

References

Aktuell

CUTHILL 2016

Innes C. Cuthill, N. Simon Sanghera, Olivier Penacchio, Paul George Lovell, Graeme D. Ruxton & Julie M. Harris, *Optimizing countershading camouflage*. [PNAS 113 \(2016\), 13093–13097](#).

Countershading, the widespread tendency of animals to be darker on the side that receives strongest illumination, has classically been explained as an adaptation for camouflage: obliterating cues to 3D shape and enhancing background matching. However, there have only been two quantitative tests of whether the patterns observed in different species match the optimal shading to obliterate 3D cues, and no tests of whether optimal countershading actually improves concealment or survival. We use a mathematical model of the light field to predict the optimal countershading for concealment that is specific to the light environment and then test this prediction with correspondingly patterned model “caterpillars” exposed to avian predation in the field. We show that the optimal countershading is strongly illumination-dependent. A relatively sharp transition in surface patterning from dark to light is only optimal under direct solar illumination; if there is diffuse illumination from cloudy skies or shade, the pattern provides no advantage over homogeneous background-matching coloration. Conversely, a smoother gradation between dark and light is optimal under cloudy skies or shade. The demonstration of these illumination-dependent effects of different countershading patterns on predation risk strongly supports the comparative evidence showing that the type of countershading varies with light environment.

Keywords: camouflage | defensive coloration | animal coloration | shape-from-shading | shape perception

Significance: Because the sun and sky are above us, natural illumination is directional and the cues from shading reveal shape and depth. However, many animals are darker on their backs and, over 100 years ago, it was proposed that this phenomenon was camouflage: countering the cues to shape that directional illumination creates. However, does this camouflage work in practice? We predicted the optimal countershading for different lighting conditions and tested this possibility with correspondingly patterned model “caterpillars” predated by birds in the wild. Predation rates varied with coloration and lighting in exactly the manner predicted. Such subtlety in the effects of countershading vindicates conclusions from prior evidence demonstrating stronger countershading in animals in more brightly lit habitats.

HIGH 2016

Kirsty High, Nicky Milner, Ian Panter, Beatrice Demarchi & Kirsty E. H. Penkman, *Lessons from Star Carr on the vulnerability of organic archaeological remains to environmental change*. [PNAS 113 \(2016\), 12957–12962](#).

Examples of wetland deposits can be found across the globe and are known for preserving organic archaeological and environmental remains that are vitally important to our understanding of past human–environment interactions. The Mesolithic site of Star Carr (Yorkshire, United Kingdom) represents one of the

most influential archives of human response to the changing climate at the end of the last glacial in Northern Europe. A hallmark of the site since its discovery in 1948 has been the exceptional preservation of its organic remains. Disturbingly, recent excavations have suggested that the geochemistry of the site is no longer conducive to such remarkable survival of organic archaeological and environmental materials. Microcosm (laboratory-based) burial experiments have been undertaken, alongside analysis of artifacts excavated from the site, to assess the effect of these geochemical changes on the remaining archaeological material. By applying a suite of macroscopic and molecular analyses, we demonstrate that the geochemical changes at Star Carr are contributing to the inexorable and rapid loss of valuable archaeological and paleoenvironmental information. Our findings have global implications for other wetland sites, particularly archaeological sites preserved in situ.

Keywords: organic artifacts | geochemistry | environmental change | analytical chemistry | wetland archaeology

Significance: Wetland deposits provide a unique repository of archaeological and environmental information, preserving organic remains rarely found elsewhere. Star Carr is an impressive example, having provided unique evidence for human interactions with the landscape at the end of the last ice age. Tragically, here we provide experimental evidence that human modifications of the local environment are leading to changes in the site's geochemistry, resulting in the rapid loss of bone and wood artifacts. Our research demands a reassessment of the assumption that sites such as Star Carr should be preserved in situ for the benefit of future researchers and demonstrates that potential changes to the burial environment must be considered before such a policy is pursued.

