REPORT ON THE RESULTS OF USE WEAR ANALYSIS OF LITHIC MATERIAL FROM DOLNÍ VĚSTONICE

Silvia Tomášková

This report is the first part of the analysis of use-wear of the lithic material from the site Dolní Věstonice II, Czechoslovakia. Results presented here pertain mostly to the 1st settlement unit. This area consisted of a hearth, a human skeleton, numerous faunal remains, and a large collection of lithic materials.

During the summer 1990, I carried out an analysis of the lithics, in order to determine the extent, intensity, and the type of use wear that these may exhibit. I examined 1610 stone artefacts and 53 pieces that were identified as possible formal tools. This sample covers the greater part of the industry gained from the studied area. After a preliminary inspection, each specimen was carefully examined under a low power microscope with the magnification of 50 and 75x. Each piece that was determined as having some traces of use wear, was then judged in terms of the type of the traces: polish, striae, and heavy-impact damage. Intensity of use was identified as minimal, moderate, and heavy. Extent of the use wear was measured in terms of the portion of the stone piece that showed traces of use wear. This served as supporting information for determining the intensity with which the lithics may have been used.

The preliminary geological report shows that the majority of the raw material was imported. The exact location of the sources has yet to be established, but the areas from which the raw material originated have been determined. Most of the material comes from the North and Northeast (present Poland), and the East (present Western Slovakia). Other sources will be identified when the full geological report is available.

The artifacts recovered from the 1st settlement unit are predominantly made of hornstone and a small portion is from radiolarite. A few pieces from a local quarzite were recovered as well. It should be noted that raw material for stone tools is locally available in south Moravia and the sources were exploited in previous times as well as later during the Neolithic. Shortage of resources was not the reason for the import of the stone from distant areas.

The area selected for this study was excavated using a 1x1 meter grid and labeled A18 - A22. The contiguous squares to the east were labeled Aa18 to Aa22 (Fig. 2). Following is the account of the examined lithics from individual squares:

Square A18 rendered 143 pieces to examination, three were identified as formal tools but none of these showed traces of use wear. One stone flake had distinct traces of heavy damage caused by repeated hitting.

Another sample from the area of the squares A18 and A19 (A18/19) had 96 pieces, eight of which were identified as formal tools. Four of these tools showed traces of use wear. An additional two retouch flakes were used as well.

Square A19 rendered 287 pieces; six were identified as formal tools. Out of these, four had traces of use wear, and an additional four pieces of the total were used as well. These four pieces include: two used microblades that could be added to the total of formal tools identified in this square, one used retouch flake, and one resharpening flake. The resharpening flake is only one of two found among lithics of the studied assemblage. Both were found in areas adjacent to the hearth, the other one being in A20/21.

Square A20 was the location of the hearth D that was approximately 1m in diameter. It contained 123 pieces of lithics scattered around, none showed signs of use. An additional six pieces were identified as formal tools but five of them were shattered by the heat of the hearth and could not be observed for use wear. The remaining piece was covered by polish applied during cataloguing which prevented any observation of traces.

Square Aa20, adjacent to the east of the hearth, had 295 pieces of lithics, and 12 of them were identified as formal tools. Out of these, eight showed traces of use and one piece could not be observed due to postdepositional damage. An additional four flakes had traces of use. This square had the highest percentage of use wear from the entire site: 4.07% of the total, and 72.73% of the formal tools were used.

Another sample from the area of the squares Aa20 and Aa21 (Aa20/21) contained further 160 pieces of lithics, six of them identified as formal tools. One of these tools showed traces of use, and four of the flakes were utilized. These four flakes showed traces of variable use, with two damaged due to a heavy impact and repeated hitting. One was a resharpening flake and one was a utilized retouch flake. All four were larger than the average size (29x12.7 mm) of the used lithics in this occupation level.

Square A21 contained 288 pieces of lithics, ten of which were identified as formal tools. Five of the tools had traces of use wear and four additional pieces showed signs of utilization. Depression A, located about 25 cm west of the feet of the skeleton, contained charcoal, faunal remains, and lithic material. It held 241 of the total number of the pieces and five of the examined tools. Only one used formal tool and one used flake of the square A21 were from this depression.

Square Aa21 contained 184 examined pieces of lithics, two of which were identified as formal tools. These were both utilized, as well as four other flakes from this square. One of these flakes is a truncated blade and can be added to the list of the formal tools, the remaining three are retouch flakes that exhibit utilization.

Square A22 contained 88 examined pieces, none of which were used.

