Relationship between precision and size of flake technology in the Middle Paleolithic. An experimental study.

Malavé Bilbao* and Joseba Rios-Garaizar*1

1Centro Nacional para la Investigación sobre la Evolución Humana (CENIEH) – Paseo Sierra de Atapuerca, 3, 09002 Burgos, Espagne

Résumé

Microlith production is usually related to Upper Paleolithic and Mesolithic technology (Kuhn, 2002), however, small tools have been documented since the Lower Paleolithic (Burdzkiewicz and Ronen, 2003; Parush et al., 2015). Recent studies have emphasized the relevance of microlithic productions in Middle Paleolithic, so this seems to be an important aspect to understand Neanderthal adaptations, technological evolution and economic organization (Kuhn, 1995; Kuhn y Elston, 2002; Dibble y McPherron, 2006; Rios-Garaizar, 2010; Villaverde et al., 2012; Lemorini et al., 2015; Rios-Garaizar et al., 2015; Patiño et al., 2017). The production of small flakes in Middle Paleolithic has been interpreted as a simple technological solution to cope with difficulties to access good quality raw material (Kuhn, 1995). However, new investigations suggest that the emergence of these types of tools could be part of planned behavior by Neanderthals, and that the objective was to produce precision tools (Dibble and McPherron, 2006; Rios-Garaizar, 2010; Villaverde et al, 2012; Lemorini et al., 2015; Rios-Garaizar, 2015).

The link between size and precision has been invoked several times but almost no empirical evidence was available. The objective of this investigation is to evaluate, from an experimental perspective, if there is a link between precision and size of flakes. The results of this experimentation will allow us to corroborate or falsify the existence of such link, and will give us new empirical arguments to discuss the reasons of microlith production in Middle Paleolithic.

A group of 50 participants took part in the experimental test, which consisted in measuring the precision of small (> 3 cm) and big (> 5 cm) Levallois flakes when used to follow predefined cutting patterns. The error was precisely estimated calculating the area of error (area originated between the predefined pattern and the actual tracing), and the results were statistically analyzed. Initial results show that there are not significant differences in precision between small and big Levallois flakes, so the presence of a relevant assemblage of small tools wouldn’t be explained only by the need of precision tools. Following this argument, there must be multiple causes that explain the resource of small flake production (raw material availability, site function, settlement patterns, intensity or duration of occupations, etc.), which in any case allowed the realization of precision task with less expenditure of raw material.

*Intervenant

sciencesconf.org:uispp2018:182494
References:

BURDUKIEWICZ, J.M., RONEN, A. 2003. Research problems of the Lower and Mid-
dle Palaeolithic small tool assemblages. En: Lower Palaeolithic Small Tools in Europe and the Leva-
nt, J.M. Burdukiewicz, A. Ronen (Eds.):235-238. BAR International.


versity Press.

KUHN, S. 2002. Pioneers of Microlithization: The "Proto-Aurignacian" of Southern Eu-

KUHN, S., ELSTON, R. 2002. Thinking Small Globally. En: Thinking Small: Global Per-
spectives on Microlithization, R. Elston, S. Kuhn (Eds.): 1-7. Arlington: American Anthro-
pological Association.


RIOS-GARAIZAR, J. 2015. The visuo-spatial capacities of Neanderthals seen through ma-

RIOS-GARAIZAR, J., EIXEA, A., VILLAVERDE, V. 2015. Ramification of lithic pro-
duction and the search of small tools in Iberian Peninsula Middle Paleolithic. Quaternary International, 361: 188-199.


Mots-Clés: Neanderthal, precision, microlith, Middle Paleolithic