Revisiting the Middle to Upper Palaeolithic transition at Gatzarria Cave, France

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Gatzarria Cave is a karstic cave in the Atlantic Pyrenees, France ***(1),*** with deposits spanning the Middle to Upper Palaeolithic transition. We reassess the stratigraphic integrity of the Middle Ensemble deposit and provide the first AMS radiocarbon dates for the most recent Mousterian occupation of the site.

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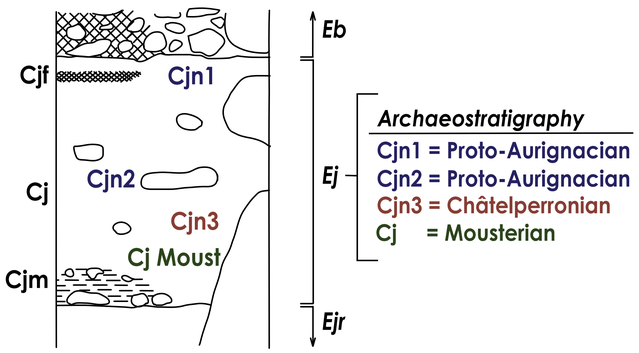
1

Stratigraphy

2 Profile of the Middle Ensemble (Ej)

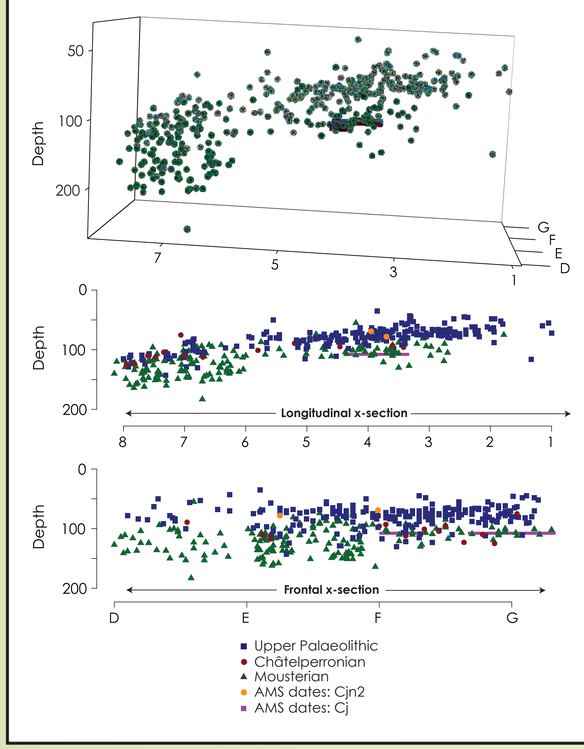


During initial study of faunal remains of level Cj at Gatzarria, we identified several incised ivory fragments in the décapages labeled "Cj", as well as a refit on a mammoth tooth between the Châtelperronian and Mousterian levels, which led us to suspect that the Mousterian assemblage might be mixed with later deposits. Careful reanalysis of the site notebooks revealed that the sediments in the Middle Ensemble (Ej) at Gatzarria ***(2)*** were largely homogeneous and that, in fact, the lithic assemblages and archaeological "levels" were largely created through sorting that took place subsequent to the excavations. To address this problem, we re-identified a subsample of lithic index fossils in Ej and found that the original attributions by G. Laplace were often problematic. However, using our new attributions, it was possible to show that in certain portions of the cave, there is vertical separation of the lithic industries ***(3)***. Consequently, we were able to identify a set of décapages that we believe isolates a sample of predominately Mousterian lithic and faunal remains ***(4)***. No incised ivory fragments, and only one (unmodified) antler fragment, are present in this subsample.

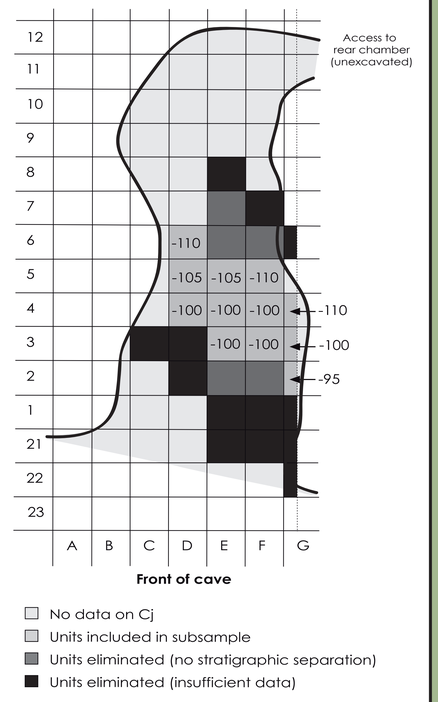
Radiocarbon Dates

Four bone specimens with features characteristic of anthropogenic assemblages, all representing ungulate long bone shafts, were selected for AMS dating from the subsample of Mousterian remains. The provenience of the specimens selected for radiocarbon dating is highlighted in ***(3)***. The specimens yielded a coherent set of dates between **44–47,000 BP ^{14}C uncalibrated *(5,6)***, although one specimen (OxA-25718) had a less than ideal pretreatment collagen yield (0.8%). The dates could not be calibrated as the upper error bound of the calibrated dates falls beyond the 50,000 BP limit of the IntCal09 curve. Nevertheless, the radiocarbon results support the stratigraphic integrity of the subsample of the deposit that we isolated, as well as its attribution to the late Mousterian period. Our dates are substantially older than those obtained by Barshay-Szmidt et al. (2012) for the Proto-Aurignacian deposits. We conclude that there may have been a short hiatus in occupation between the Mousterian and the early Upper Paleolithic occupations and that ***Gatzarria retains great importance for understanding the Middle to Upper Palaeolithic transition in the Pyrenees, provided that future analyses are based on a detailed reanalysis of the stratigraphy.***

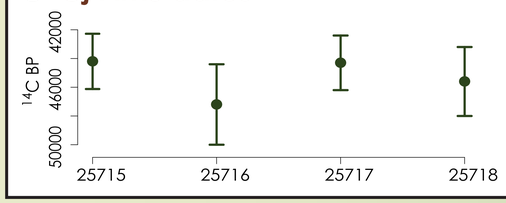
3 Distribution of diagnostic artifacts



4 Cj Mousterian sub-sample



5 Cj AMS dates



6 Cjn2 and Cj AMS dates

Level	Number	Unit	Location	Date	Source
Cjn2	OxA-22553	3E	69.99.95	**33800 ± 550**	*Barshay-Szmidt et al. 2012*
Cjn2	OxA-22554	3E	78.25.70	**36300 ± 700**	*Barshay-Szmidt et al. 2012*
Cj	OxA-25715	3G	105–110	**44200 ± 2000**	*(this study)*
Cj	OxA-25716	3G	105–110	**47200 ± 2800**	*(this study)*
Cj	OxA-25717	4F	105–110	**44300 ± 1900**	*(this study)*
Cj	OxA-25718	4F	105–110	**45600 ± 2400**	*(this study)*

References

Barshay-Szmidt, C. et al. 2012. Radiocarbon (AMS) dating the Classic Aurignacian, Proto-Aurignacian and Vasconian Mousterian at Gatzarria Cave (Pyrénées-Atlantiques, France). Paléo 23:11–38.

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