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Butchery knives in the Mousterian sites of Armenia

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Résumé

Les principaux résultats de l'étude complexe (tracéologique, expérimentale et morphologique) des couteaux de boucherie provenant des sites moustériens de Yerevan I et Lusakert I (Arménie) sont présentés. Les traits d'usure différentiels et substantiels de ces instruments sont dégagés. Les problèmes liés à la fabrication et l'usage des couteaux de boucherie (ajustage, forme optimale, degré de spécialisation, causes de fragmentation d'outils) sont observés et interprétés.

Abstract

The major results of the complex (traceological, experimental and morphological) study of butchery knives from the Mousterian sites of Yerevan I and Lusakert I (Armenia) are presented. The differential and substantial wear features of these implements are discussed. Problems connected with the making and using of butchery knives (accommodation, optimal shape, degree of specialization, causes of tool fragmentation and so on) are observed and interpreted.

Among numerous Lower Paleolithic deposits of Armenia the most important ones are, undoubtedly, Yerevan I (Yeritsyan 1971 ; Yeritsyan, Semenov, 1971) and Lusakert I (Yeritsyan, 1975). They are situated on the bank of Hrazdan River canyon, at a distance of 50 km from one another. Both are small, cave rockshetters, in the area of contact of dolerites with upper andesite-basalts. The deposits are multilayer (7 and 5 Mousterian cultural layers), with rather distinct stratigraphies. All the layers are rich in cultural remains (stone implements, bones of fossil animals). Almost all of the thousands of stone implements are of obsidian (94 % in Yerevan and 99 % in Lusakert). Andesite-basalt, flint and other rocks were of secondary importance. B. G. Yeritsyan, specializing in cave research, suggests that the Yerevan industry as a whole is a developing specific local version of the Mousterian culture, combining elements of typical Mousterian, Kina and Tayac (Yeritsyan, 1950 : 26-30). Other scholars regard this industry as typical Mousterian (Lyubin, 1977 : 194). In Lusakert cave an interstratification

phenomenon is observed : Mousterian of Acheulean tradition, Tayacian, denticulate Levallois and typical Levallois form a sequence of layers (Yeritsyan, 1975 : 50).

These are the basic characteristics of the deposits, the archaeological materials of which we have studied traceologically. Microanalytic research of selected, yet vast series of obsidian articles from all the layers of Yerevan and two Levallois layers of Lusakert was undertaken. The functions of more than 500 Yerevan and 200 Lusakert tools were determined. On both sites wood, hide and meat were treated. Types of working operations and corresponding functional types of tools are varied, the latter being knives, saws, planes, chisels, drills (woodworking), scrapers, scraper-knives, borers (hide processing) and, finally, butchery knives.

To separate butchery knives (105 objects from Yerevan and 18 from Lusakert) from the cutting artifact assemblage was not an easy task, because some of the wear components on the knives for soft and those for hard materials differ only slightly. First of all, the difference is observed in the texture of wear microfeatures. The basic components of linear wear on hard material knives are deeply-cut scratches (fig. 1 : 1, 6), whereas linear traces on butchery knives consist mainly of subtle threadlike traces of broken dotted-point character, which means, that the treated material was pliable and slightly abrasive (fig. 1 : 2-5). Continuous employment of a tool considerably increases the number of linear traces, so that on the edges of the artifacts there are ground-appearing areas (fig. 1 : 2, 4). The highest intensity of this kind of wear microfeature is observed on the edgdes of blades and on the interfacet ridges. As a consequence, the blades of butchery knives become considerably blunted : the tops of edge retouch get ground. The edges of hard material knives, on the contrary, retain their sharpness, that is, a finely-denticulated profile. This is the result of an intensive working damage process.

Other distinctive features of butchery knife wear cannot be considered apart from their shape. The thing is that in the overwhelming majority of cases the above described set of wear traces is observed on the tools of only one – convergent – shape (fig. 2). Rare exceptions (6 objects from Yerevan) merely prove the rule. From a typological standpoint the main body of this functional group forms convergent side-scrapers and points (Mousterian, Levallois and retouched Levallois). Canted side-scrapers are also present. In most cases both edges are worn out, although the heaviest load was on the left edge. The bases of the knives served as accommodation elements (it was grasped in two or three fingers)[1]. The distal end of the tools was the most active working zone (fig. 1 : 2, 5). Exactly here the intersection of several operations occurred : blade cutting was combined with perforation and angular cutting. This is the last, but not least, peculiarity of the tools of this functional group.

