Linking Blades

A systematic refitting analysis of blade fragments from the Protoaurignacian sequence of Fumane Cave

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Research Aim and Summary

Did post-depositional events have a significant role in the formation of the lithic assemblages at Fumane Cave?

Our results suggest minor post-depositional reworking processes of the sequence and contribute to disentangle the complex stratigraphic relations of an archaeological excavation running for several decades.

Spatial data will ultimately allow us to identify the optimal area of the cave to be sampled for a more robust techno-typological and chrono-cultural study.

Scan and read me!

Materials and Methods

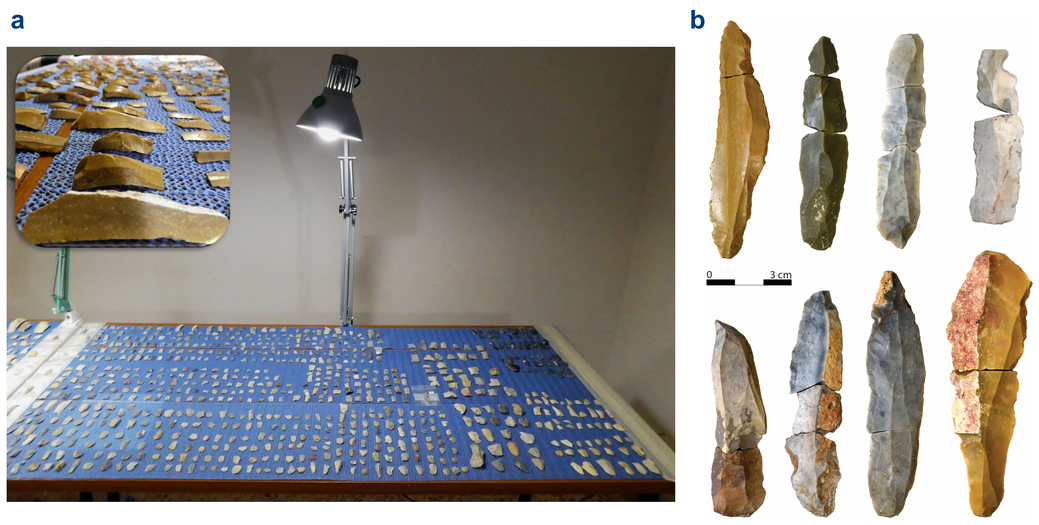
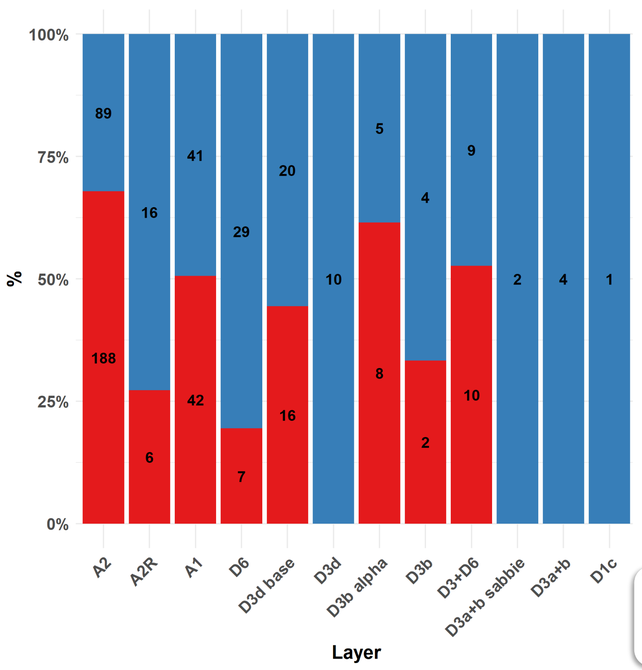


Fig. 1. (a) Example of the break connection activity carried out after sorting blade fragments according to different features such as preservation (i.e., proximal, mesial, and distal), raw material type, size, and other relevant features (e.g., presence and localization of cortex). **(b)** A small sample of successfully connected blades, composed of either two or three fragments.

