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Blades, bladelets and flakes: A case of variability in tool design at the dawn of the Middle–Upper Palaeolithic transition in Italy

Lames, lamelles et éclats : un cas de variabilité dans la réalisation de l'outillage à l'aube de la transition Paléolithique moyen–supérieur en Italie

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ABSTRACT

Neanderthals left diverse sets of cultural evidence just before the Middle–Upper Palaeolithic transition in Europe. Within this evidence, the production of lithic implements plays a key role in detecting possible affiliations (or lack thereof) with the techno-complexes that occurred during the few millennia before the large-scale spread of the Proto-Aurignacian. This crucial phase has also been recorded in the North of Italy, where around 44–45 ky cal BP, the last Neanderthals were still using the Levallois knapping technique, in common with the technology adopted at several sites in the central Mediterranean region. A similar picture is seen at the Grotta di Fumane, which provides the evidence presented in this paper. The production technology employed produced different levels of variability with respect to the production of blades, sometimes pointed, and the use of recurrent centripetal flaking at the end of the reduction sequence, in addition to bladelet and Discooidal volumetric structures. This variability does not outweigh the dominant tendency towards the use of elongated Levallois blanks and other by-products for shaping into basic retouched tools such as simple or convergent scrapers and points. A break from this apparently well-rooted use of the unipolar Levallois method is recorded in the Uluzzian where, instead, flakes and cores were made using the centripetal modality.

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R É S U M É

Les Néanderthaliens ont laissé diverses séries de preuves de culture, juste avant la transition Paléolithique moyen–Paléolithique supérieur en Europe. Parmi ces preuves, la production d'objets lithiques joue un rôle clé dans la détection d'affiliations possibles (ou d'absence d'affiliation) avec les techno-complexes trouvés durant les quelques millénaires avant l'expansion à grande échelle du Proto-Aurignacien. La phase cruciale a été enregistrée au Nord de l'Italie où, aux alentours de 44–45 ka cal BP, les derniers Néanderthaliens utilisaient encore la technique de débitage Levallois, en même temps que la technique adoptée sur différents sites de la région méditerranéenne centrale, en particulier à la Grotta di Fumane, qui fournit la preuve présentée dans cet article. La technique de production utilisée a pour conséquence différents niveaux de variabilité en ce qui concerne la production de lames quelquefois pointues et l'usage d'un écaillage centripète récurrent à la fin de la séquence de réduction, outre les structures volumétriques Discoïdes et lamellaires. Cette variabilité ne l'emporte pas sur la tendance à l'utilisation d'ébauches de taille Levallois allongées et autres

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sous-produits pour fabriquer des objets retouchés, tels que grattoirs et pointes simples ou convergents. Une interruption de cet usage, apparemment bien rodé, de la méthode unipolaire Levallois est enregistrée dans l'Uluzzien, où des éclats et nucléus ont été confectionnés en utilisant la modalité centripète, à la place de la précédente.

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1. Foreword

Research on human behaviour around the Middle–Upper Palaeolithic transition in Europe involves several different scientific domains, each of which provides, at various levels, its contribution in detecting the bio-cultural distance between Neanderthals and Anatomically Modern Humans (Harrold, 2009; Lalueza-Fox et al., 2011; Van Andel and Davies, 2003). Within these fields, a first-order role in the investigation of cognition, skill, handedness and economic strategies in terms of landscape ecology is performed by the study of lithic tool design and the organization of lithic tool production (Bird and O'Connell, 2006; Kuhn, 1994; Uomini, 2011). Across the interval considered, the examination of lithic techno-complexes has permitted us to discover substantial differences between the final Mousterian period, the transitional complexes and the full affirmation of the Aurignacian period.

