

## References

### Aktuell

PIQUÉ 2015

Raquel Piqué et al., *Characterizing prehistoric archery, Technical and functional analyses of the Neolithic bows from La Draga (NE Iberian Peninsula)*. [Journal of Archaeological Science](#) **55** (2015), 166–173.

Raquel Piqué, Antoni Palomo, Xavier Terradas, Josep Tarrús, Ramon Buxó, Àngel Bosch, Júlia Chinchilla, Igor Bodganovic, Oriol López & Maria Saña

The discovery in 2012 of a complete yew bow (*Taxus baccata*) in the lakeside Neolithic site of La Draga, together with two more fragmented bows from previous field seasons, are the oldest evidence of archery among farming communities in Europe. This group of bows has allowed different aspects of prehistoric archery to be considered. Firstly with regard to the manufacturing processes of these weapons, which show great uniformity in terms of the raw material used, but some variety in shapes and sizes. Secondly about the socioeconomic significance of weapons in societies which no longer based their economy on hunting and gathering.

Keywords: Prehistoric archery | Neolithic | La Draga | Bow function

### Altpaläolithikum

SALA 2015

Nohemi Sala, Juan Luis Arsuaga, Ignacio Martínez & Ana Gracia-Téllez, *Breakage patterns in Sima de los Huesos (Atapuerca, Spain) hominin sample*. [Journal of Archaeological Science](#) **55** (2015), 113–121.

JAS055-0113-Supplement.pdf

Fracture pattern analysis implement the taphonomic information obtained and it help understanding the largest accumulation of human remains from the Middle Pleistocene known, the Sima de los Huesos (SH) sample. The SH hominin long bones exhibit a fracture pattern characterized especially by the dominance of transverse fractures of the long axis, complete circumferences and fracture edges with right angles and jagged surfaces. These properties are expected for post-depositional fractures and are compatible with collective burial assemblages. The very small proportion of fractures typical of biostratinomic stage could be due to a blunt force trauma produced by a free-fall down the vertical 13 m shaft that constitutes the access to the SH chamber.

Keywords: Taphonomy | Bone breakage | Middle Pleistocene

### Amerika

INOMATA 2015

Takeshi Inomata et al., *Development of sedentary communities in the Maya lowlands, Coexisting mobile groups and public ceremonies at Ceibal, Guatemala*. [PNAS](#) **112** (2015), 4268–4273.

Takeshi Inomata, Jessica MacLellan, Daniela Triadan, Jessica Munson, Melissa Burham, Kazuo Aoyama, Hiroo Nasu, Flory Pinzón & Hitoshi Yonenobu

Our archaeological investigations at Ceibal, a lowland Maya site located in the Pasión region, documented that a formal ceremonial complex was built around 950 B.C. at the onset of the Middle Preclassic period, when ceramics began to be used in the Maya lowlands. Our refined chronology allowed us to trace the subsequent social changes in a resolution that had not been possible before. Many residents of Ceibal appear to have remained relatively mobile during the following centuries, living in ephemeral post-in-ground structures and frequently changing their residential localities. In other parts of the Pasión region, there may have existed more mobile populations who maintained the traditional lifestyle of the preceramic period. Although the emerging elite of Ceibal began to live in a substantial residential complex by 700 B.C., advanced sedentism with durable residences rebuilt in the same locations and burials placed under house floors was not adopted in most residential areas until 500 B.C., and did not become common until 300 B.C. or the Late Preclassic period. During the Middle Preclassic period, substantial formal ceremonial complexes appear to have been built only at a small number of important communities in the Maya lowlands, and groups with different levels of sedentism probably gathered for their constructions and for public rituals held in them. These collaborative activities likely played a central role in socially integrating diverse groups with different lifestyles and, eventually, in developing fully established sedentary communities.

**Keywords:** Mesoamerican archaeology | sedentism | Maya | public ceremony | subsistence

## WATERS 2015

Michael R. Waters, Thomas W. Stafford Jr., Brian Kooyman & L. V. Hills, *Late Pleistocene horse and camel hunting at the southern margin of the ice-free corridor, Reassessing the age of Wally's Beach, Canada*. [PNAS 112 \(2015\), 4263–4267](#).