Each observation can be fully substantiated. Thus, prefered left blade cutting, when the tool is ventral aspect down, allows to lessen the friction. The basa grip of the tool, as well as the existence of two sharp convergent blades, guaranteed the most favorable mode of tool manipulation in a wide kinematic range[2].

And, finally, the existence of a point is stipulated by a periodically-arising need for perforation and angular cutting in the course of butchering. These operations were interrelated, supplemented each other and were applied successively and alternately in one and the same labor cycle. Each kind of work was carried out with a particular, specially-shaped morphological element : angular cutting and perforation with the point, cutting with the convergent blades. That is why, despite the formal polyfunctionality of butchery knives,

(1) The absolute prevalence of double-blade worn butchery knives excludes the possibility of edge prehension, due to the optimal working position of tools (ventral aspect down), therefore the version of alternating cutting with forefinger pressed against one then the other edge is unrealistic. A considerable number of tools (27,8 %) with specially-shaped accommodation features exactly in the proximal area (fig. 2 : 7, 10) also testifies to the basal prehension of these knives.

(2) By its character, edge prehension of tools requires a firm grasp and is more apt for such operations as wood cutting, wood planing etc., whereas the two-finger basal holding of butchery knives allows free motion of the hand, that guarantees the necessary range of tool manipulation.

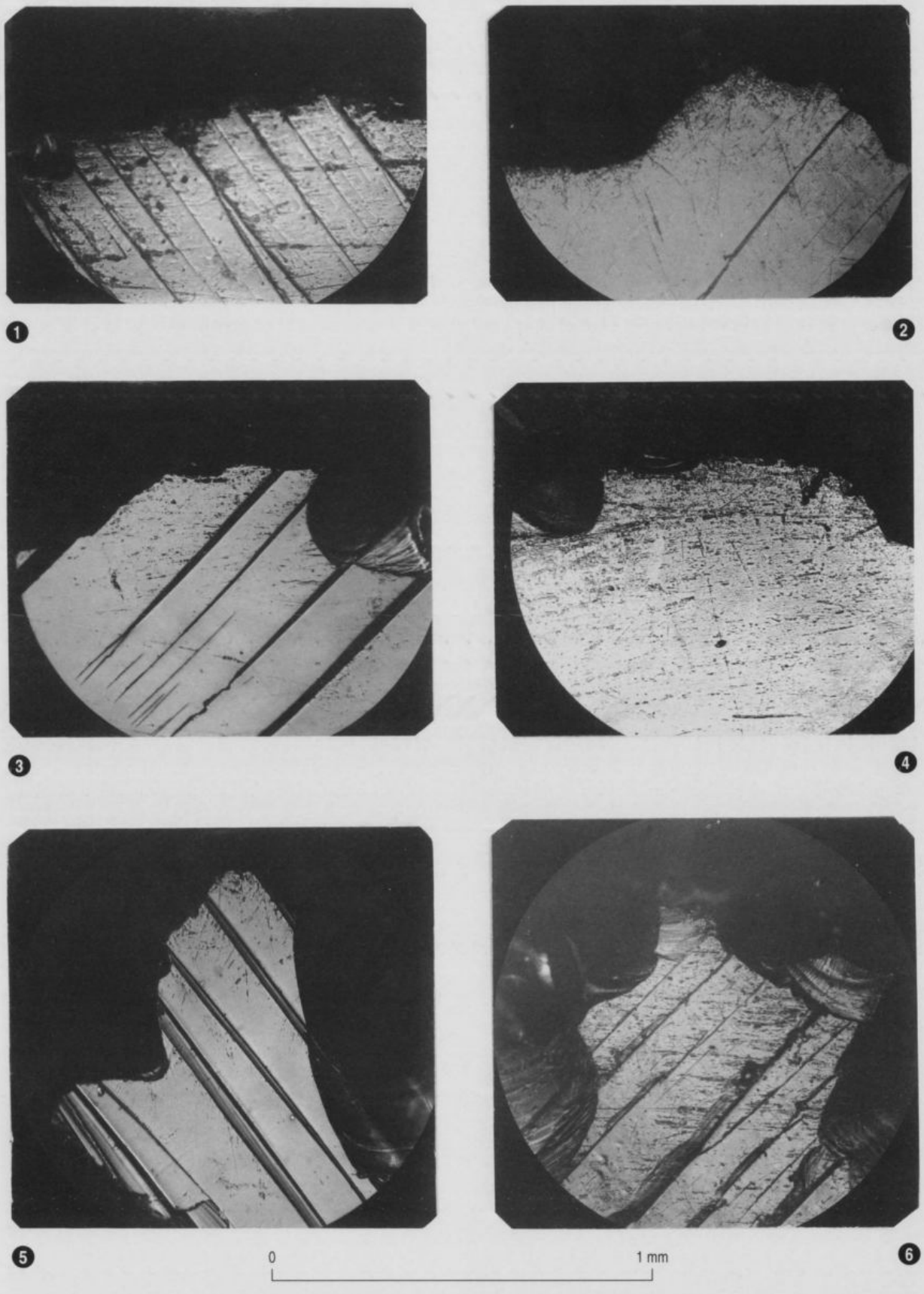

Fig. 1. Microphotographs of portions of working edges of obsidian tools.

we are rightful to consider them as specialized tools.

