

FUNCTIONAL ANALYSIS OF THE MICROGRAVETTIAN POINTS AND BACKED BLADELETS OF STILLFRIED/STEINSCHLÄGERATELIER - PRELIMINARY RESULTS

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Abstract

This study deals with the functional analysis of the microgravettian points and the backed bladelets from Stillfried/*Steinschlägeratelier*. This site has been regarded as a flintknapper's workshop. The analysis showed that microgravettian points had been used as projectile points and borers, while a few others seem to be unfinished.

1 - Introduction

The Palaeolithic site Stillfried/*Steinschlägeratelier* has always been regarded as the remains of a flintknapper's workshop, producing mainly microgravettian points. In this study I intend to investigate whether this interpretation of the function of the site can be supported or refused by the use-wear analysis of the (micro-)Gravettian points and backed bladelets. General aspects regarding the composition of the finds will also be taken into account.

2 - The Site

2.1 - The excavations

The site is situated on a promontory near the western shore of the river March. The "flintknapper's workshop" was found during the excavations by F. Felgenhauer of the so-called "Westwall", a part of a Late Bronze Age fortification, which was reused in the Iron Age, Roman and Mediaeval times. Stray finds from the Neolithic and Bronze age were also found

during the excavation of the Westwall. The Palaeolithic layer was situated just below the upper edge of the loess horizon. The find horizon was ca. 20 cm thick. It was excavated in 1974, 1975, 1977 and 1979. This layer was excavated with trowels and finer tools, the sediment was not sieved. The area of the Palaeolithic site excavated covered ca. 40m². The limits of the settlement area to the east and north were found, but not those to the south and west (Felgenhauer 1980). To the west the Palaeolithic layer had been destroyed by the ditch of the Late Bronze Age fortification. Further to the west, lithic artefacts were, however, found on the surface (pers. comm. W. Antl). Thus, the real size of the Palaeolithic site cannot be estimated. It is possible that only the edge of the site has been excavated. A real "cultural layer", hearths and concentrations of animal bones were not found in the excavated area.


2.2 - F. Felgenhauer's arguments for the interpretation of the site as a flintknapper's workshop specialising in the production of microgravettian points

- The lack of a cultural layer, hearths and bone accumulations
- A large quantity of lithic artefacts
- The high percentage of microgravettian points relative to a low number of scrapers, burins, etc.

He argued that a large number of microgravettian points were broken during production and that others were lost. He did not regard any microgravettian points as having been used.

3 - The lithic find material

The publication by F. Felgenhauer (1980) con-

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centrated on the possible production of microgravettian points and a more general study of other tool types. Because of the limited information so far published, I briefly studied the complete lithic find material to gain an overview of the context in which the microgravettian points and backed bladelets were found. A few of the artefacts from the original publication seem to be missing. Also, some artefacts found in other parts of the Westwall, which the excavator thought to derive from the "flintknapper's workshop", but to be in secondary deposition, are included in the find material and could not now be excluded. The results concerning the general assemblage are thus to be regarded as preliminary.

3.1 - The quantity and size of the artefacts

During this analysis, 1086 artefacts could be ascribed to the site, i.e. an average of only ca. 27 artefacts per m². Among these 18 cores, 20 crested blades/bladelets/flakes were present as well as 9 burin spalls. 131 artefacts showed retouches and/or burin negatives. Most artefacts are rather small (Tab. 1), the lithic material consists mainly of blade and flake fragments. Also, a considerable number of spalls were found.

Most retouched artefacts (Tab. 2) are also narrow, which shows that bladelets or narrow blades were the main blanks used for modifications. The broader blanks were used for producing scrapers and burins.

Length/ width	≤ 10 mm	≤ 20 mm	≤ 30 mm	≤ 40 mm	≤ 50 mm	Σ
≤ 10 mm	234	59	2	-	-	295
≤ 20 mm	206	143	21	-	-	370
≤ 30 mm	62	77	20	5	-	164
≤ 40 mm	16	30	13	4	1	64
≤ 50 mm	4	18	6	-	-	28
≤ 60 mm	5	1	3	1	-	10
≤ 70 mm	-	2	1	-	-	3
≤ 80 mm	-	-	1	-	-	1
≤ 90 mm	-	-	-	1	-	1
≤ 100 mm	-	-	1	-	-	1
Σ	527	330	68	11	1	937

Table 1. Size of the unretouched artefacts (except the cores).

