

Abstract

In this book, the complexity of late Neanderthals' technical behaviour is investigated through the analysis of the backed artefacts selected from three of the most important sites framed in the final phase of European Middle Paleolithic (beginning of Marine Isotopic Stage 3 – around 50 thousand years ago):

- The G-Complex of Sesselfelsgrötte (Lower Bavaria), characterized by the coexistence of the Central European Micoquian (*Keilmessergruppe*) and the Mousterian cultural traditions; the study is applied on a selection of bifacial (*keilmesser*) and unifacial (scrapers and unretouched flakes) backed tools.
- The A9 and A10-A11 units of Grotta di Fumane (Venetian Prealps), Mousterian assemblages characterized by the alternation between the Levallois and Discoid techno-complexes; the study is applied on a selection of the respective backed artefacts: different types of *débordant* flakes, naturally backed flakes and pseudo-Levallois points, as well as tools with retouched back.
- Layer 7 of La Rochette shelter (Dordogne), one of the best examples of Mousterian of Acheulean tradition, type B (MTA-B), where retouched backed knives are abundant, as well as natural backed knives.

The choice of focusing the analysis on this broad category of artefacts is dictated by the idea that they can summarize the techno-cultural differences between the respective assemblages. In fact, they represent technological or cultural-related tools characterized by different shapes and manufacturing procedures, despite they theoretically respond to the same objective and functional scheme: a wide-ranging knife with an active part designed to cut/transform the material, and an opposite passive part necessary for manipulation. Their different manufacturing processes and own features are here compared to investigate the technological and behavioural variability of late Neanderthals, and trying to answer the question: why roughly contemporary Neanderthal human groups manufactured their knives in such different ways?

The analytical approaches used here mainly refer to the techno-functional method, capable of providing data on the tools' manufacturing and functional schemes. The techno-functional method is applied both directly to the lithic artefacts and to the virtual models that have been obtained with different three-dimensional acquisition techniques. The use of 3D technology allows better interaction and more precise qualitative data, as well as the possibility to process quantitative analysis such as geometric morphometrics. Other approaches have been integrated to investigate particular technical behaviours recognized on the tools: among these, the use-wear analysis, combined with experimental replication and use of similar artefacts, was applied for understanding the functionality and performance of the retouched Discoid backed tools.

Results and discussions are organized around a series of key macro-topics that have been chosen in order to pursue specific objectives:

- Deepening of the relationship between the Micoquian-*Keilmessergruppen* and the Mousterian. It has been possible to raise hypotheses on the techno-functional and ecological value of bifacial backed knives (*keilmesser*), a durable, highly potential and versatile version of unifacial backed tools. They were possibly a techno-functional imitation manufactured within constrained ecological and environmental contexts.
- Investigation of the Discoid/Levallois technological dualism, examined through the resources' exploitation and mobility strategies, productivity rates and effectiveness of first choice backed products. The comparison helped to better define the origin of two different technical choices, adopted in similar contexts based on different functional and potential objectives.
- Analysis of the retouched backed tools in the Middle Palaeolithic and understanding the functionality of the range of technical interventions utilized for this purpose. This topic mainly comes from the Fumane Discoid assemblage, while a comparison with La Rochette backed

knives confirmed the profoundly different nature of the two categories of tools. The study contributed to define a technical innovation conceived by late Neanderthal, whether it responds to the application of mental models with a possible cultural value (MTA-B backed knives), or to purely functional and ergonomic purposes (Discoid retouched backed tools).

The tracing of technological innovations and the recognition of cultural elements and ecological or functional adaptations represent single parts of a complex ensemble that, albeit partial, gives us a glimpse of the variability of Neanderthal's material culture. Particularly in the final phase of their occupation of Europe, the strong environmental pressures of glacial stadia may have affected the demographic shifts generating the well-known techno-cultural fragmentation. Its full comprehension, however, is still far from being unraveled, also in relation to the arrival of anatomically modern humans.

Key-words: Mousterian, Keilmessergruppe, Discoid, Musterian of Acheulean tradition, Lithic technology, Techno-functional, 3D application, Grotta di Fumane, Sesselfelsgrotte, La Rochette