We cannot pass over the fact that the results obtained contradict in many aspects the experimental data recently published by A. E. Matyukhin (Matyukhin, 1983, 1984). This concern butchery knife accommodation (in Matyukhin's opinion – edge prehension) (Matyukhin, 1983 : 182 ; Matyukhin, 1984 : 15) and their optimal shape (rather varied, for this scholar) (Matyukhin, 1983 : 182-183 ; Matyukhin, 1984 : 14-19). This divergence of results, as we see it, is stipulated first of all by the unilateral – merely experimental – character of data used by A. E. Matyukhin. We know that the concluding knowledge resulting from any, even a correctly held model experiment, has but a probable character, often with a rather small degree of accuracy. The initial cause of this phenomenon is the impossibility of a quantitative description of the model and the prototype (they are described qualitatively) and, as a result of this, their correspondence is often determined with insufficient completeness and precision. That is why on physical modelling a complete use of all information combined about subjects of cognition, minimizing subjective aspects of the experiment, is of paramount importance. Allegedly exactly here are the weakest points of the afore-mentioned experiments. Thus, when determining the optimal accommodation of the butchery knives as edge prehension, the scholar proceeded from his own, subjective feelings(3). Meanwhile, if one takes into account some paleontological and archaeological data(4), it becomes quite obvious that the basal seizure of knives could easily be realized by the Neanderthal man when butchering any animal, as big as it might be. The erroneous definition of the tool accommodation in its turn brought forth even larger inaccuracy, that is, in our opinion, an unjustified enlargement of the circle of potential butchery knives, in wich certain points, flakes and simple and transverse side scrapers were included (Matyukhin, 1983 : 182-183 ; Matyukhin, 1984 : 14-19).

The materials from the Armenian sites testify to the opposite : the extreme morphological monotony of butchery knives. This repeatedness of shape could not be accidental. Undoubtedly it is indicative of a certain tradition when morphological standards, accepted as the most effective and expedient for the tools of this function, had to be followed.

Is this tradition of local character, or does it bear certain phenomena of a higher rank ? Considering that most of the soft-material knives from the Mousterian sites of the USSR (Monasheskaya cave, Nosovo I, Zaskalnoye V and others) (Shchelinskiy, 1975 : 53-55 ; Shchelinskiy, 1977 : 195 ; Shchelinskiy, 1983 : 115) are of convergent shape, we tend to the second view point. Anyway, the question remains open, until enough factual material is assembled.

When examining the group of butchery knives, it does not take long to notice that most of the tools (over 1/3) are fragmented (fig. 2 : 9, 11, 12). The problem of fragmentation is crucial for the Yerevan industry, where 57,5 % of the equipment is more or less broken. Some scholars claim that a great number of Yerevan obsidians are broken deliberately (Yeritsyan, 1972 : 15-16). Meanwhile, the diagnostic features of deliberate fragmentation are vague and little studied. In many other respects the motivation for such a wide use of this method of secondary stone processing remains unclear. The results of the experimental-traceological study of artifacts are of great help in solving these problems. Now we shall see it on fragmented butchery knives. Some sections bear obvious, deliberate technico-morphological features. Yet, such artifacts being rare, they do not allow for general conclusions. The sections are regular-transverse (fig. 2 : 9) and slanting transverse (fig. 2 : 11, 12). This is the way the butchery knives would break during the working process. The experiments, meanwhile, showed that the tools were not subjected to extreme dynamic or static loads. That they would hardly break when employed is proved also by functional evidences of great care towards the

(3) « As far as flake surfaces are permanently slippery with grease, forefinger fixation against the edge, but not the two-finger seizure should be admitted as most optimal. » (Matyukhin, 1984 : 15).

(4) The Neanderthal man's hand was adjusted to force manipulation motions (Semenov, 1950 : 79-82 ; Danilova, 1979 : 293, 294, 318), besides, their arm power significantly surpassed that of the contemporary man (Praslov, Semenov, 1969 : 17-18).