Tab. 12. Spatial distribution, percentage and numerical count of use wear traces

location	No.of lithics	No.wt use wear	No.of tools	No.wt use wear
A18	140	1	3	0
%	143	0.7%	3	0%
A18/19	88	2	8	4
%	96	6.25%	8	50%
A19	281	4	6	4
%	287	2.79%	6	66.66%
A20	123	0	6	-
%	0	0	0	0
Aa20	283	4	12	8
%	295	4.07%	11	72.73%
A21	278	4	10	5
%	288	3.13%	10	50%
depression A	241	1	5	1
%	246	0.8%	5	20%
Aa20/21	154	4	6	1
%	160	3.13%	5	20%
Aa21	182	4	2	2
%	184	3.26%	2	100%
A22	81	0	0	0
%	81	0	0	0

Interpretation

The large quantity of the debitage, used and unused flakes, indicates that the raw material was not treated in the most economical way. The stone was not used to its maximum and not every detached flake was turned into a formal tool. On average, the retouch flakes are significantly larger (29x12.7 mm) than the formal tools (17.4x5.2 mm). Economy of the raw material was not a major force behind the production of stone tools at this part of Dolní Věstonice II site.

Despite the fact that the material was brought from a fairly distant area, it was not treated in a fashion that would suggest its rarity and inaccessability. Large, detached flakes were not reworked into usable implements, and considering that most of the used tools were microliths, it would seem clear that a potential existed for a far greater number of tools than were actually produced. Therefore, I would suggest that the people who made the tools at Dolní Věstonice II may have migrated regularly over a fairly large area and were familiar with the landscape and its potential. It could also be suggested that they were in a regular contact with other groups and exchanged with them either information about the resources, or the materials themselves. The "wastefulness" with which they seem to have treated the "imported goods" may indicate either or both of the suggested scenarios.

Out of the 1610 pieces examined, only 23 (i.e. 1,43%) showed traces of use wear. Among the 23 utilized pieces, four could be identified as formal tools (three blades, one microblade), which reduces the percentage of retouch flakes that were used to 19 out of the total 1610 (1.18%). These flakes may be separated into three groups - retouch flakes that were used as tools (14), resharpening flakes (two), flakes removed as a result of heavy impact, possibly an activity resembling that of a hammer (three). Both resharpening flakes and the three flakes removed by heavy impact are from areas immediately adjacent to the hearth, the retouch flakes are not distributed in any specific pattern through the site to suggest a particular interpretation. The small size of the analysed area (5x2 m) does not lend itself to an elaborate spatial analysis with special activity areas. The formality of the finished tools that were utilized, in contrast with the small percentage of used retouch flakes, may suggest a special activity carried out at the site. However, the same artifacts may be a result of a very specific, culturally conditioned notion of material culture. They could also represent an intersection of these two possibilities.

A small number of the lithics (53) were identified as formal tools. Only 45 of these could be examined for use wear, as five pieces were shattered by the heat in the hearth, and three were damaged by the polish in the process of labelling. An additional four stone pieces from the collection of retouch flakes were identified as tools. Out of this total of 49 lithic tools, 28 had traces of use wear (57.1%). A majority of the tools is composed of microblades with the average size 17.4x

x5.2 mm. My observations did not show any significant correlation between the size of the tool and the intensity of utilization. All of the tools had either moderate or heavy traces of wear.

Four pieces showed clear signs of hafting, with some difference in the material into which they were inserted. One of the microblades had an entire edge covered with polish and lines parallel to the edge. This suggests hafting into a less abrasive, softer material, possibly wood. The three tools, that I identified as having signs of hafting, are all marked with fairly deep striae, perpendicular to the edge. They all show polish on the opposite edge to the striae. These microblades were inserted into a harder, more abrasive material, possibly a bone. The majority of the tools have traces of polish on the utilized edge. This indicates use on a non-abrasive material, plant or animal tissue.

The microliths generally display a high intensity of use, and some tools show signs of being almost worn out. A high negative correlation appears between truncation and the intensity of use wear. Those lithics that were truncated have fewer traces of use, than those that were not truncated. I suggest that the truncated microliths snapped in the process of being used and were discarded for that reason. The nontruncated microliths, on the other hand, were used to their maximum potential.

It seems plausible that the people who occupied the site at Dolní Věstonice II were not concerned about the availability of the raw material and did not treat it with a special sense of economy. However, I suggest that the work that was put into making the serated microblades was highly valued and these were used until they were considered non-functional - either snapped during use, or worn out. The additional labour that increased the value of the product came from hafting that required a certain amount of skill and time. It appears that the artifacts that were invested with the largest amount of work and/or skill showed the highest extent of use.

Department of Anthropology
University of California
Berkeley, California 94720