Favella. Un villaggio neolitico nella Sibaritide. 2009, pp. 381-385.

Barbara Voytek

7.2. Microwear analysis of tools and unretouched blades

The chipped stone assemblage from Favella, which forms the basis of this report, includes 454 pieces, namely all the retouched tools, plus blades and blade fragments from structures A, B, E and G; 108 of them were found to carry usewear. This study complements an earlier work done, published in 1996 (Starnini, Voytek 1996: 354-60), which was a small sample of the early neolithic assemblage (only the retouched tools from structure A, cuts V-XVII). The larger research analysis contradicts some of the findings of the earlier one, most likely due to sample size, as noted below.

Methodology

A series of experiments conducted during the Seventies (Tringham *et al.* 1974) forms the basis of the analysis described here. Experimentation with retouched, used edges followed that work. The experiments involved actions such as unidirectional cutting, scraping, as well as bidirectional sawing, butchering and boring/piercing. During the experimentation, we determined that certain patterns of damage were produced in the course of a particular use. The patterns entailed microscars (left by microflaking that happens as the tool edge is struck or pressured against the worked materials) as well as varying degrees of polish and abrasion and in some cases, scratches. In the cases of retouched flints, the degree and nature of abrasion, rather than edge damage, reflected the usage of the edge. When hard materials were scraped, for example, the abrasion did not extend over the surface of the retouch scars as it did when wood was worked. The abrasion that resulted from working less resistant substances, such as meat, was only slightly damaging to the retouch scars, smoothing them over rather than wearing them away.

For this study the author used a stereoscopic binocular Nikon microscope with camera attachment and magnifications from 10x to 100x. In general, most observations were made at lower magnifications of 10x to 40x. Microphotographs were taken with the same microscope at magnifications up to 20x[1]. The advantages and disadvantages of the so-called "low-power" and "high-power" techniques of microwear analysis have been discussed elsewhere and do not need repeating here – except perhaps pointing out that these terms do not properly differentiate between the two. The principal distinction is that the former uses a reflective-light, dissecting microscope, while the latter uses an incident-light, metallurgical microscope (Odell 2004: 143-56). However, one aspect of the comparison should be mentioned and that is the fact that the low-power technique does not profess to be able to identify the exact nature of a worked material. Thus, the results are recorded in terms of the resistance of a worked material to abrasion and wear. A "hard" material, such as bone and antler, will have had a higher resistance than a "soft" material such as meat. Although these categories are not definitive, they are sufficient to the purpose of interpreting the blades as functional tools or as non-functional symbolic objects.

In the plates, the usewear is represented by a single word or abbreviation, as "H" (Haft), "Si" (Sickle), "Resh." (Resharepening) and "Saw", or by a combination of capital letters and/or abbreviations. In the latter case, the first letter indicates the activity to which the piece was assigned ("C": Cut; "G": Groove; "S": Scrape; "B": Bore), while the second one defines the nature of worked materials ("W": Wood; "V": Vegetals; "B": Bone; "Hi": Hide; "G": Grains) or, at least, its resistance ("S": Soft; "M": Medium; "H": Hard).

Another factor worth mentioning here is the fact that my own research usually involves at least hundreds if not thousands of pieces from an assemblage or assemblages (Starnini, Voytek 1997, 2005; Voytek 1990, 2001, 2002). In such cases, one also finds pat-

[1] The pieces for which a microphoto has been shot are characterized by an "x" next to the used edge.

terning among the microwear traces that can be related to particular activities or behaviors, taking into consideration other aspects of the assemblage – such as spatial distribution and feature association, stratigraphy, etc. As shown below, an attempt was made to produce such a study with interesting results – tentative, unfortunately, due to the size of the assemblage. However, it does add another early Neolithic study to compare, for example, with that of Arene Candide's Impresso assemblage (Starnini, Voytek 1997: 349-426).

Results

As mentioned, 108 used pieces (or pieces with hafting evidence) were found in the whole assemblage; 61 of them come from surely Early Neolithic contexts (tab. 1). Limiting our considerations to these, we note that, unlike the earlier study of a small portion of the Favella lithic complex that suggested relatively specialized tools, the results of the study of the whole assemblage show diverse activities and materials (Starnini, Voytek 1996: 357). As mentioned above, this is perhaps not surprising in view of the difference in sample sizes. Activities included cutting (most common), followed by boring and then scraping and grooving. This distribution is not uncommon and perhaps not very surprising. At the same time, the quantity of borers should be noted, as it was in the earlier study (Starnini, Voytek 1996: 355; fig. 1).

The most common activity, cutting soft/potentially vegetation (16.4%), is challenging in that it does mirror the results of the earlier research. The worked material cannot be 100% identified but the slight gloss and scar patterns suggest that these tools were not harvesting instruments, like sickles which show heavy polish (fig. 2). However, they were used to cut and gather vegetation that could include grains but also reeds, grasses, straw, etc. The analysis of the structures at Favella showed evidence of the use of wood and branches in their production as well as potentially straw in the plaster that was so prevalent (Tiné *et al.* 2000: 480). Chipped stone knives certainly played a role in gathering this vegetation for construction. At the same time, however, wood-working tools were not especially abundant (9.8%; fig. 3).