HOBBS 2016

William R. Hobbs, Moira Burke, Nicholas A. Christakis & James H. Fowler, *Online social integration is associated with reduced mortality risk*. [PNAS 113 \(2016\), 12980–12984](#).

These results are suggestive that offline social activities—and not online activities—are driving the relationship between overall Facebook activity and decreased mortality risk.

Social interactions increasingly take place online. Friendships and other offline social ties have been repeatedly associated with human longevity, but online interactions might have different properties. Here, we reference 12 million social media profiles against California Department of Public Health vital records and use longitudinal statistical models to assess whether socialmedia use is associated with longer life. The results show that receiving requests to connect as friends online is associated with reduced mortality but initiating friendships is not. Additionally, online behaviors that indicate face-to-face social activity (like posting photos) are associated with reduced mortality, but online-only behaviors (like sending messages) have a nonlinear relationship, where moderate use is associated with the lowest mortality. These results suggest that online social integration is linked to lower risk for a wide variety of critical health problems. Although this is an associational study, it may be an important step in understanding how, on a global scale, online social networks might be adapted to improve modern populations' social and physical health.

Keywords: social networks | social media | health | longevity | social support

Significance: People who have stronger social networks live longer. However, can we say the same about online social networks? Here, we conduct such a study. Using public California vital records, we compare 12 million Facebook users to nonusers. More importantly, we also look within Facebook users to explore how

online social interactions—reflecting both online and offline social activity—are associated with longevity. We find that Facebook users who accept more friendships have a lower risk of mortality, but there is no relationship for those who initiate more friendships. Mortality risk is lowest for those with high levels of offline social interaction and moderate levels of online social interaction.

NAVIAUX 2016

Robert K. Naviaux et al., *Metabolomics and chronic fatigue syndrome, Reply to Vogt et al.* [PNAS 113 \(2016\), E7142–E7143](#).

Robert K. Naviaux, Jane C. Naviaux, Kefeng Li, A. Taylor Bright, William A. Alaynick, Lin Wang, Asha Baxter, Neil Nathan, Wayne Anderson & Eric Gordon

It was the detailed nature and specific pattern of abnormalities affecting six pathways (sphingolipids, phospholipids, purines, cholesterol, polyamines, and redox metabolism), and not the over 50 other biochemical pathways interrogated, that focused our attention on dauer.

VOGT 2016

Henrik Vogt, Elling Ulvestad & Vegard Bruun Wyller, *Metabolic features of chronic fatigue syndrome revisited.* [PNAS 113 \(2016\), E7140–E7141](#).

The authors have not investigated the diagnostic specificity in relation to other conditions with a phenotype similar to CFS, such as fibromyalgia (2). They have also not explored metabolomics in otherwise healthy subjects who have been in a state of prolonged, profound inactivity and stress, or in other chronic conditions characterized by reduced bodily activity, such as cardiac failure. For all we know, a similar metabolic response might be present in all these conditions.

Second, when discussing the possibilities of novel therapeutics, the authors seem to assume that their findings of metabolic alterations in CFS suggest a causal explanation of patients' clinical symptoms. Evidently, the cross-sectional nature of their design does not allow causal claims to be made.

Archäologie

BALÉE 2006

William Balée, *The Research Program of Historical Ecology.* [Annual Review of Anthropology 35 \(2006\), 75–98](#).

Historical ecology is a new interdisciplinary research program concerned with comprehending temporal and spatial dimensions in the relationships of human societies to local environments and the cumulative global effects of these relationships. Historical ecology contains core postulates that concern qualitative types of human-mediated disturbance of natural environments and the effect of these on species diversity, among other parameters. A central term used in historical ecology to situate human behavior and agency in the environment is the landscape, as derived from historical geography, instead of the ecosystem, which is from systems ecology. Historical ecology is similar to nonequilibrium dynamic theory, but differs in its postulate of human-mediated disturbance as a principle of landscape transformation. Such disturbances counterintuitively may involve anthropogenic primary and secondary succession that result in net increases of alpha and even beta diversity. Applied historical ecology can supply the reference conditions of time depth and traditional knowledge to restore past landscapes.

