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Session: S6-B: Traceology in the 21st Century: Contributions to Archaeological Science and the Human Journey

For oral presentation

Controlled experiments as a mean for understanding butchering processes in the Palaeolithic: experimental use-wear on non-flint tools at Pinilla del Valle (Madrid, Spain).

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Experimentation as a basic scientific approach is present from the very conception of the traceological method and, in Archaeology, it is frequently used for the purpose, among others, of 'replicate past phenomena' (Mathieu (2002: 1). Considering that an experimentation must take into account aspects as clear objectives and starting hypotheses (i.e. Marreiros et al 2020), we present the results of a controlled multifaceted experimental program that has been designed and adapted to the particular features of the archaeological record documented in the Mousterian sites of Pinilla del Valle in the Upper Lozoya Valley, a central mountainous region of the Iberian Peninsula. The Calvero de la Higuera constitutes a unique enclave to understand different occupation models by groups of hominins and carnivores that populated this area during the Upper Pleistocene (Baquedano et al 2012, 2014).

Butchering processes are well documented both by taphonomic (i.e. Huguet et al 2010) and traceological evidences (Márquez et al 2016) in some of the sites. In order to understand the phases and difficulties of this complex activity, 4 bull heads (*Bos primigenius taurus*) were processing by experienced individuals using flakes of similar formats to those located in the archaeological deposits.

Local raw materials as quartz, quartzite and porphyry were collected at a maximum distance from Calvero de la Higuera of 7 km in a straight line. All of them are present in the archaeological sites to a greater or lesser extent; being quartz the predominant one in all of them and the most frequent knapping material in the vicinity (Márquez et al 2013; Abrunhosa et al 2017). In this way, 52 simple flakes of quartz (n=36), quartzite (n=9) and green porphyry (n=7) were used. Simple flakes are the most frequent elements in the deposits (Márquez et al 2013) and in order to control as much as possible the formation of flaking due to use, the items were not retouched.

On the other hand, several quartz, gneiss and green porphyry pebbles were selected to work as hammerstones. All of them present different formats providing the best possible handling to the experimenter according to the task. As anvils, 2 blocks with tabular format were chosen, one made of gneiss and the other of pink porphyry. Both raw materials are also common in the Pinilla del Valle deposits.

The obtained experimental data on use-wear are now presented, yet to be compared in the future with those observed on archaeological tools from the archaeological sites of Pinilla del Valle.

Keywords: Experimental archaeology, Use-wear analysis, Butchering, Non-flint tools, Mousterian, *Homo neanderthalensis*

References

Abrunhosa A, Pereira T, Márquez B, Baquedano E, Arsuaga JL, Pérez-González A (2019) Understanding Neanderthal technological adaptationat Navalmaíllo Rock Shelter (Spain) by measuring lithic raw materials performance variability. *Archaeological and Antrhopological Sciences* 11: 5949–5962. https://doi.org/10.1007/s12520-019-00826-3.

Baquedano E, Márquez B, Pérez-González A et al (2012) Neandertales en el valle del Lozoya: los yacimientos paleolíticos del Calvero de la Higuera (Pinilla del Valle, Madrid). *Mainake* XXXIII: 83–100.

Baquedano E, Márquez B, Laplana C et al (2014) The archaeological sites at Pinilla del Valle: (Madrid, Spain). In: Sala R (ed) *Pleistocene and Holocene hunter-gatherers in Iberia and the Gibraltar strait: the current archaeological record*. Fundación Atapuerca, Burgos, pp 577–584.

Huguet, R., Arsuaga, J. L., Pérez-González, A. et al (2010) Homínidos y hieas en el Calvero de la Higuera (Pinilla del Valle, Madrid) durante el Pleistoceno superior. Resultados preliminares. *Zona Arqueológica* 13: 444-458.

Márquez, B.; Mosquera, M.; Baquedano, E.; Pérez-González, A.; Arsuaga, J. L.; Panera, J.; Espinosa, J. A. y Gómez, J. (2013) Evidence of a Neanderthal made quartz-based technology at Navalmaíllo rockshelter (Pinilla del Valle, Madrid Region, Spain). *Journal of Anthropological Research* 69 (3): 373-395. https://doi.org/10.3998/jar.0521004.0069.306

Márquez B, Baquedano E, Pérez-González A, Arsuaga JL (2016) Microwear analysis of Mousterian quartz tools from the Navalmaíllo Rock Shelter (Pinilla del Valle, Madrid, Spain). Quat Int 424:84–97. https://doi.org/10.1016/j.quaint.2015.08.052.

Marreiros, J., Pereira, T. & Iovita, R. (2020). Controlled experiments in lithic technology and function. *Archaeological and Antrhopological Sciences*, 12: 110. https://doi.org/10.1007/s12520-020-01059-5

Mathieu, J. R. (2002) Introduction. In J. R. Mathieu (Ed) *Experimental Archaeology: Replicating Past Objects, Behaviours and Processes*. BAR Int. Series 1035, Archaeopress, pp. 1-4.