Length/ width	≤ 10 mm	≤ 20 mm	≤ 30 mm	≤ 40 mm	Σ
≤ 10 mm	10	-	-	-	10
≤ 20 mm	27	6	3	-	36
≤ 30 mm	28	8	2	1	39
≤ 40 mm	15	7	3	2	27
≤ 50 mm	5	3	2	-	10
≤ 60 mm	1	2	4	1	8
≤ 70 mm	-	1	-	-	1
Σ	86	27	14	4	131

Table 2. Size of the retouched artefacts.

Available artefacts	Complete	Proximal	Medial	Distal	Σ
Micro-/Gravettian points	15	14	-	2	31
Backed bladelets	3	1	2	2	8
Not classifiable	1	23	7	4	35
Σ	19	38	9	8	74

Table 3. Preservation of the examined backed tools.

3.2 - Raw material of the lithic artefacts

The raw material used at the site consisted mainly of several different varieties of red and green radiolarian cherts. Other cherts and chalcedony occur more rarely, but a dozen or more artefacts of each of the raw materials were found. It cannot be determined whether some of the raw materials have been imported as finished tools, with the exception of one scraper which has been made from an unknown chert. Otherwise, the most likely candidate for import as finished tools is a usually white patinated, yellow chalcedony, which might have been knapped elsewhere. The microgravettian points and the backed bladelets were mostly made of radiolarite, but 10 pieces were made of white patinated chalcedony or flint. This is a rather high number, considering that only ca. 40 artefacts made of these raw materials were found at the site. This can easily be explained by the high quality of the raw materials, but could indicate that some of the microgravettian points were imported to the site.

4 - Analysis of the Gravettian points

4.1 - Morphological analysis

Quantity and preservation of the Gravettian points

The classification of the microgravettian points and backed bladelets can be seen in Tab. 3. Three additional microgravettian points and a fragment published by F. Felgenhauer (1980) were not currently available. As Gravettian points do not only have a point but also often a rounded, and also ventrally retouched base (Bosinski 1987: 34), it was possible to distinguish even some of the proximal fragments.

The high number of the proximal fragments compared with the distal fragments indicates that these artefacts might have been used elsewhere and that only the proximal fragments might have returned to the site within a haft. The low number of complete Gravettian points does not permit the recognition of a bimodal distribution in microgravettian and Gravettian points. The size of most backed points is between 20 and 45

mm (Fig. 1), thus they are nearly exclusively microgravettian points. The size of the proximal fragments is mainly between 10 and 30 mm, which might be the part covered by their hafts.

4.2 - Use wear analysis

Method

All microgravettian points and backed bladelets as well as the fragments were inspected under a low power microscope (Wild M3Z, magnification 6.5-40X). Selected pieces were also examined with an incident light microscope (Wild Metallux 3, 100X and 200X magnification used). The tools were cleaned with water and a mild detergent. The photos taken under low magnification were scanned and

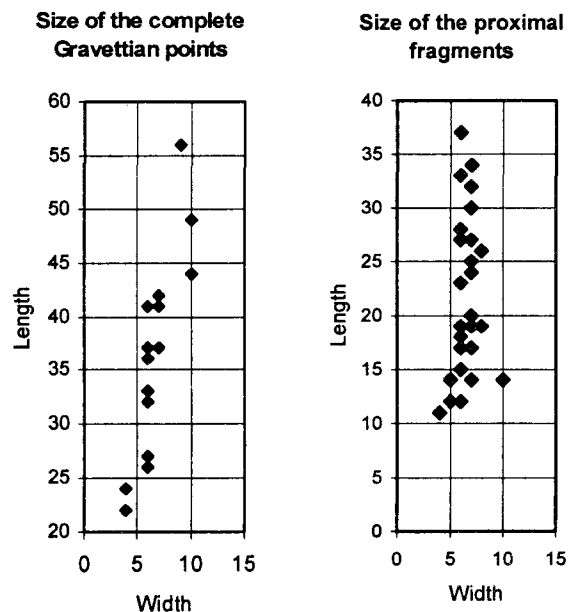


Figure 1. Size of the complete Microgravettian points and of the proximal fragments (in mm).

thereafter processed with Adobe Photoshop 5.0, i.e. I substituted black for the background, modified brightness and contrast to improve the visibility of the features in the images and added a scale-bar.

