

## Blade flaking techniques

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**ABSTRACT** - The articles analysed were: pre-cores, cores, artefacts and a group of blade-bladelets, as well as flakes coming from the site of Lugo di Grezzana (Verona). The site have been attributed to the Fiorano Culture on the basis of the ceramic and lithic industry.

*Key words:* Lugo (Verona), Early Neolithic, Refitting, Lithic Technology

*Parole chiave:* Lugo (Verona), Neolitico antico, Rimontaggio, Tecnologia litica

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### 1. TECHNOLOGICAL ANALYSES

In spring of the year 1990 due to earth levelling works carried out in the industrial area in the locality of Campagne di Lugo in Comune of Grezzana (Province of Verona) a section with archaeological findings came to light (SALZANI, 1993). The site was consequently brought to the attention of the Soprintendenza ai Beni Archeologici di Verona by Mr. G.Chelidonio and Mr. F.Zanini and a first campaign of excavation was undertaken with the financing aid of the Comune di Grezzana. Other excavation campaigns periodically took place in the years 1992, 1993, and 1995, promoted by the Soprintendenza ai Beni Archeologici di Verona and from 1996 onwards in collaboration with the Dipartimento di Scienze Filologiche e Storiche of the Università di Trento.

The findings brought to light a very large settlement and on the basis of the numerous lithic and ceramic materials found, it has been attributed to the Fiorano Culture of the Early Neolithic (MOSER, 1996; MOSER & PEDROTTI, 1996).

During the excavations a considerable number of areas with flint knapping and working evidence were found within the settlement. In some cases the presence of assemblages of cores and pre-cores, rock minerals, and blades-bladelets are docu-

mented and in some cases it was possible to refit some of the items.

The materials which came from these areas were studied piece by piece (MOSER, 1996) depending on their morphology (the type of butt, the section, the presence or absence of "cortex", the curved shape, the distal extremity and the dorsal face) and also according to their dimensions (length, width and thickness). This was done in order to verify the technological processes used during the working of the raw material (TIXIER, 1980; TIXIER, 1982). The result of the study of the pre-cores and the numerous cores was important in recomposing the different phases of utilization and in understanding the mechanisms and procedures used during the working.

The majority of these cores were carinated, unifacial, and in a few cases bifacial. There are unidirectional bladelets cores with an horizontal prepared platform. The face is often very round which indicates it is still in full use, while in other cases it is quite flat which is a sign that it has been consumed. On the opposite side of the flat percussion surface of many of these cores, flakes were purposely detached from the core in order to obtain the original form of the core and to create a convex or carinated face. This procedure is confirmed by the refitting of the detached flakes of the percussion surface, RR88-2, found in a flint working area.

The lateral faces of the cores that generally only showed the cortex were very rarely chipped away. With regard to the production of blade-bladelets, various different groups were studied and it was possible to verify that two techniques were used to produce them.

49 of the blade-bladelets from RR121 were refitted. After having studied their morphological and metric characteristics, it was thought that they came from the same core: there are similarities in the lengths (from 2.5cm to 5.7cm, but the majority of the artefacts were from 3 to 4cm), even the widths seems to be rather standardised (0.6cm and 1cm). The standard thickness was from 0.1 and 0.2cm. Apart from two specimens all the artefacts present faceted butts - which indicates the surface of percussion was prepared - and the bulb was not very pronounced.

Margins of the blades were parallel or sub-parallel and sometimes they met at the distal end.

On the basis of the regular sides, the veining, the type of butt and the bulb and the constant metric characteristics, together with experimental archaeology results, it is possible to hypothesise that pressure and soft-hammer techniques were used for the production of these types of artefacts. On the basis of data of experimental archaeology, it was also possible to hypothesise that the core was placed on its distal part to avoid going through it.

