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LITHOLOGICAL SELECTION IN POLYGENIC GRAVELS OF NOTARCHIRICO (EARLY ACHIELEAN, SOUTHERN ITALY)

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Geological background

The schematic geological map of the Notarchirico area shows the outer units of southern Apennines and the the Bradanic Foredeep deposits associated with the archaeological evidences. The polygenic gravels in the stratigraphy of Notarchirico formed in fluvo-lacustrine depositional environments after erosion and transport of the flysch units. Pebbles and cobbles of limestones with different texture, silicified calcarenites and calciturbites, arenites, marls and radiolarites were identified.

Archaeological context

The several human occupations attested at Notarchirico (Venosa, southern Italy) date back to 610-695 ka, among the oldest ones in Western Europe at the MIS 17/MIS 16 transition. Open-air occupations were at the top or in proximity of polygenic pebbles/cobbles formed in fluvo-lacustrine, as also inferred from taphonomical data on the faunal and lithic remains and their spatial distribution. Hominins came probably to scavange but also made domestic activities. Some evidence of recycling of lithic materials is observed, suggesting recurrent hominin presence on the site. On the left, a recent photo of the excavation area with the name of the layers identified.

Lithic assemblages

The lithic material is composed of Large Cutting Tools including bifaces and cleavers in layers F and G, made on pebbles and large nodules, and also diverse pebble tools. The debitage component is made of cores and flakes on small nodules with few removals. Flakes of small size (10-20 mm long) are left unretouched or retouched by fine, abrupt or denticulate retouches. There are also convergent and thick tools and becs. Small nodules are also directly retouched by abrupt and denticulated retouches. The lithic assemblage belong to the Lower Paleolithic and the Acheulean when bifaces (layers F and G). In layer H, I1 and I2, no bifaces were found.

Aims

> to assess the available lithological variability
> to verify the archaeological hypothesis of the exploitation of local secondary chert to produce artefacts
> to verify the hypothesis of lithological selection

Sampling and methods

A selection of archaeological (98) and geological (22) lithic samples was studied to verify the archaeological hypothesis of the exploitation of local polygenic pebbles/cobble lags to produce artefacts, as well as the hypothesis of lithological selection. Petrographic analysis of samples as such, coupled with thin section microscopy for geological samples, as well as colorimetric (spectrophotocolorimeter) and geochemical (pXRF) analyses were carried out according to the non-invasive investigation protocol for chert investigation (INP-PCI) (Deluniveris et al., 2019).

Conclusions

The results show that the lithotypes of the pebble/lag layers present in Notarchirico are compatible with the observed artifacts. Moreover, pre and post depositional biological patina due to wetland conditions further prove local exploitation. Preferential use of silicified lithotypes, with some exception for Large Cutting Tools, indicates adaptation to local raw materials and selectivity. The relative abundance of flysch chert among artefacts, compared to the other chert varieties, is interpreted as a consequence of its abundance among chert lithotypes and quarternaries. Although limestone pebbles are prevalent within gravels, especially among cobbles, the use of silicified lithotypes demonstrates selectivity based on the physical properties of these raw materials, other than size and shape.

Highlights

> Lithic tools were obtained from pebbles and cobbles lags of the site
> Different types of silicaceous rocks available were preferentially selected for small tools and bifaces
> Physical properties other than size and shape were taken into account for knapping

Results

A synthesis of the petrographic analysis is here reported. The photomicrographs were taken under water at 10x magnification, except for large cutting tools. As a whole five groups of lithotypes were identified. As can be observed in the two histograms, small and large lithic tools show a different selection of lithotypes. The number of silicous rocks of different sedimentary facies exceeds the number of limestone.

Thin section of geological pebbles allowed to better identify the different lithotypes (see above and left). Silicified calcarenites constitute the predominant raw material among the artifacts of the different layers. Texture ranges from coarse (NOT102) to fine sand (NOT6). Silicified calciturbites and radiolarites are less frequent among small artefacts and absent among bifaces. Ailochism are generally not identifiable, except for siliceous sponge spicule (NOT115) in silicified calcarenites and radiolarites (NOT14, NOT114). Few planktonic foraminifers were observed in silicified calciturbites.

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