The second most common activity (18.0%) of the assemblage was engaged in cutting medium/potentially hides. This activity had been predominant during the Neolithic at Arene Candide (Starnini, Voytek 1997: 422). It is conceivable that some of the tools labeled as "cutting medium" had actually been used on something other than hide but of a similar resistance. As mentioned, distinguishing the exact worked material is challenging with this microscopic technique. The percentage of tools used on hard materials such as bone or antler is not surprising (14.7%).

	Cut	Bore	Scrape	Saw	Groove	Totals
Soft/vegetation?	10 (16.4%)					10 (16.4%)
Medium/hide?	5 (8.2%)	5 (8.2%)		1 (1.6%)		11 (18%)
Wood	4 (6.5%)		1 (1.6%)			5 (8.2%)
Hard		1 (1.6%)	4 (6.5%)		4 (6.5%)	9 (14.7%)
Soft	4 (6.5%)					4 (6.5%)
Soft wood	1 (1.6%)					1 (1.6%)
Grain	2 (3.3%)					2 (3.3%)
Totals	26 (42.6%)	6 (9.8%)	5 (8.2%)	1 (1.6%)	4 (6.5%)	
Sickles						8 (13.1%)
Armatures						3 (4.9%)
Haft only						6 (9.8%)
Scrape plus bore medium/hides						1 (1.6%)
Cut plus scrape medium/hard						1 (1.6%)
Totals						61

Table 1 - Description of activity, worked material and number of pieces from all EN contexts.

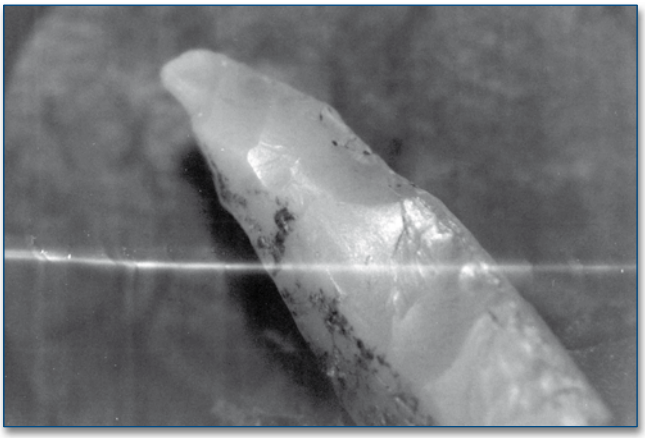

Figure 1 - Boring medium/hide, 10x (Plate 12 n. 6).

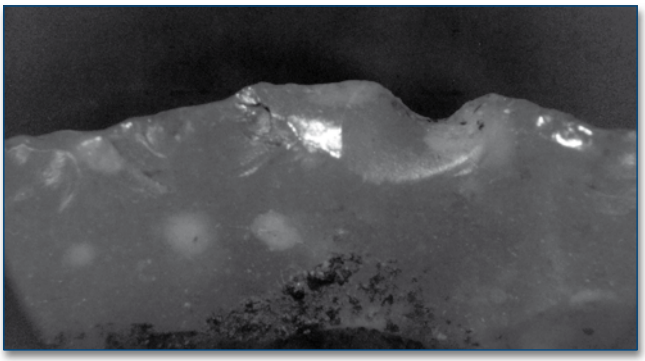

Figure 2 - Sickle, 10.5x (Plate 12 n. 9).

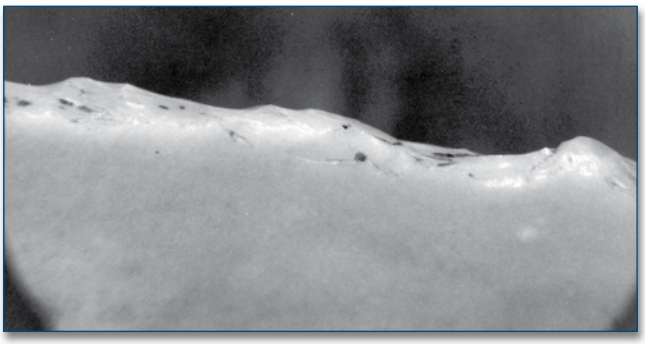

Figure 3 - Cutting wood, 10x (Plate 4 n. 11).

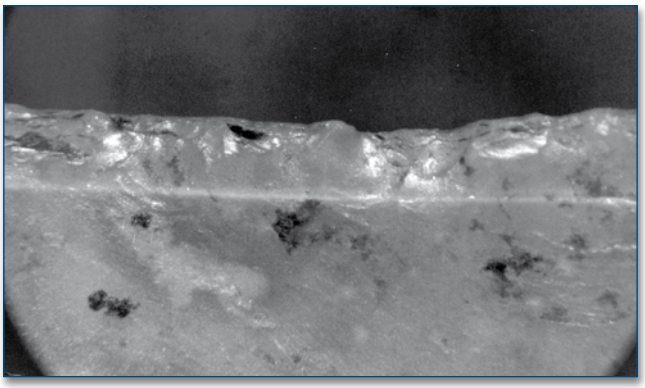

Figure 4 - Cutting hard, 10.5x (Plate 12 n. 10).