The only certain evidence for prehistoric human hunting of horse and camel in North America occurs at the Wally's Beach site, Canada. Here, the butchered remains of seven horses and one camel are associated with 29 nondiagnostic lithic artifacts. Twenty-seven new radiocarbon ages on the bones of these animals revise the age of these kill and butchering localities to 13,300 calibrated y B.P. The tight chronological clustering of the eight kill localities at Wally's Beach indicates these animals were killed over a short period. Human hunting of horse and camel in Canada, coupled with mammoth, mastodon, sloth, and gomphothere hunting documented at other sites from 14,800–12,700 calibrated y B.P., show that 6 of the 36 genera of megafauna that went extinct by approximately 12,700 calibrated y B.P. were hunted by humans. This study shows the importance of accurate geochronology, without which significant discoveries will go unrecognized and the empirical data used to build models explaining the peopling of the Americas and Pleistocene extinctions will be in error.

**Keywords:** Pre-Clovis | Clovis | Pleistocene | megafauna | extinction

## Jungpaläolithikum

### SALOMON 2015

Hélène Salomon, Colette Vignaud, Sophia Lahlil & Nicolas Menguy, *Solutrean and Magdalenian ferruginous rocks heat-treatment, Acci-*

*dental and/or deliberate action?* [Journal of Archaeological Science](#) **55** (2015), 100–112.

Heating of prehistoric coloring materials can induce radical changes in color indicative of structural matter transformation. For instance, the structure of the yellow iron oxide-rich mineral, goethite, changes into the red iron oxide-rich mineral, hematite, when it is heated to around 250–300 °C. For a long time, heating has been thought to be the reason for the high frequencies of red rocks used in camp sites and the red pigments in rock art paintings. However, records of heat-treatment of coloring materials are usually not well documented; the contextual information is not clear enough to confirm intentional heating. Two Solutrean camp sites (the flint workshop Les Maïreaux and the hunting site Combe Saunière I) and one middle Magdalenian cave with rock art (Grotte Blanchard, La Garenne) allow us to study the heating process of ferruginous rocks. All three sites, which have been excavated relatively recently, have well-defined archaeological records and strong associations between the ferruginous rocks and other artifacts. With the use of X-ray diffraction and electron m-diffraction for identifying structural modification and SEM-FEG and TEM-FEG for detecting dehydration nano-pores, we have strong evidence for intentional heat-treatment of yellow goethite-rich materials in two archaeological contexts and one site for unintentional heating, where rocks were only partially transformed. Intentional heating to obtain red hematite from primary goethite would have required ingenious methods of temperature control in fireplace settings and purpose-built ground ovens.

**Keywords:** Goethite | Hematite | Heat-treatment | Paleolithic | Solutrean | Magdalenian | SEM-FEG | TEM-FEG | XRD | Combe Saunière | Les Maïreaux | Blanchard | La Garenne

## Kultur

JIANG 2015

Jing Jiang, Chuansheng Chen, Bohan Dai, Guang Shi, Guosheng Ding, Li Liu & Chunming Lu, *Leader emergence through interpersonal neural synchronization*. [PNAS](#) **112** (2015), 4274–4279.

The neural mechanism of leader emergence is not well understood. This study investigated (i) whether interpersonal neural synchronization (INS) plays an important role in leader emergence, and (ii) whether INS and leader emergence are associated with the frequency or the quality of communications. Eleven three-member groups were asked to perform a leaderless group discussion (LGD) task, and their brain activities were recorded via functional near infrared spectroscopy (fNIRS)-based hyperscanning. Video recordings of the discussions were coded for leadership and communication. Results showed that the INS for the leader–follower (LF) pairs was higher than that for the follower–follower (FF) pairs in the left temporo-parietal junction (TPJ), an area important for social mentalizing. Although communication frequency was higher for the LF pairs than for the FF pairs, the frequency of leader-initiated and follower-initiated communication did not differ significantly. Moreover, INS for the LF pairs was significantly higher during leader-initiated communication than during follower-initiated communications. In addition, INS for the LF pairs during leader-initiated communication was significantly correlated with the leaders' communication skills and competence, but not their communication frequency. Finally, leadership could be successfully predicted based on INS as well as communication frequency early during the LGD (before half a minute into the task). In sum, this study found that leader emergence was characterized by high-level neural synchronization between the leader and followers

and that the quality, rather than the frequency, of communications was associated with synchronization. These results suggest that leaders emerge because they are able to say the right things at the right time.