Keywords: hard-core postulates | landscape transformation | historical | contingency | human-mediated disturbance | species diversity | biological invasions

ZEDER 2006

Melinda A. Zeder, Eve Emshwiller, Bruce D. Smith & Daniel G. Bradley, *Documenting domestication, The intersection of genetics and archaeology*. *Trends in Genetics* **22** (2006), 139–155.

Domestication, a process of increasing mutual dependence between human societies and the plant and animal populations they target, has long been an area of interest in genetics and archaeology. Geneticists seek out markers of domestication in the genomes of domesticated species, both past and present day. Archaeologists examine the archaeological record for complementary markers – evidence of the human behavior patterns that cause the genetic changes associated with domestication, and the morphological changes in target species that result from them. In this article, we summarize the recent advances in genetics and archaeology in documenting plant and animal domestication, and highlight several promising areas where the complementary perspectives of both disciplines provide reciprocal illumination.

Grabung

PARDEE 2009

Dennis Pardee, *A New Aramaic Inscription from Zincirli*. *Bulletin of the American Schools of Oriental Research* **356** (2009), 51–71.

A new inscription from Zincirli dating in all likelihood to the third quarter of the eighth century B.C.E. adds significant new data, linguistic, religious, and historical, to our knowledge of the kingdom of Sam'al in the period that immediately preceded Barrakib's submission to Assyrian hegemony (KAI 216). The excellent state of preservation of the inscribed stele makes the superficial decipherment relatively straightforward. The interpretation, on the other hand, presents challenges at various levels.

SCHLOEN 2009

J. David Schloen & Amir Sumaka'i Fink, *The Neubauer Expedition to Zincirli – Ancient Sam'al*. *Oriental Institute News & Notes* **200** (2009), 3–13.

Klima

TERRELL 2003

John Edward Terrell et al., *Domesticated Landscapes, The Subsistence Ecology of Plant and Animal Domestication*. *Journal of Archaeological Method and Theory* **10** (2003), 323–368.

John Edward Terrell, John P. Hart, Sibel Barut, Nicoletta Cellinese, Antonio Curet, Tim Denham, Chapurukha M. Kusimba, Kyle Latinis, Rahul Oka, Joel Palka, Mary E. D. Pohl, Kevin O. Pope, Patrick Ryan Williams, Helen Haines & John E. Staller

Harvesting different species as foods or raw materials calls for differing skills depending on the species being harvested and the circumstances under which they are being taken. In some situations and for some species, the tactics used are mainly behavioral?that is, people adjust, or adapt, their own actions to fit the behavior and circumstances of the species they are taking. Under other circumstances and for other species, the skills and tactics used may call for greater

environmental preparation or manipulation. Therefore, instead of trying to distinguish people today and in the past as either “foragers” or “farmers,” it makes sense to define human subsistence behavior as an interactive matrix of species and harvesting tactics, that is, as a provisions spreadsheet

Keywords: ecology | landscapes | foraging | farming.

Kupfer

YALÇIN 2009

Ünsal Yalçın & Hadi Özbal, *Ein neues Zinnvorkommen in Kayseri-Hisarçık, Zentralanatolien, Ein Vorbericht*. *Türkiye Bilimler Akademisi Arkeoloji Dergisi* **12** (2009), 117–122.

Die ersten Untersuchungen in Hisarçık haben gezeigt, dass in Anatolien durchaus Zinnvorkommen zu erwarten ist. Die bis dahin steril geltende granitische Schmelze des Kappadokischen Vulkanischen Komplexes scheint doch erzführend zu sein, wenn auch sein ökonomisches Ausmaß noch nicht abzuschätzen ist. Neben den bisher viel diskutierten Kestel wird auch in Hisarçık bei Kayseri Zinn nachgewiesen. Über die Größe des Vorkommens und das Ausmaß des frühen Bergbaus und dessen Zeitstellung lässt sich momentan keine Aussage treffen.