Results of the Refitting Activity



Layer	Tested	Conn.	Rate
D1e	2	0	0.0
D1d	5	0	0.0
D1c	18	1	5.6
D3a+b	56	4	7.1
D3a+b sabbie	21	2	9.5
D3+D6	138	19	13.8
D3a	2	0	0.0
D3b	63	6	9.5
D3b alpha	70	13	**18.6**
D3d	55	10	**18.2**
D3d base	203	36	17.7
D6	231	36	15.6
A1	701	83	11.8
A2R	163	22	13.5
A2	1526	277	**18.2**
Total	**3254**	**509**	**15.6**

Fig. 2. (left) Frequency of intra- and inter-layer connections sorted according to layer of provenience. Numbers within the bars refer to the sum of fragments within each category. **(right)** Quantification of the tested and connected (Conn.) fragments. Refit rates (Rate) are reported in percentages.

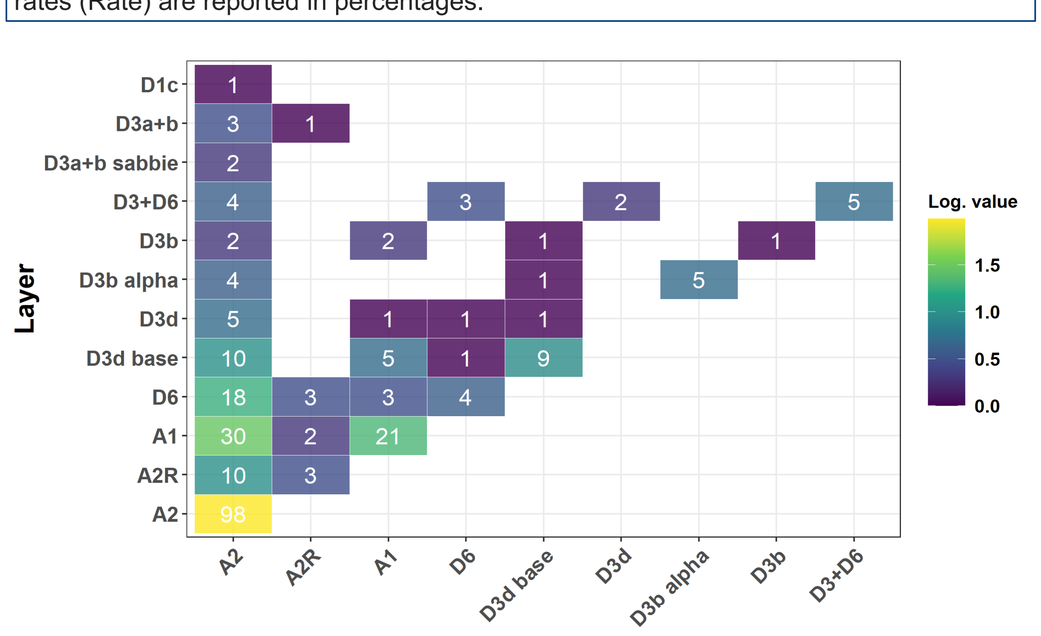


Fig. 3. Distribution matrix of intra- and inter-layer connections across the sequence and heatmap generated by log-transforming the overall number of connections. The figure can be effectively interpreted by starting from the lowermost layer A2 and moving upwards along the y-axis. The overlying layers must be read along the x-axis until reaching the box corresponding to the intra-layer comparison. Then, the reader needs to move along the y-axis.

