Aegean Sea. I use a generalized additive model to downscale winter rainfall from a state-of-the-art paleoclimate simulation. The

model performs well at reproducing the present-day pattern of rainfall in the northeastern Mediterranean, and it generates physically-interpretable estimates of past rainfall consistent with global and regional proxy records of early Holocene climate. Comparing modeled rainfall with Neolithic settlement patterns reveals spatially-heterogeneous regional impacts of this period of global aridification. Only the humid regions of the Aegean coast experienced major drought, while more inland zones temporarily experienced more rainfall. The result of this spatially heterogeneous climate event was, conversely, more homogeneous regional rainfall. Neolithic colonists from southwest Asia would have encountered new landscapes with a more familiar, and predictable, precipitation regime.

Keywords: Neolithic dispersal | Paleoclimate modeling | Statistical downscaling

## Kultur

### BUTTS 2016

Carter T. Butts, *Why I know but don't believe*. [science 354 \(2016\), 286–287](#).

Individuals hold interdependent beliefs that affect whether or not they accept scientific findings.

About 40 to 45% of Americans believe that humans were supernaturally created in the past 10,000 years. A natural interpretation of this finding is that U.S. science education is failing to reach nearly half of the population, and that widespread belief in recent human origins reflects basic scientific illiteracy. However, the reality is more complex (2): Many of those who reject evolutionary theory are aware of the scientific consensus on the subject, and such rejection is not always associated with low scientific literacy. Similar results have been found for beliefs regarding anthropogenic climate change.

### FRIEDKIN 2016

Noah E. Friedkin, Anton V. Proskurnikov, Roberto Tempo & Sergey E. Parsegov, *Network science on belief system dynamics under logic constraints*. [science 354 \(2016\), 321–326](#).

People tend to structure their beliefs in a way that appears consistent to them. But how do some beliefs within groups persist in the face of social pressure, whereas others change and, by changing, developed a model that can describe complexes of et al. influence a cascade of other beliefs? Friedkin attitudes in a group that interact and change (see the Perspective by Butts). Their model revealed how the changing views of the U.S. population on the existence of weapons of mass destruction in Iraq changed their views on whether the invasion by the United States was justified.

Breakthroughs have been made in algorithmic approaches to understanding how individuals in a group influence each other to reach a consensus. However, what happens to the group consensus if it depends on several statements, one of which is proven false? Here, we show how the existence of logical constraints on beliefs affect the collective convergence to a shared belief system and, in contrast, how an idiosyncratic set of arbitrarily linked beliefs held by a few may become held by many.

## Kultur Religion

CONTE 2016

Matthew Conte & Jangsuk Kim, *An economy of human sacrifice, The practice of sunjang in an ancient state of Korea*. [Journal of Anthropological Archaeology 44 \(2016\), 14–30](#).

Motivations for human sacrifice are explained from various perspectives: the sociopolitical benefits gained by elite hosts and the ideological, cultural, or locally unique factors that motivate community members and victims of sacrifice to participate. While these perspectives are pertinent, in this paper we employ a political economic framework to investigate how retainer sacrifice was practiced over two centuries in the ancient kingdom of Silla in Korea and why it was ultimately banned. We suggest that retainer sacrifice rites can be regarded as public goods supplied by elite hosts and consumed by the public at large. On a regional scale, the supply of retainer sacrifice was maintained by an oligopolistic or cartellike market structure, which shaped sociopolitical relations among Silla royalty, elites, and communities. Rising costs of retainer sacrifice and an opportunistic strategy of the central government to monopolize the religious market brought about the illegalization of retainer sacrifice followed by the adoption of Buddhism as a state religion.

Keywords: Human sacrifice | Korea | Religious market | Public goods | Monopoly | Standardization

## Mathematik

STEWART 2016

Alexander J. Stewart, Todd L. Parsons & Joshua B. Plotkin, *Evolutionary consequences of behavioral diversity*. [PNAS 113 \(2016\), E7003–E7009](#).

