FROM HUNTER-GATHERERS TO HERDERS AT ZEMUNICA: CHANGING CAVE ENVIRONMENT AND SITE USE

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INTRODUCTION
Zemunica Cave is situated in the karst area, 35 km from Split, Croatia. The rescue excavations of the cave (on the route Đugopolje-Bisko of the Adriatic motorway) directed by I. Karaivan (University of Zagreb), were carried out in 2005. The cave is a 16 x 18 m wide single-chamber, with a maximum height of about 4 m, and there is a natural opening in the middle of its ceiling. The entrance to the cave is situated at the base of a cliff facing northwest. The cave sequence ranges from the Late Upper Palaeolithic to the Early Bronze Age. Geochronological studies based on sedimentology and soil micromorphology were carried out on sediments from Trench 2 and 3, indicating strong post depositional processes, different use of the cave by humans was also confirmed.

RESULTS
Early Bronze Age to Neolithic layers
Almost all of the post-Mesolithic layers are coprogenic and include herbivore dung (sheep/goat possibly cattle). In trench 3a the first indicator of stabilising is an in situ burnt stable layer (SU 64-65-51). It includes a group of grey ash accumulations with burnt dropping and phytoliths, overlying a dark brown layer of burnt droppings rich in fine organic matter, and a layered layer with frequent articulated phytoliths which indicate the presence of a litter. This unit resembles the Neolithic burnt stable layer 116 in trench 3b. The other Neolithic (SU 53, 115b, 114, 45) to Bronze Age (SU 43, 43) layers are brown to greyish-brown and homogeneous, with spherulites and phytoliths dispersed in the groundmass. An accumulation of incompletely burnt or unburnt herbivore dung is a possible explanation for the difference between the "classical" and these layers. The top of the sequence of trench 3 includes yellowish-silty clay, at microscopic scale it is made up of an almost pure sediment rich in white mica, very fine quartz, and calcified phytoliths - an intentional accumulation of selected material, a possible prepared surface/floor.

Paleolithic layers
In trench 3a, the top surface of the lowest group of reddish units is clearly an erosional feature - a strong gap - that dies southwards, putting into contact two different sedimentary environments. The erosional processes removed the fine component of the sediment, while the large blocks were left in place, with their bottom still included in the red sediment and the top protruding into the overlying levels. At microscopic scale, two levels ice-beded were observed, indicating deep seasonal frost. In trench 3, mostly in 3b, the sequence directly overlying the gap is made up of levels that plunge into the erosional shape and tend to fill up its depressions; SU 139 is a brownish-silty loam including common charcoal, organic matter and bone, it is a domestic waste deposit. Reddish pedorelicts deriving from the underlying levels indicate some reworking.

CONCLUSIONS
Geochronological studies indicate strong post depositional processes (reworking and mixing due to erosional processes), and some hiatuses. Different use of the cave by humans was also confirmed. The Lower Palaeolithic levels consist of domestic waste deposits. The Mesolithic levels mostly comprise domestic waste deposits, including ash, bone fragments and more or less crushed land snails. In the area of Trench 3b, the sequence of thick layers dominated by colluviated land snails and terra rossa pedorelicts probably indicates cyclical covering of anthropic snail middens by natural erosional processes. The Neolithic, Copper, and Bronze Age part of the sequence is characterized by continuous evidence of sheep/goat and probably cattle dung accumulations. Articulated bones also occur within the cave sediments, indicating the use of straw litter for these animals.

BIBLIOGRAPHY