Spatial Analysis

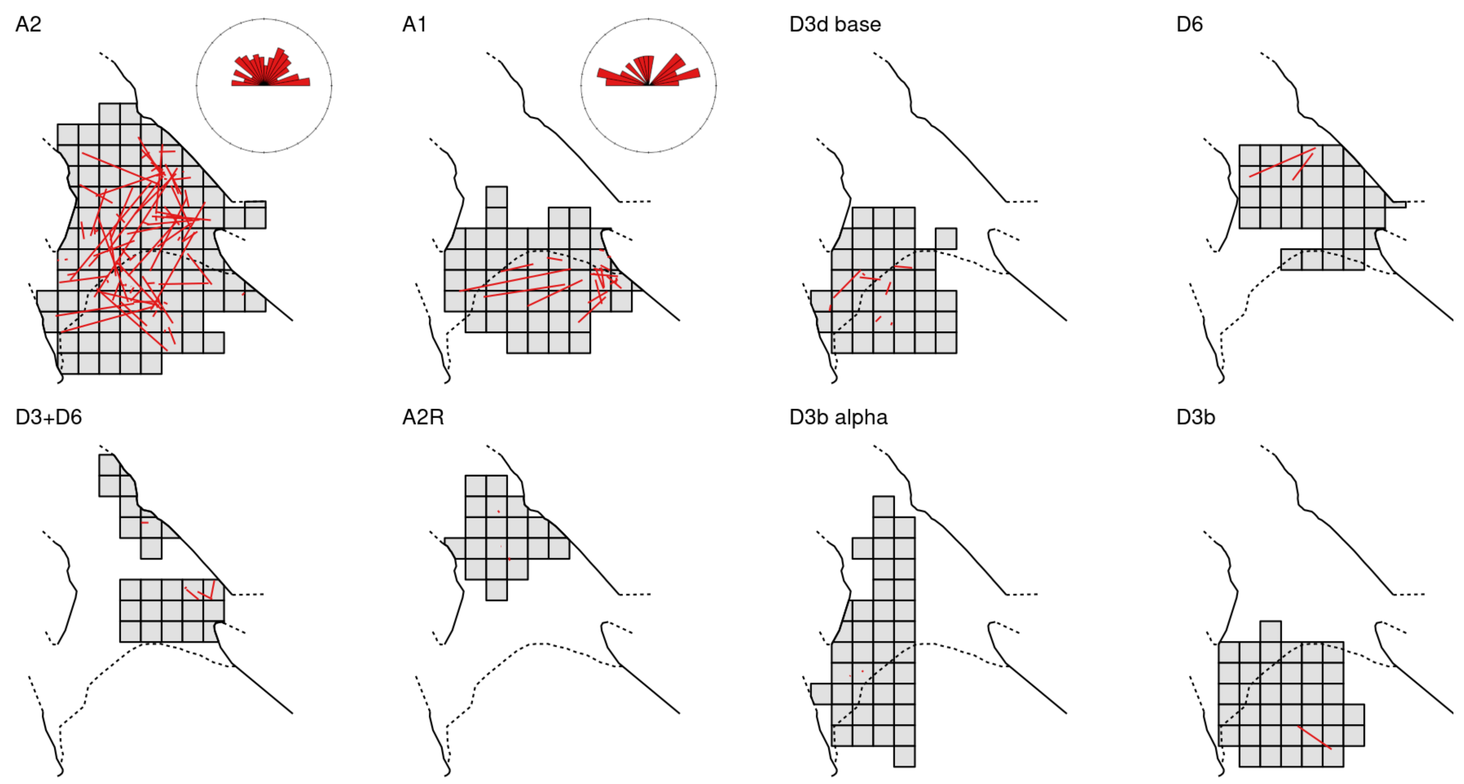


Fig. 4. Spatial distribution of the Protoaurignacian layers and intra-layer connected blanks made of 2 fragments. A2 is the most extensively excavated layer and the one with the highest number of intra-layer connections. The spatial distribution of connections in A2 is rather homogeneous, while the distribution in A1 is mostly localized outside the cave dripline. Layers A2 and A1 are complemented by orientation patterns (rose charts).