Preservation of the artefacts

At Stillfried/*Steinschlägeratelier* mostly radiolarian cherts were found, which do not patinate to the same extent as flint (Kozłowski & Pawlikowski 1989). Thus, these artefacts looked fresh, except some green radiolarites, which are lightly patinated, and some weathered, i.e. paler looking (cf. Bäsemann 1987), red radiolarites. Many of the rare flint and chalcedony artefacts, however, displayed heavy white patination. Microscopically, intensive sediment polish, which does not allow distinguishing use on soft, non-abrasive materials, could frequently be detected also on artefacts made of radiolarian chert. In addition, some bright spots occurred, which is especially irritating since radiolarian cherts often acquire only a few polished spots during use situations experimentally (Derndarsky 2001). The dorsal ridges of most artefacts were only slightly rounded, which indicates that the artefacts were only exposed to minor mechanical processes in the soil. The more intensive rounding of some tools might be due to a softer raw material or to more handling of these artefacts.

Possible use of Gravettian points

Unused and broken or lost already during production

According to M. O'Farrell (1997: 73) indications that Gravettian points might be broken or lost already during production are the frequent occurrence of Hertzian cone fractures and unfinished retouch. At Stillfried/*Steinschlägeratelier* most fractures on the microgravettian points and the fragments are bending fractures. Nearly all artefacts have a completely retouched back, only on 5 pieces does the retouch seem to be unfinished. Thus, most microgravettian points here do not seem to derive from this part of the chaîne opératoire. Still, the high number of narrow retouched and unretouched artefacts (Tab. 1-2) might indicate more preparatory work for the production of microgravettian points and backed bladelets.

Gravettian points as projectiles

On 8 artefacts the point or the remaining most distal part was damaged in a way, which indicates impact damage (cf. e.g. Geneste & Plisson 1993; Dockall 1997; Soriano 1998). This includes large step/hinge fractures initiated directly at the tip (Fig. 2a), bending fractures with fluting (Fig. 2b) and buri-

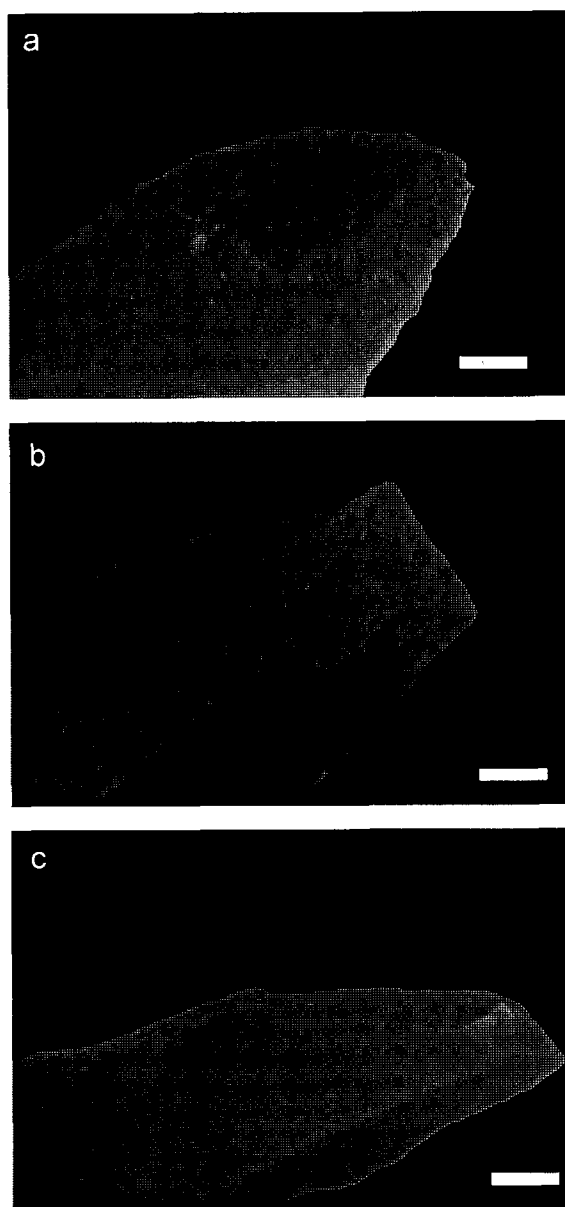


Figure 2. a. Impact scar on Microgravettian point; b. Bending fracture with fluting tip on Microgravettian point; c. Burination on Microgravettian point (Magn.: 25X, scale bar: 1mm).