Iterated games provide a framework to describe social interactions among groups of individuals. This body of work has focused primarily on individuals who face a simple binary choice, such as “cooperate” or “defect.” Real individuals, however, can exhibit behavioral diversity, varying their input to a social interaction both qualitatively and quantitatively. Here we explore how access to a greater diversity of behavioral choices impacts the evolution of social dynamics in populations. We show that, in public goods games, some simple strategies that choose between only two possible actions can resist invasion by all multichoice invaders, even while engaging in relatively little punishment. More generally, access to a larger repertoire of behavioral choices results in a more “rugged” fitness landscape, with populations able to stabilize cooperation at multiple levels of investment. As a result, increased behavioral choice facilitates cooperation when returns on investments are low, but it hinders cooperation when returns on investments are high. Finally, we analyze iterated rock–paper–scissors games, the nontransitive payoff structure of which means that unilateral control is difficult to achieve. Despite this, we find that a large proportion of multichoice strategies can invade and resist invasion by single-choice strategies—so that even well-mixed populations will tend to evolve and maintain behavioral diversity.

Keywords: behavioral diversity | cooperation | evolution | rock–paper–scissors | game theory

Significance: Access to a diversity of behavioral choices makes social dynamics rich and difficult to analyze. Individuals are rarely constrained to a binary choice between “cooperate” or “defect,” as many theoretical treatments assume. Here we

use game theory to ask what social behaviors will emerge in populations as the number of behavioral choices grows. We show that simple strategies, where players do not vary their behavior much at all, can nonetheless be successful, and that access to a broader range of behavioral choices can cause a population to evolve toward lower levels of cooperation. Finally, we show that access to greater choice in rock–paper–scissors games inevitably leads to behavioral diversity, with players using strategies that make use of all possible choices.

## Methoden

### BAXTER 2016

Mike Baxter & Hilary Cool, *Basic Statistical Graphics for Archaeology with R, Life Beyond Excel*. (Nottingham 2016). <<http://www.academia.edu/29415587/>> (2016-11-11).

Some of the simpler methodology that we've used, with respect to graphical presentation of the kind that is the staple of archaeological publications that touch this kind of thing, should be straightforward. The archaeological literature is littered with statistical graphics that should have been strangled at birth or, in some cases, not conceived at all. Quite a lot of the more heinous graphics to be seen in archaeological publications are produced using Excel or software purposely designed to emulate the worst that Excel has to offer. For many purposes Excel is quite capable of delivering decent graphs, but it has to be controlled/customised and not everyone bothers. The royal 'We' is used a lot in the text; this is supposed to be bad practice (along with over-use of the first-person singular) in academic texts, and is quite deliberate. One reason is the text is opinionated in places, and opinions differ (particularly among academics); we thought it best to make it quite clear when disputable opinion was being expressed.

What amused us – and we shall make it clear that we are not criticising the scholarship of authors singled out for attention – is that a lot of the really awful graphical stuff was produced by authors who have passed through the hallowed portals of our more prestigious universities – most notably Cambridge – usually as PhD students or post-doctoral, and have gone on to lectureships in other noted universities. What's worrying is that their supervisors obviously did nothing to discourage the graphics used and that bad habits will perhaps be condoned in future generations. To quote the poet Philip Larkin out of context 'Man hands on misery to man/It deepens like the coastal shelf'. If this text has a serious purpose it is to encourage archaeologists to give more thought to the statistical graphics that they use, possibly even to have the courage to eschew them on occasion. The emphasis is on how you might do things in R, which isn't as 'comfortable' as Excel and other menu-driven software, but allows more control and forces you to think.

### VEAL 2016

Robyn Veal, Lorna O'Donnell & Laura McParland, *Reflectance – Current state of research and future directions for archaeological charcoal, Results from a pilot study on Irish Bronze Age cremation charcoals*. *Journal of Archaeological Science* **75** (2016), 72–81.

