

Research Paper

ESR/U-series chronology of the Lower Palaeolithic
palaeoanthropological site of Visogliano, Trieste, ItalyChristophe Falguères^{a,*}, Jean-Jacques Bahain^a, Carlo Tozzi^b, Giovanni Boschian^b,
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Abstract

The Visogliano shelter, in north-eastern Italy, is an important Middle Pleistocene occupation site where human remains were found together with an archaic lithic industry, including choppers, chopping tools and a few protobifaces. It is of utmost importance to try to document this period, when a second wave of settlement colonised Western Europe, carrying new flaking techniques and tools.

Combined ESR/U-series analyses, integrated with biostratigraphical and environmental data, define a chronological frame for the layers from which the artefacts were unearthed. The lower levels, including human remains, can be dated to the 350–500 kyr time span, in agreement with micromammal and stratigraphical studies.

These data make Visogliano one of the oldest palaeoanthropological sites in Italy, where human remains are directly associated with protobifaces, choppers and chopping tools. In Western Europe, Visogliano is contemporaneous to the G soil of the Arago Cave, France, with which it shares several similarities in faunal assemblages and radiometric data, and which contains human remains also. These data make Visogliano as one of the oldest sites in Europe where the Acheulian culture is observed.

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1. Introduction

The Lower Palaeolithic palaeoanthropological site of Visogliano is located in the Trieste Karst, in northern Italy (Fig. 1). It was discovered in 1974 by A. Marcucci, a local amateur, and the first archaeological and geological studies were immediately started by the Department of Earth Sciences of the Ferrara University (Bartolomei et al., 1977; Bartolomei and Tozzi, 1979); the Department of Archaeological Science of the Pisa University has been carrying on yearly excavation since 1983.

Sequences of Middle Pleistocene archaeological sediments, including human remains, lithics, human-processed faunas and micromammal fauna were unearthed in two

distinct loci of a karstic doline originated by the collapse of a cave: a rock shelter (locus A, Fig. 2), and an outcrop of well-cemented breccia (locus B), about 30 m to the west of the shelter (Fig. 3); both are situated at the edge of the doline. A total sequence of about 12 m was studied (Cattani et al., 1991; Tozzi, 1994).

Such a long sequence of almost continuous human occupation of this period provides high-quality information on the peopling and cultures of Western Europe during the Middle Pleistocene and on the diffusion of hominid species through the continent. Geochronometric datings are of greatest importance in this case, in order to refine the chronology of the sequence, and insert it into the framework of Middle Pleistocene stratigraphy. ESR and U-series analyses on teeth of various herbivore species were carried out on samples collected from selected levels, covering the whole sequence.

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1.1. Site stratigraphy

The sequence of locus B is about 3 m thick; it lies unconformably over a thick speleothem, locally called “onyx”, which corresponds to the first known karstic processes of Pleistocene age within the area (Boschian et al., 2002). The breccia levels include large speleothem fragments deriving from the collapse of the cave; geological, faunal and pollen data suggest deposition under humid, non-glacial conditions.



Fig. 1. Location of the Visogliano site, which is about 15 km northeast of Trieste city, Italy.

Unfortunately, a direct stratigraphical correlation between the breccia and the shelter is precluded by an erosion surface, filled up with Upper Pleistocene red soils and calcareous blocks. Nevertheless, a tentative correlation can be established: faunal, pollen and stone tool assemblages, and sediments of locus B are similar to those observed in the lower levels (layers 44–41) of the shelter, even if the characteristics are not exactly the same. Moreover, the breccia layers plunge towards the shelter (locus A) with a dip that is compatible with the depth of layers 44–41 (Fig. 3).

The sequence of locus A is at present about 10 m thick, but the bedrock has not been reached yet. The lower part (levels 46–40) is characterised by sediments, and pollen and faunal assemblages suggesting a mild climate phase (*Dama clactoniana*, *Felis sylvestris*, *Macaca* sp., *Microtus* sp., *Crocidura* sp.). Clay loam colluvia are interfingered and mixed with limestone and/or speleothem rubble deriving from the collapse of the karstic system. It is noteworthy that a large part of the gravel-size fraction of the deposit is made up of flaked limestone tools and debris.

The deposits of the upper part (levels 39–11) can be grouped into three main *facies*: breakdown deposits (large blocks and/or frost slabs), loessic sediments and colluvia of red soils previously developed outside the cave. Alternating cold and dry-cold phases, with major ceiling breakdown events and loess deposition, occur in the upper part of this sequence. This 7 m thick part includes several unconformities that in some cases derive from erosional events, in other cases from changes in the depositional style, and finally also from human activities; whichever their origin, a perfect cyclicity in the sequence cannot be expected.

Two major breakdown phases can be observed in levels 30–29 and 18–17. Apparently, both lie on non-erosional unconformities/paraconformities and are followed first by deposition of frost slabs (28–26 and 16–14) and then by loess (25 and 12–11). The second of these sequences

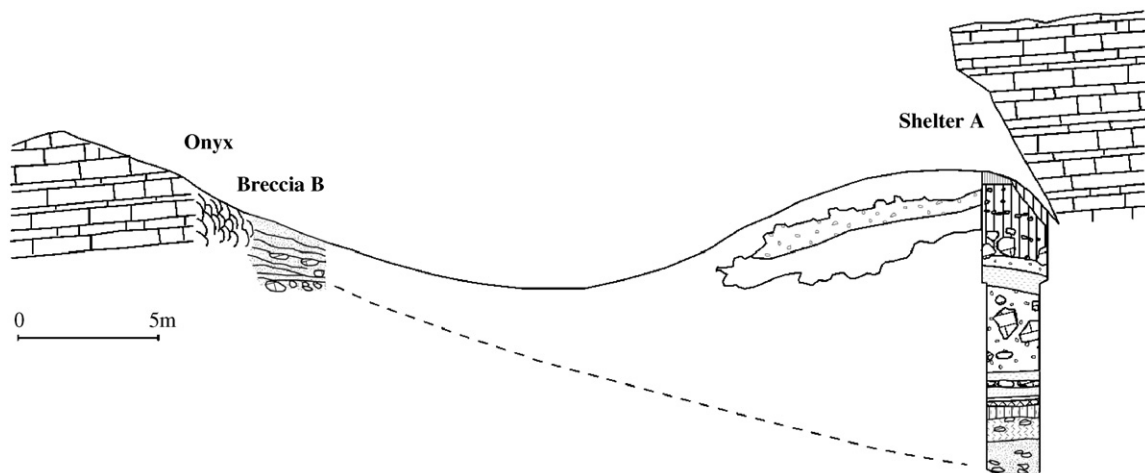


Fig. 2. Stratigraphical sketch of Shelter A and of Breccia B. The lowest layers of the first one exhibit similarities with those of Breccia B, which lay unconformably on Onyx layer, which represents the first testimony of the karst activity.

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