In refitting a second group of blades, RR140, different morphological and metric characteristics emerged: the dimensions of the artefacts are larger, from 5 to 7cm long, the width varies from 1 to 2.1cm and the thickness is from 0.3 to 0.5cm. The blades present sub-parallel converged sides, the butt is roughly faceted and the bulb is pronounced. On the basis of these characteristics, which are also found in the group of blades RR178, it can be thought that a different flaking technique was used from the one used for the production of the RR121 bladelets and it could be presumed that percussion technology was used.

The last group of blades studied (RR178) show that flaking was purposely aimed at obtaining products

of larger dimensions: there were only a few of these artefacts within the settlement and this can depend on many factors. It can either depend on the transformation of these artefacts into tools or their exportation but this hypothesis has not yet been confirmed. They could have also been purposely flaked in order to obtain particular types of tools.

## 2. CONCLUSIONS

The findings of many specialized flake industry areas attest that the production of artefacts and tool making were undertaken within the site and it was possible to typologically place the settlement in those defined by BARFIELD (1986, 1990): "settlements near sources of flint", therefore, it probably refers to a site of primary working of the raw material. First, this raw material was worked and then it was distributed: in fact, many authors refer to the presence of pre-Alpine and Lessini flint on the Po sites of the Early Neolithic Age. If this were confirmed by the petrographic analysis on materials, the Lugo site and in particular the Fiorano Culture could have in some way controlled the exchange of Lessini flint among the various Early Neolithic groups of the Po Plain and of the Alps. This can be confronted with the fact that the presence of many forms of pottery found in Lugo are out of context with the Fiorano Culture.

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**SUMMARY** - The articles analysed were: pre-cores, cores, artefacts and a group of blade-bladelets, as well as flakes coming from Lugo di Grezzana (Verona) site which on the basis of the ceramic and lithic industry have been attributed to the Fiorano Culture. The finding of assemblages *in situ* of blade-bladelets, interpreted as a flaking area, underlines that the production of artefacts and the making of the tools were carried out on the site. Partial refitting was carried out on these groups of blade-bladelets, which has permitted to surmise the type of flaking techniques used for their production. This regards both pressure and soft-hammer techniques with the use of a soft "baton".

**RIASSUNTO** - Sono stati analizzati prenuclei, nuclei, manufatti e un gruppo di lamelle/lame e schegge provenienti dal sito di Lugo di Grezzana (Verona), che in base all'industria ceramica e litica è stato attribuito alla Cultura di Fiorano. Il ritrovamento di concentrazioni in sito di lame e lamelle, interpretate come zone di scheggiatura, sottolinea che la produzione di manufatti e la confezione degli strumenti doveva avvenire in loco. Di questi gruppi di lamelle/lame è stato possibile effettuare parziali rimontaggi che hanno permesso di formulare delle ipotesi sulle tecniche di scheggiatura utilizzate per la loro produzione: si tratta sia della tecnica a pressione sia di quella a percussione con l'utilizzo di un percussore tenero.

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Fig. 1 - Lugo di Grezzana (Verona). Assemblage of refittings (Paolo Chistè photo)

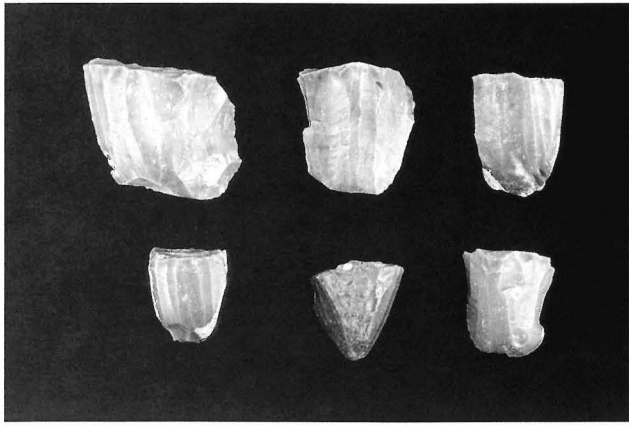


Fig. 2 - Lugo di Grezzana (Verona). Cores (Cristina Dal Ri photo)