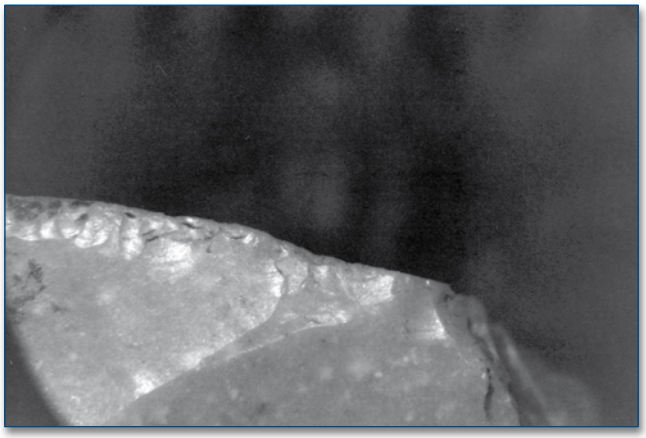

Figure 5 - Cutting hard, 10x (Plate 6 n. 11).

Since this type of usage is most damaging, it tends to render the tool edge dull and nonfunctional (figs. 4, 5).

Also of note is the low number of sickle blades, just over 13%. Such is the pattern for many early Neolithic sites that have been studied for microwear traces in Italy. The case is different for early Neolithic sites in southeast Europe, a fact that suggests some differences in early farming practices (Starnini, Voytek 1997: 420-421). The geometric trapezoids mentioned in the earlier study find parallels in this assemblage (Starnini, Voytek 1996: 355). They show no use wear but some hafting wear on occasion. Again, the earlier study had also shown a few "borers" were hafted as potential armatures. This research did not back up that possibility. Separate consideration and mention should be made of two so-called "combination" tools – tools that could not be assigned one action and one worked material. Although such tools are not unique, it sometimes helps to keep them separate for comparative purposes in terms of the typology, technology, or raw material.

If we separate the assemblages that come from the three main structures here considered, namely A, E and G, it is possible to note, on the basis of usewear analysis, some differences between them (tables 2-3). A high percentage of used pieces from structures E and G (considered together, following what has already been done for the typological study[2]) were employed in cutting vegetation (cutting soft/vegetation + cut grain + sickles = 42.8%), while for structure A this value is lower (24.1%). At the same time, of a certain importance is the complete absence, for structures E and G, of pieces with usewear related to grooving and to wood working, while for structure A these two activities are well documented. This fact could be related to a differentiation in the use

[2] Cfr. cap. 7.1.

	Cut	Bore	Scrape	Saw	Groove	Totals
Soft/vegetation?	4 (12.1%)					4 (12.1%)
Medium/hide?	2 (6%)	3 (9.1%)		1 (3%)		6 (18.2%)
Wood	4 (12.1%)		1 (3%)			5 (15.1%)
Hard			1 (3%)		4 (12.1%)	5 (15.1%)
Soft						
Soft Wood	1 (3%)					1 (3%)
Grain	2 (6%)					2 (6%)
Totals	13 (39.4%)	3 (9.1%)	2 (6%)	1 (3%)	4 (12.1%)	
Sickles						2 (6%)
Armatures						2 (6%)
Haft Only						6 (18.2%)
Scrape plus bore medium/hides						
Cut plus scrape medium/hard						
Totals						33

Table 2 - Description of activity, worked material and number of pieces from structure A, EN layers.

	Cut	Bore	Scrape	Saw	Groove	Totals
Soft/vegetation?	6 (21.4%)					6 (21.4%)
Medium/hide?	3 (10.7%)	2 (7.1%)				5 (17.9%)
Wood						0
Hard		1(3.6%)	3 (10.7%)			4 (14.3%)
Soft	4 (14.3%)					4 (14.3%)
Soft Wood						
Grain						
Totals	13 (46.4%)	3 (10.7%)	3 (10.7)			
Sickles						6 (21.4%)
Armatures						1 (3.6)
Haft Only						
Scrape plus bore medium/hides						1 (3.6%)
Cut plus scrape medium/hard						1 (3.6%)
Totals						28

Table 3 - Description of activity, worked material and number of pieces from structures E+G, EN layers.

of village space, as already hypothesized in order to explain some typological differentiation between the same two complexes[3].

Finally, it is worth noting that, among the 162 early neolithic blades and blade fragments, only 14 were found to show usewear (less than 10%). This is a rather low percentage that could witness the easy availability of raw materials to the inhabitants of Early Neolithic Favella that provided a supply of blades as blanks and reduced the need to resharpen the used tools.

3 Cfr. cap. 7.1.

Conclusions

The microwear analysis of the stone tools from Favella della Corte brings us somewhat closer to an understanding of the activities practiced by early Neolithic farmers and the functions fulfilled by their chipped stone assemblages. Not surprisingly, the functions correspond to other findings at the site and suggest that the stone tool assemblage was integrated in the daily activities of house construction, pottery making, and subsistence acquisition.