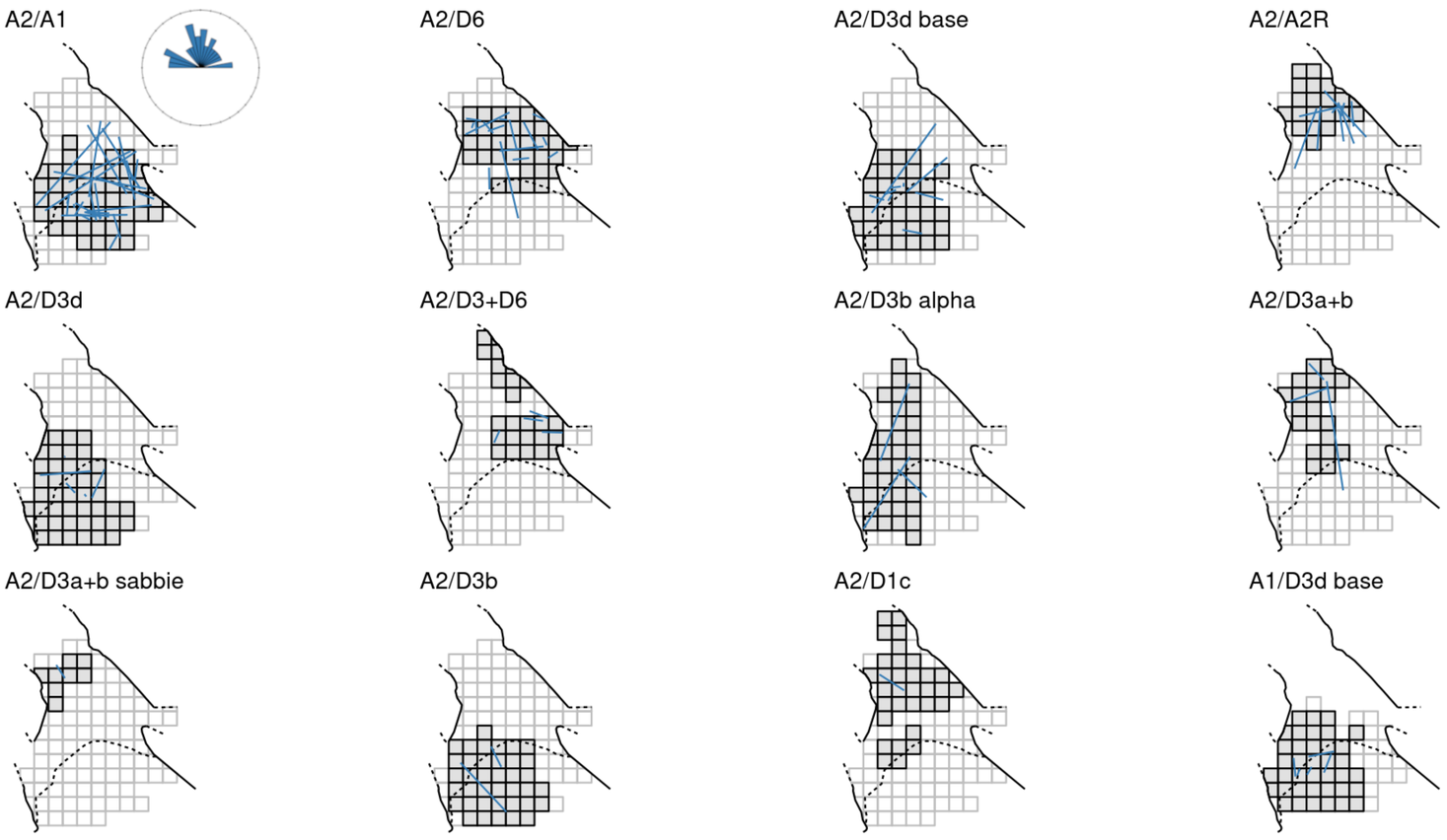


Fig. 5 Spatial distribution of the inter-layer connections between A2 and the rest of the analyzed layers, as well as between A1 and D3d base. Light gray square meters correspond to the spatial distribution of the lower layers, while dark gray squares to those overlying. With A2 being extensively excavated, the spatial distribution of A2 inter-layer refits is quite homogeneous within the different excavated areas. The A2/A1 comparison is complemented by a rose chart on the orientation patterns.

