
Technical innovations and socio-economic behaviours in Upper Solutrean. New data on heat treatment in southwestern France

Julie Bachellerie*^{†1}, Caroline Renard¹, and Patrick Schmidt^{2,3}

¹Travaux et recherches archéologiques sur les cultures, les espaces et les sociétés (TRACES) – CNRS : UMR5608, Université de Toulouse Jean-Jaurès – Maison De La Recherche, 5 Allée Antonio Machado, 31058 TOULOUSE Cedex 9, France

²Department of Early Prehistory and Quaternary Ecology – Eberhard Karls University of Tübingen, Tübingen, Allemagne

³Department of Geosciences, Applied Mineralogy – Eberhard Karls University of Tübingen, Tübingen, Allemagne

Résumé

The heat treatment of siliceous rocks is an intentional process that alters the mechanical properties of the material. It is now recognized that this process improves at least the knapping ability of siliceous rocks and the sharpness of artefacts. The use of this process during the Solutrean techno-complex is attested from the 1960-70s with the discovery of fragments of heat-treated laurel leaves in the collections of Laugerie Haute and Placard (Bordes 1969, Collins 1974, Inizan et al. 1976). Evidences of intentional heat treatment were later detected in the Solutrean of Iberian facies (Tiffagom 1998,2006).

The Upper Solutrean (23.5-23 ky cal BP) is also characterized by the systematization of another technical process: the pressure retouch technique. These two technological innovations appeared in parallel with the development of a very specific hunting implements. In this context, a heat treatment phase is a significant process. It takes place in otherwise complex operating procedures which are already heavily invested economically and technically, and introduces an additional degree of risk. The management of heat treatment thus oscillates between a benefit of the mechanical properties of the material and a high risk of failure in case of poor process control.

At this time our knowledge of heat treatment remains scattered concerning the heating environment and its place in the solutrean technical system. We want to restart the research work on this issue in order to improve our understanding of the socio-economic organisation upper solutrean groups. It's also necessary to question the sociocultural conditions that allowed the adoption and generalization of these innovations. The abandonment of these technologies in Badegoulian is associated with a probable economic and social restructuring of the nomadic groups.

My previous work has produced initial results and food for thought on lithics systems and heat treatment, as well as on the organisation and social composition of Solutrean groups. My thesis combines techno-economic analyses of lithic industries, macroscopic observations

*Intervenant

[†]Auteur correspondant: julie.bachellerie@etu.univ-tlse2.fr

of heat treatment, experiments and physico-chemical analyses. One of the objectives is therefore to carry out a more global work on the heat treatment of siliceous rocks in south-western France at the dawn of the Last Glacial Maximum. We intend to present some of the data and results collected so far.

Mots-Clés: Upper Solutrean, Heat Treatment, Silica rocks, Upper Paleolithic – Southwestern Europe, Lithic points, Technical innovations