nation (Fig. 2c). A number of artefacts used as projectiles might also be hidden among the Gravettian points without visible damage since it has been proved by experiments that not all projectile points get damaged on the impact (cf. e.g. Fischer *et al.* 1984: 27; Odell & Cowan 1986). Even bending fractures might be result of impact but they might also derive from other modes of use as well as from trampling, handling, etc. Another indication for the use of the microgravettian points as projectiles is the high number of proximal fragments compared with distal fragments. It might

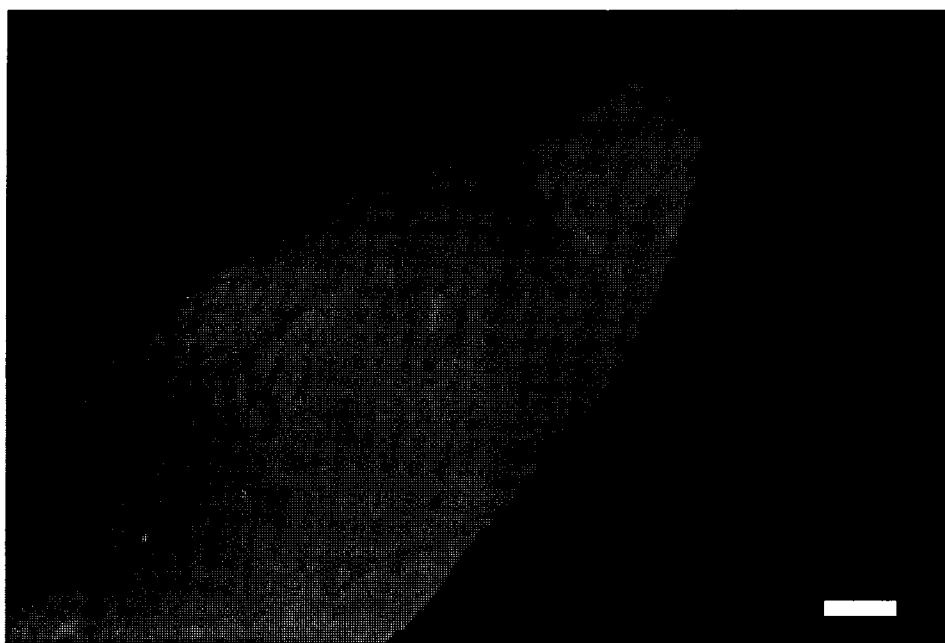


Figure 3. Ventral aspect of Microgravettian point with dorsal retouch on both lateral edges (Magn.: 16X, scale bar: 1mm).

also be argued that the broken tips were not found since they were smaller than the proximal fragments. However, the repeated occurrence of a smaller size of distal fragments than proximal ones still would indicate that the distal part was broken during use (perhaps as borers) and not during production.

Gravettian points as borers

Three artefacts displayed scarring at the distal end (Fig. 3), which might be attributed to boring activities. All of them had a lateral retouch near the point on both edges on the dorsal aspect. The other artefacts with this type of retouch did not display clear use-wear traces.

Gravettian points as knives

Use-wear analyses of artefact samples from Southern France proved that Gravettian points were used as knives (O'Farrell 1997: 44). However, since the microgravettian points and backed bladelets found at Stillfried/Steinschlägeratelier are much smaller, they would have been suited only for light cutting duties. Such cutting activities result merely in some edge scarring and slight polishing, which is hard to distinguish from post-depositional traces on archaeological artefacts. A few pieces exhibited edge scarring and polished spots (Fig. 4), which might be ascribed to cutting activities. Still, these artefacts do not necessarily have to be interpreted as knives; the damage might

derive from having been used as inserts in the side of arrow shafts.