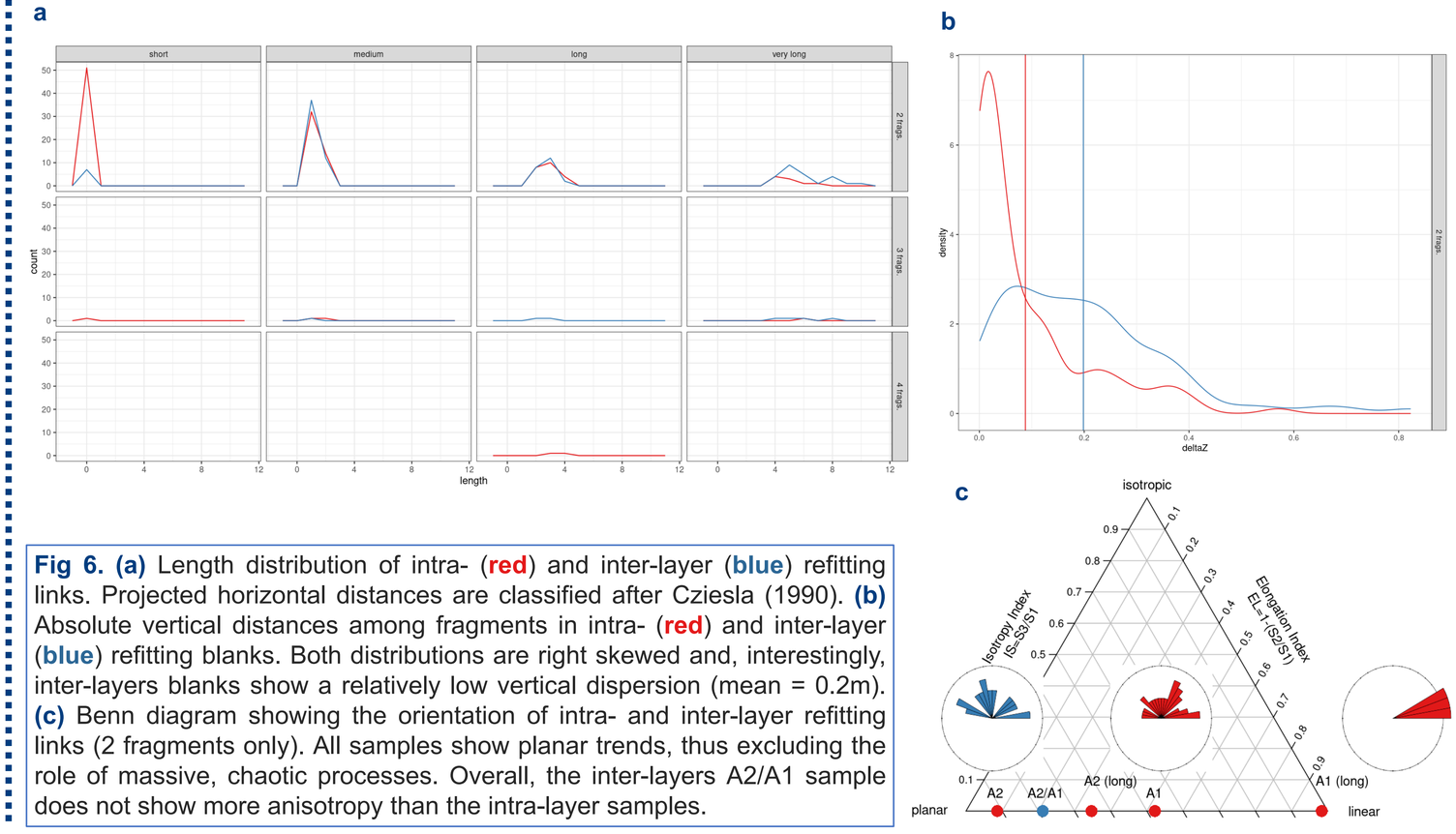


Fig 6. (a) Length distribution of intra- (**red**) and inter-layer (**blue**) refitting links. Projected horizontal distances are classified after Cziesla (1990). **(b)** Absolute vertical distances among fragments in intra- (**red**) and inter-layer (**blue**) refitting blanks. Both distributions are right skewed and, interestingly, inter-layers blanks show a relatively low vertical dispersion (mean = 0.2m). **(c)** Benn diagram showing the orientation of intra- and inter-layer refitting links (2 fragments only). All samples show planar trends, thus excluding the role of massive, chaotic processes. Overall, the inter-layers A2/A1 sample does not show more anisotropy than the intra-layer samples.

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