Keywords: leader emergence | neural synchronization | babble hypothesis | quality of communication | communication skill

## Methoden

### CERRILLO-CUENCA 2015

Enrique Cerrillo-Cuenca & Marcela Sepúlveda, *An assessment of methods for the digital enhancement of rock paintings, The rock art from the precordillera of Arica (Chile) as a case study.* [Journal of Archaeological Science](#) **55** (2015), 197–208.

The digital tracing of rock art is becoming a standard for archaeologists working in this field of research. The lack of specific software for this task has resulted in archaeologists either using solutions that are not statistically robust enough or working with overly generic fields of image analysis. This paper will assess the application of three techniques for digital tracing: Principal Components Analysis, K-means, and Decorrelation Stretch. In addition to these techniques of image analysis, this paper will also explore three selective techniques that classify or enhance pigmentation. These analyses have been implemented in a software package called PyDRA (developed by one of the authors, ECC). This software makes use of several scientific libraries for the digital analysis of an image.

As a case study, we chose three rock art sites located between 3100 and 3500 m above sea level in the precordillera of Arica, the northern region of Chile. All of the paintings are located inside rock shelters that are easily accessible; however, we lack a systematic recording for analysing these sites. Pampa El Muerto 14 and Mullipungo 1 were recorded through direct tracings between 1980 and 1990. The Lupica 1 site was identified only in 2013 and has not been recorded until now. Due to the advancement of technology in the years since the 1980s, we have been able to compare the proficiency of different digital and statistical techniques. Our study uses the most adequate parameters and enables us to trace the paintings digitally without actually handling the surface of the rock.

Keywords: Rock art paintings | Digital methods | Statistics | Principal components analysis | Decorrelation of images

### HUTCHINGS 2015

W. Karl Hutchings, *Finding the Paleoindian spearthrower, Quantitative evidence for mechanically-assisted propulsion of lithic armatures during the North American Paleoindian Period.* [Journal of Archaeological Science](#) **55** (2015), 34–41.

Archaeologists have long assumed that fluted points were used by North American Paleoindians as spearthrower dart armatures despite a lack of empirical evidence of the spearthrower from the Paleoindian Period. Employing non-subjective, quantitative data derived from velocity-dependent microfracture features observed on damaged fluted and un-fluted Paleoindian lithic points, this research presents empirical evidence for the existence of the Paleoindian spearthrower. In addition, the research serves as proof-of-concept for a novel quantitative method of lithic analysis that has far-reaching potential to contribute significantly to our understanding of the human past.

Keywords: Lithic analysis | Paleoindian | Fracture mechanics | Fracture velocity | Loading rate | Spearthrower | Quantitative method

## Story or Book

BEDFORD 2015

Jacey Bedford, *Mort's Laws, Ten commandments for a New Dawn*. [nature 520 \(2015\), 126](#).

Had they won? Mort hadn't a clue, but they'd survived in scattered groups. Was it enough? It had to be. They could rebuild communities, relearn skills.

But these kids needed some basic rules to build on. If only he could remember the Ten Commandments. He dredged dim memory ...

CRESSEY 2015

Daniel Cressey, *The Invaders*. [nature 520 \(2015\), 31](#).

*The Invaders: How Humans and Their Dogs Drove Neanderthals to Extinction*. Pat Shipman. Belknap press (2015)

Are humans the ultimate invasive species? So contends anthropologist Pat Shipman — and Neanderthals, she opines, were among our first victims. The relationship between *Homo sapiens* and *Homo neanderthalensis* is laid out cleanly, along with genetic and other evidence. Shipman posits provocatively that the deciding factor in the triumph of our ancestors was the domestication of wolves. Perhaps more troubling is the concept of early humans as invaders, rather than just another species finding its way.