'Reflectance' is a method that estimates the absolute burn temperature of charcoal from the 'shininess' of resin mounted samples. The method's usefulness for archaeological charcoal is yet to be comprehensively studied. This article details first results from reflectance testing of archaeological charcoals excavated from Irish Bronze Age cremations, which included calcined bone. As calcination of bone commences at 650 °C, it was expected that the charcoals would reflect at least



this temperature. This was not the case for taxonomically identified charcoals >2 mm, nor for micro-charcoals of c. 250  $\mu$ m, although measured temperatures rose slightly with decreasing fraction size of charcoal remains. Depositional practice, combustion completeness and taphonomic influences may have all played a part in this result, and these will need careful consideration in different archaeological circumstances. However, the greatest challenge for reflectance of archaeological materials lies in obtaining full agreement on the production and use of reflectance calibration curves. Current calibration curves differ substantially, by 100–150  $^{\circ}$ C ( $\pm$ 50–75  $^{\circ}$ C) and in one instance up to as much as 180  $^{\circ}$ C ( $\pm$ 90  $^{\circ}$ C). Without better agreement on calibration, the method’s ultimate usefulness in archaeological research will be limited. At the level of refinement currently possible, it will still be useful for determining very high or very low temperature processes, and possibly the difference between charcoal fuel and raw wood fuel fires. The latter has distinct implications for estimating ancient forest wood consumption, since more wood is consumed in processes employing charcoal fuel. Proving the utility of reflectance for archaeological purposes may also require modification of normal practice for archaeological field collection of charcoal, to include collection and laboratory processing of un-sieved soil samples.

**Keywords:** Reflectance | Charcoal absolute burn temperature | Reflectance calibration curve | Cremation

## Ozeanien

### MONTENEGRO 2016

Álvaro Montenegro, Richard T. Callaghan & Scott M. Fitzpatrick, *Using seafaring simulations and shortest-hop trajectories to model the prehistoric colonization of Remote Oceania*. *PNAS* **113** (2016), 12685–12690.

The prehistoric colonization of islands in Remote Oceania that began  $\approx$ 3400 B.P. represents what was arguably the most expansive and ambitious maritime dispersal of humans across any of the world’s seas or oceans. Though archaeological evidence has provided a relatively clear picture of when many of the major island groups were colonized, there is still considerable debate as to where these settlers originated from and their strategies/trajectories used to reach habitable land that other datasets (genetic, linguistic) are also still trying to resolve. To address these issues, we have harnessed the power of high-resolution climatic and oceanographic datasets in multiple seafaring simulation platforms to examine major pulses of colonization in the region. Our analysis, which takes into consideration currents, land distribution, wind periodicity, the influence of El Niño Southern Oscillation (ENSO) events, and “shortest-hop” trajectories, demonstrate that (i) seasonal and semiannual climatic changes were highly influential in structuring ancient Pacific voyaging; (ii) western Micronesia was likely settled from somewhere around the Maluku (Molucca) Islands; (iii) Samoa was the most probable staging area for the colonization of East Polynesia; and (iv) although there are major differences in success rates depending on time of year and the occurrence of ENSO events, settlement of Hawai’i and New Zealand is possible from the Marquesas or Society Islands, the same being the case for settlement of Easter Island from Mangareva or the Marquesas.

**Keywords:** Pacific colonization | Lapita expansion | ancient seafaring | computer simulations | ENSO

**Significance:** The colonization of Remote Oceania between  $\approx$ 3400 and 800 B.P.—from multiple origin points and across hundreds or thousands of kilometers of

open ocean—represents some of the most impressive population dispersals on Earth. For decades, scholars have sought to explain when and how these occurred. Here we show that seafaring simulation techniques coupled with sophisticated analyses of climatic data, including the role of El Niño Southern Oscillation events and island distribution on ancient voyaging, are critical comparative tools for understanding the variables—culturally, technologically, and environmentally—that structured movement across the world’s largest ocean. These data also pinpoint likely departure points for ancient Pacific Islanders that in some cases support or negate current archaeological and other lines of evidence.

## Story or Book

STIEGLITZ 2016

Troy Stieglitz, *Melissa, Lost time*. [nature 539 \(2016\), 324](#).

An elderly woman was lying peacefully in bed with her eyes closed. A blue and white knitted blanket was pulled up to her waist. He paused for a moment and then softly knocked three times on the metal door frame. Melissa slowly opened her eyes with a smile and whispered: “Daddy.”