As in other European regions, the MP–UP transition was a multi-faceted period in the Italian peninsula, where substantial change occurred across many aspects of human behaviour and material culture (Boscato and Crezzini, 2012; Broglio and Gurioli, 2004; D'Errico et al., 2012; Kuhn and Bietti, 2000; Mussi, 2001; Peresani, 2011; Ronchitelli et al., 2009). This has encouraged dispute, even if not strongly supported by data, over the presumed taxonomic coherence or lack thereof of some techno-complexes (Bietti and Negrino, 2007; Gioia, 1990; Riel-Salvatore, 2009), and over enhancing models of mobility and settlement dynamics (Riel-Salvatore and Barton, 2004). The recent attribution of the Uluzzian techno-complex to the first spread of AMH (Benazzi et al., 2011) seems to indicate an earlier replacement of Neanderthals by AMH (Moroni et al., in press). This, in turn, leads to new implications in the comparison of cognition and behaviour between the two species. Our attention should then be focused on the last behavioural expressions of the autochthonous population. The comparison between such expressions assumes a greater importance in cases where the temporal distance is short.

In North-East Italy, some known sequences (Grotta di Fumane, Riparo Tagliente, Grotta di San Bernardino, Riparo del Broion, Grotta del Rio Secco) might permit this kind of evaluation, but the lack of chronometric data or the scarcity of artefacts could be an obstacle to their eventual value in addressing the issue. One case of a short time horizon occurs at Grotta di Fumane, where the presence of a finely stratified sequence comprising a recently-analysed group of layers, A5, A5+A6, A6 (to be referred to as A5–A6 from here forwards), offers ample evidence of Neanderthal technical expressions, so much so as to become the object of the present study. This cave, on the southern fringe of the

Venetian Pre-Alps, has been systematically excavated since 1988 and owes its importance to the 12 m thick Late Pleistocene stratigraphic sequence (Martini et al., 2001) which includes the MP–UP transition spanning the final Mousterian, the Uluzzian and the Aurignacian periods (Broglio et al., 2005, 2009; Higham et al., 2009; Peresani, 2008; Peresani et al., 2008, 2011).

2. The A5–A6 complex and its cultural content

The stratigraphic complex of the layers A5–A6 covers 58 m² at the cave entrance and has been excavated in many different sectors since 1988 and more extensively from 2006 to 2008. It is sandwiched between the Uluzzian layer A4 above and the sterile layer A7 below. This finely layered sedimentary succession made of frost-shattered breccia, Aeolian silt and sands is markedly different in the density and number of anthropogenic signatures (bones, with signs of anthropic modification, hearths, flint flakes) as a consequence of changes in settlement dynamics. A thin, flat charcoal layer (A5) overlies a loose stony layer with loamy fine fraction (A5+A6). Below, a dark layer (A6) is recognizable over the whole excavated zone, with constant dense indications of anthropogenic activity. Combustion structures are plentiful in A6 and there are a smaller number in A5 and A5+A6 (Peresani et al., 2011). The chronometric refinement offered by the ¹⁴C data puts A5 at 43.6–43.2 ky BP and the boundary with the Uluzzian layer A4 above at 43.6–43.0 ky BP (Higham et al., 2009). Red-deer, ungulate and some carnivore bones all bear signs of cultural modification (Peresani et al., 2011).

The lithic industries yielded groups of flint flaked artefacts, with highest frequency in A6 and lowest in A5, with a total of around 6,000 with a module (length + breadth) ≥ 4 cm. Several flint types were exploited, albeit with varying frequency. At a first glance at their texture, structure, colour and the morphology of the exterior surface, the flints were obtained from the Late Jurassic to Middle Eocene carbonatic formations in the western Lessini Mountains. Maiolica and Scaglia Rossa (Cretaceous) have the highest frequencies, but high frequencies are also shown by the Tertiary carbonatic sandstones, Scaglia Variegata (Cretaceous) and its varieties, while there are lower frequencies from oolitic limestone (Jurassic) and other formations of Tertiary age. These lithic assemblages show the variety of raw materials exploited in this region, where provisioning may have occurred at a range of 5–10 km from the site. Flint is also contained in loose coarse stream or fluvial gravels, slope-waste deposits, and soils: for this reason, they became a major resource to be exploited close to the cave. There was also very occasional exploitation of old patinated artefacts collected as potential cores from elsewhere. Indeed, flaking was

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