Bei den Bergbauspuren handelt es sich um kleine Schächte, Such- und Abbaustrecken und durch die Erosion verschüttete Stollenmundlöcher. Einige Kriechstrecken enden in einem größeren Abraum. Die stumpfen Abbauspuren deuten darauf hin, dass hier Steinwerkzeuge im Einsatz waren. Damit kann eine prähistorische Zeitstellung als wahrscheinlich gehalten werden.

Keywords: Tin | ancient mining | Kayseri | Anatolia

Keywords: Zinn | Alter Bergbau | Kayseri | Anatolien

YALÇIN 2016

Ünsal Yalçın, *Zinn für die Königin, Ein Barrenfragment aus Alacahöyük und seine Deutung*. In: GABRIELE KÖRLIN, MICHAEL PRANGE, THOMAS STÖLLNER & ÜNSAL YALÇIN (Hrsg.), *From Bright Ores to Shiny Metals, Festschrift for Andreas Hauptmann on the Occasion of 40 Years Research in Archaeometallurgy and Archaeometry*. Der Anschnitt, Beiheft 29 (Bochum 2016), 69–74.

An der Probe wurden außerdem die Bleisotope ermittelt und mit den beiden anatolischen Zinnvorkommen in Kayseri-Hisarçık (Yalçın & Özbal 2009) und Niğde-Kestel (zuletzt Yener 2009) verglichen (Abb. 4). Hier wird eine sehr gute Übereinstimmung mit den Zinnerzen aus Kayseri ersichtlich. Obwohl die Lagerstätten nur mit wenigen Analysen belegt sind und hier eher von einem Trend auszugehen ist, kann eine Herkunft des Zinns aus Kayseri für wahrscheinlich gehalten werden. Das Zinnvorkommen bei Kayseri wurde in den Jahren 2001 bis 2003 von Mitarbeitern der staatlichen Anstalt für Geologie und Erzexploration der Türkei (MTA) beobachtet und 2004 vom Autor selbst untersucht; dabei konnten prähistorische Bergbauspuren nachgewiesen werden (Yalçın & Özbal 2009). Weiterführende Geländearbeiten werden derzeit fortgeführt (Yener et al. 2015).

Bei dem hier kurz besprochenen Fund handelt es sich um das bisher früheste, aus einem Grabkontext stammende Zinn im gesamten Vorderen Orient. Bekanntlich sind Zinnfunde (Barren oder Objekte) sehr selten in der Archäologie. Abgesehen von einem tordierten Armring von Thermi, dessen Fundkontext und Datierung nicht sicher sind, und von dem bisher der analytische Nachweis fehlt, stammen die ersten gut identifizierten Zinnbarren aus den beiden spätbronzezeitlichen

Schiffwracks von Uluburun sowie Cap Gelidonya (Bass 2005). Auch bei unserem Fund handelt es sich wahrscheinlich um den Rest eines Zinnbarrens, der damals sehr wertvoll war und deshalb der bestatteten Persönlichkeit ins Grab gelegt wurde.

Neolithikum

ZEDER 2000

Melinda A. Zeder & Brian Hesse, *The Initial Domestication of Goats (Capra hircus) in the Zagros Mountains 10,000 Years Ago*. [science](#) **287** (2000), 2254–2257.

Initial goat domestication is documented in the highlands of western Iran at 10,000 calibrated calendar years ago. Metrical analyses of patterns of sexual dimorphism in modern wild goat skeletons (*Capra hircus aegagrus*) allow sexspecific age curves to be computed for archaeofaunal assemblages. A distinct shift to selective harvesting of subadult males marks initial human management and the transition from hunting to herding of the species. Direct accelerator mass spectrometry radiocarbon dates on skeletal elements provide a tight temporal context for the transition.