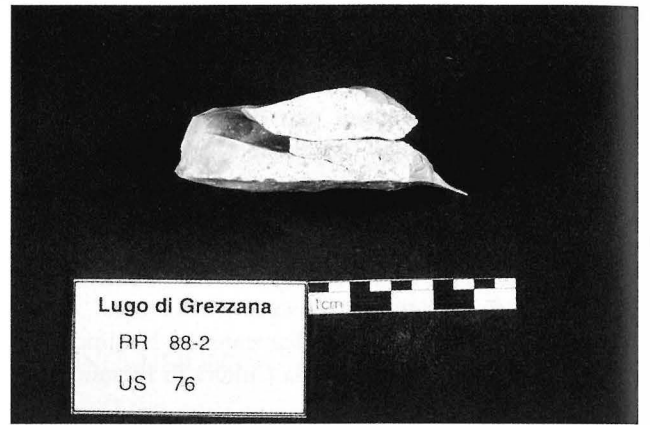


Fig. 3 - Lugo di Grezzana (Verona). Refitting of the percussion surface (Paolo Chistè photo)



Fig. 4 - Lugo di Grezzana (Verona). Refitting and bladelet of flint of RR121, US102 (Paolo Chistè photo)

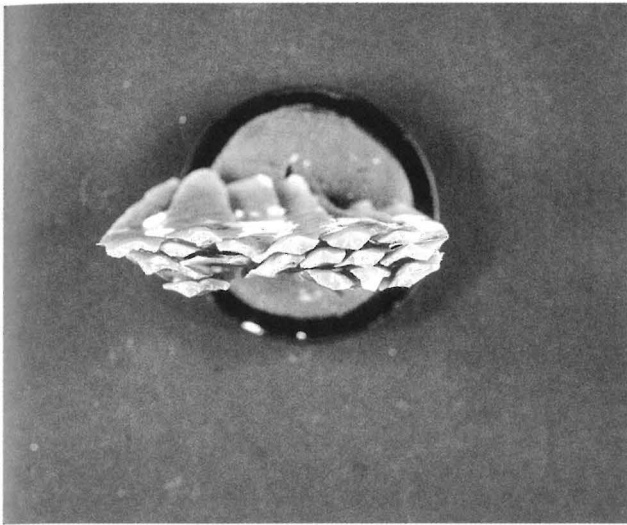


Fig. 5 - Lugo di Grezzana (Verona). Refitting I of RR121: detail of the bulb and the butt of the blades (Paolo Chistè photo)

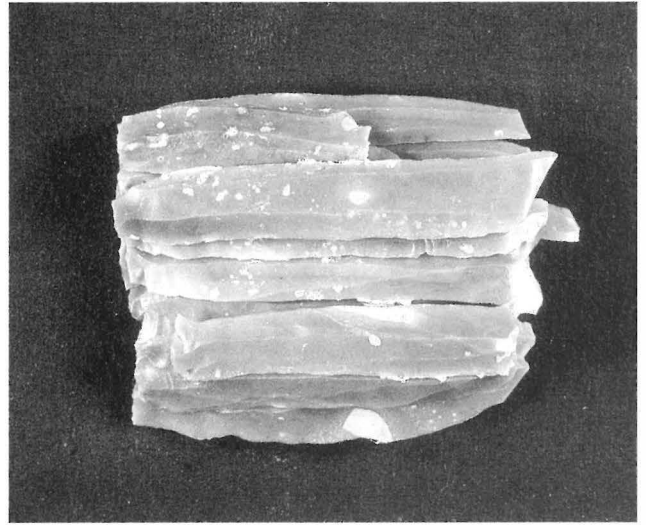


Fig. 6 - Lugo di Grezzana (Verona). Refitting I of RR121 (Paolo Chistè photo)



Fig. 7 - Lugo di Grezzana (Verona). Refitting of RR140, US109 (Paolo Chistè photo)



Fig. 8 - Lugo di Grezzana (Verona). Refitting di RR140, US109: detail of the bulb and the butt of the blades (Paolo Chistè photo)