Resharpened Gravettian points

According to P. Kelterborn (2000) indications for resharpened arrowheads are bends or shifts in the edge outline as well as an impact fracture, which can still be seen under new retouches. Even though a change in the edge outline could be seen on a microgravettian point with a broken tip, it has to be considered that these observations relate to bifacially retouched pieces. On a small artefact with a simple retouch such a shift or bend in the edge outline might just be a coincidence.

5 - Other functional analyses

5.1 - Larger artefacts at Stillfried/Steinschlägeratelier

A sample of larger retouched artefacts and unmodified blanks was also selected for use-wear analysis. Clear use-wear traces could be detected on several retouched pieces and burins, which indicates that also larger artefacts were not only produced at the site.

5.2 - (Micro-)Gravettian points at other sites

In recent years several morphological and

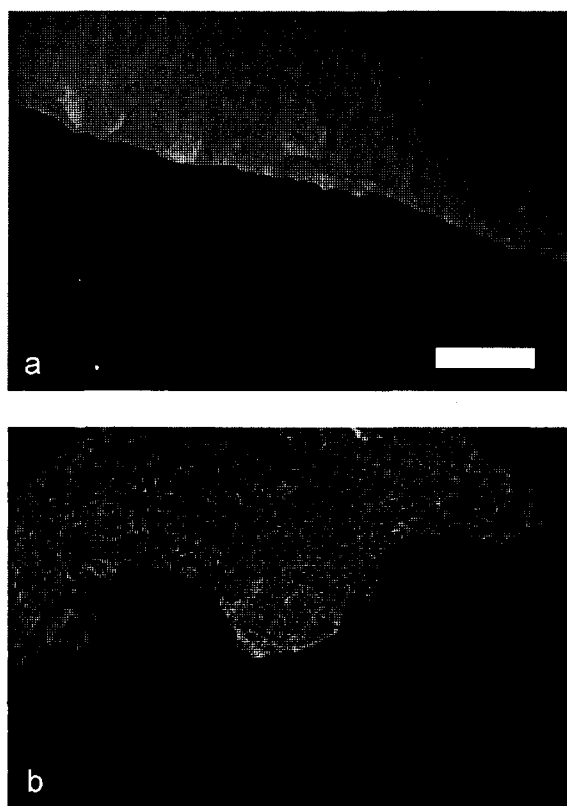


Figure 4. a. Edge scarring on backed bladelet (Magn.: 40X, scale bar: 1 mm); b. Same tool, slightly polished areas at the edge and edges of the scars (Magn.: 100X).

functional analyses of micro-/Gravettian points have been conducted (e.g. O'Farrell 1997; Soriano 1998; Borgia 2003). At the Perigordian site Rabier à Lanquais (Dordogne) many fragments of microgravettian points as well as some complete pieces were found. The proximal fragments were the most frequent, but the difference between the number of proximal, medial and distal fragments was much smaller than in Stillfried/Steinschlägeratelier. Impact fractures were frequently detected (Soriano 1998). M. O'Farrell (1997) analysed the Gravettian points of Corbiac (Dordogne) and stated that a part of the Gravettian points had been used as projectiles but that production of the tools was an important activity at the site, too. Gravettian and microgravettian points from different archaeological layers in Willendorf showed wear traces indicating their use as projectiles (Gurova 1998). At Temnata Cave the Gravettian points were used especially as arrow heads, but also for other activities. A few micropoints, among them a microgravettian point with retouch on both lateral edges, as well as a Gravettian point were used for piercing hide (Giourova & Schtchelinski 1994).

6 - Conclusions of the artefact use at Stillfried/Steinschlägeratelier

- Many of the microgravettian points at the site have probably been used.
- Edge damage indicates the use of microgravettian points as projectiles and borers.
- The high number of proximal fragments compared with the low number of distal fragments also indicates a probable use as projectiles.
- Larger tools have also been used.
- Still, there seems to have been little use and handling of the general assemblage to judge from the rather fresh looking edges and ridges.
- Flintknapping was likely to have taken place at the site because of the numerous spalls and fragmented pieces.
- The modes of use of the microgravettian points and the association of used tools with tool production resemble the situation at other sites.

Thus, the interpretation of the function of the site can be modified to suggest that flintknapping took place but it was probably not the only activity at the site. Possibly tools were repaired and the microgravettian points found at the site replaced.

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