ABSTRACTS

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Universitat Rovira i Virgili de Tarragona, URV
Centro Nacional de Investigación sobre la Evolución Humana, CENIEH
Silicious rock extraction and prehistoric lithic economies

(Organisers: Jacek Lech, Alan Saville, Xavier Terradas, Andreas Zimmermann)
The UISPP Commission on Flint Mining in Pre-and-Protohistoric Times

Tuesday 2nd (9:00 to 13:30 15:00 to 19:30)
C15-C16 Meeting Room
Introduction by Jacek Lech and Xavier Terradas
and anatomical element type. Our experimental assemblage we compared to archaeological burnt rabbit bone stratigraphically associated with six combustion structures from Middle Palaeolithic Unit X of El Salt (Alcoi, Alicante).

We observed that rabbit bones buried at the same depth had a similar response to combustion and that their transformation was determined by their nature (fresh or dry). Fresh bone is more affected than dry bone. We also observed the occurrence of more than one color in a single bone, a feature previously interpreted as consequence of burning bone with meat attached to it. None of the buried bones calcined, while all of those in direct contact with flames were. Finally, we observed that different combustion time caused different proportion of modification in the color and structure of the bones. Short duration fire (2 h.) showed very little modification, while long duration fires (8 h.) modified practically all bones.

This experimental allows us to say that buried unburnt bone can be thermally altered by fire made above it. Thus, not all of the burnt bone in an archaeological assemblage is unquestionably anthropogenic or associated to anthropogenic combustion activity. For this reason, studies investigating the relationship between fire and bone in Prehistory, should be accompanied by taphonomic analyses (marks from different agents) and spatial analyses (3D positions of bone element in relation to hearths). This kind of observations are fundamental towards accurate excavation and interpretation of faunal assemblages. From an interdisciplinary perspective, this type of work contributes to the dissection of archaeological palimpsests, in order to identify specific human occupations approach historical explanations our archaeological sites.

The approach utilized is based on the following: a) rigorous measurements of geographic positions (latitude, longitude coordinates) of the archaeological excavations; b) digital photographs of the artifacts, displaying only the contour; c) assignment of chronological values to each artifact; d) storage of the information in a database. For a user in the proximity of the LOIs, the application displays his position and the distance to the LOIs on a map.

By selecting an archaeological location, the application displays the images of each artifact, superimposed in an axonometric vertical and in chronological order, from the oldest to the newest layer of dwelling.

The application is developed with Augmented Reality and HTML5 as IT technologies and can be accessed from smartphones and Tablet PC with Android or iOS scanning a QR barcode.

We consider that the proposed application will prove useful in helping archaeologists, researchers and other interested users, discover various historical sites, as well as access and visualize the archaeological information in an intuitive and integral manner. The Augmented Reality displays the virtual information superimposed on the real view.

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**POSTER**

**7. VIRTUAL PALIMPSESTS: THE USE OF MOBILE DEVICES TO VISUALISE THE ARCHAEOLOGICAL RECORD.**

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To help archaeologists and the public more easily visualize the stratigraphy of archaeological sites, we propose the use of IT and mobile devices to achieve a palimpsest dissection. Specifically, we developed a web application for mobile devices that identifies locations of interest (LOIs) on a map and allows the visualization of the historical information, superimposed over the live image of the site and in chronological order; this, in turn, makes explicit the archaeological layers.

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**POSTER**

**8. IN-SITU OR REWORKED? MICROMORPHOLOGICAL EVIDENCE FOR MIXING PROCESSES IN SHELTER SEQUENCES OF THE IBERIAN PENINSULA AND NORTHERN MOROCCO**

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The formation of palimpsests involves phases of strongly reduced sediment accumulation, partial sediment erosion or sediment mixing by bioturbation, cryoturbation, peloturbation or processes of mass
movement along a slope. Humans may also cause mixing by differential trampling, raking out of fire residues or dung and levelling of dwelling floors. Generally, mixing processes cause problems in age determination of archaeological sequences resulting in age inversion or unexpectedly young ages. Micromorphology provides an important tool to identify mixing processes and clarify site formation in order to set up more reliable (chrono-) stratigraphic frameworks of shelter deposits. In addition, the first step to identify and disentangle Palimpsests is to evaluate mixing processes.

In the framework of the CRC 806 „Our way to Europe“, we investigated several Middle to Upper Palaeolithic rock shelter sequences. We found a set of micromorphological features which indicate in-situ archaeological levels while others give strong evidence for reworking or mixing. In-situ preserved archaeological layers often show subhorizontal orientation of elongated rock fragments, an increased degree of compaction, remnants of surface seals, signs of trampling and internal layering. Reworked deposits may show rolled aggregates and concretions, a low degree of compaction and lack of surface features. Internal layering is lacking. The poster will discuss these feature sets considering case studies in cave and rock shelter sequences in Spain (Las Palomas de Teba, Ardales, Arbeda) and Northern Morocco (Ifri Oudadane, Ifri N’Ammar). Overall, it was found that micromorphology considerably improved our understanding on processes of reworking. Micro features indicating reworking should be taken as evidence for the presence of a palimpsest.

9. FINDING SINGLE-PERIOD SITES TO STUDY: AVOIDING PALIMPSEST SITES IN THE RAGANELLO BASIN.

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A ‘palimpsest’ is a Medieval manuscript on vellum that has been erased and over-written; archaeologists use this term as a metaphor to describe archaeological sites as a composite of features and remains from several periods - later ones overlapping with and often erasing earlier ones. This is rightly presented as a problem: untangling complex chronostratigraphies and dealing with increasingly ‘gappy’ data as one goes back further in time is a work garnering diminishing returns. But what if the Medieval scribe had reams of paper instead of a limited supply of vellum? In this paper the author, who has extensive experience in survey projects in central and southern Italy, will argue that many problems associated with the excavation of palimpsest sites can be avoided by a two-step approach in which the selection of the site to be excavated follows on a wider (microregional) geoarchaeological survey. This approach is illustrated by examples from the author’s recent ‘Rural Life in Protohistoric Italy’ project (2010-2015), in which single-phase and multiphase protohistoric site classes could be defined on the basis of the composition of surveyed assemblages and topographic characteristics of the site. Representative examples from these classes have been further investigated to define what a ‘typical’ single-period rural protohistoric site looks like; this information can then be used to reassess nearby excavated examples of mutliperiod palimpsest sites. It will be argued that this research strategy, though initially more laborious, will resolve may interpretation problems that continue to plague excavators of palimpsest sites.

10. ASSESSING SYNCHRONIES IN NEANDERTHAL OCCUPATIONS FROM ARCHAEOMAGNETIC ANALYSES. A CASE STUDY OF MIDDLE PALAEOLITHIC COMBUSTION STRUCTURES FROM LEVEL O AT ABRIC ROMANÍ ROCK-SHELTER (CAPELLADES, SPAIN).

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The Abric Romaní (Capellades, Barcelona, NE of Spain) is a wide rock-shelter with a 20 m deep stratigraphic sequence dated by more than forty U-Series and 14C (AMS) data between 39 and 70 ky BP (Bischoff et al., 1988; 1994). This is a travertine deposit where thousands of lithic artefacts, bones, archaeobotanical remains, and even...