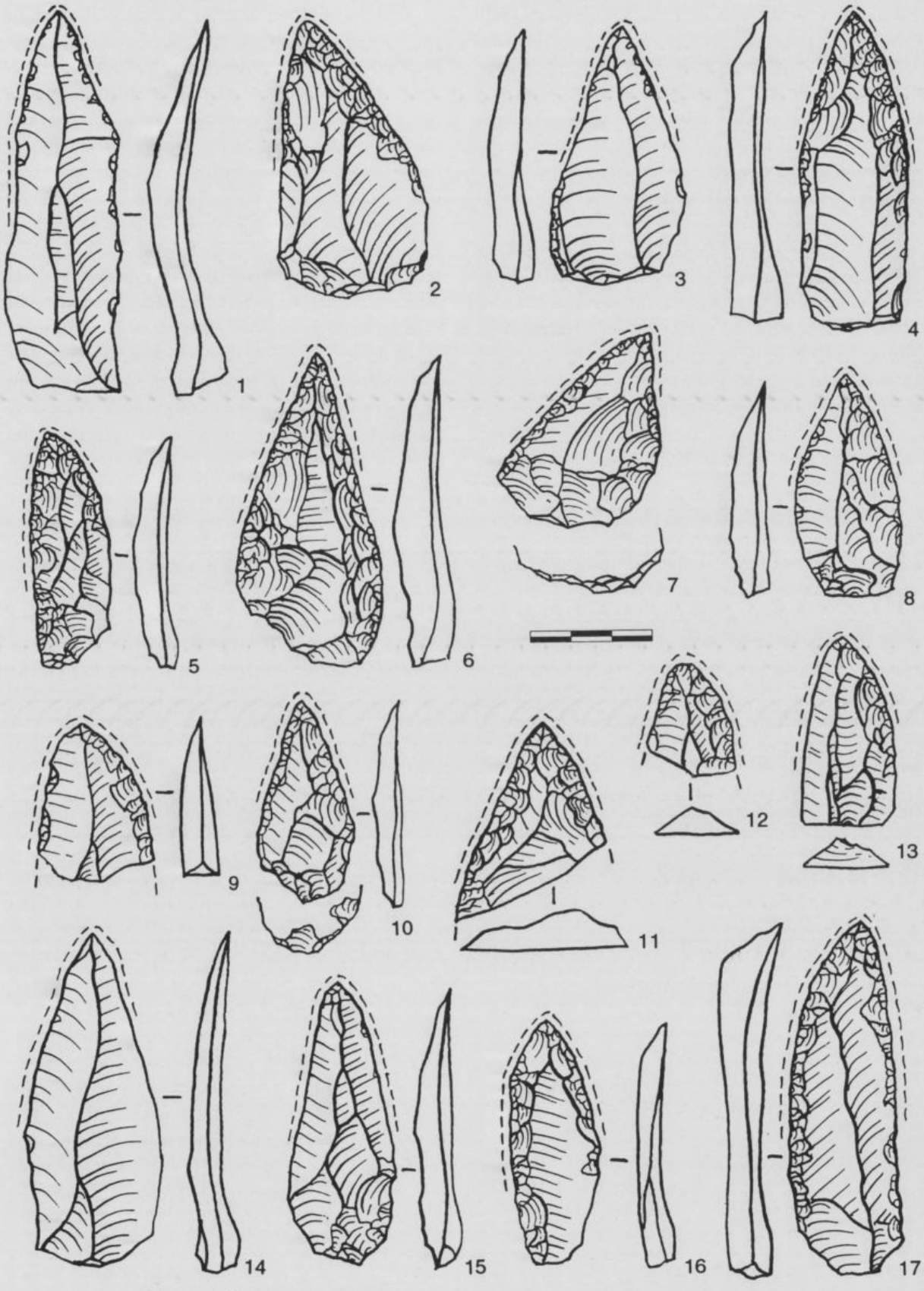

Fig. 2. Obsidian butchery knives. **1, 3, 14.** From Lusakert I. **2, 4-13, 15-17.** From Yerevan I. Dotted lines show exhausted working edges of tools.

working equipment on the part of the ancient dwellers of Yerevan cave[5]. Still, there is another, more telling, argument in favor of the functional character of the deliberate fragmentation of implements : the overwhelming majority of fragmented butchery knives are badly worn out. Apparently, after having dulled, the tools were fragmented (instead of being retouched) so as to get rid of the upper, most active and worn out zone. Each or one of the broken parts could be reshaped thereafter into an independent tool, often with a quite new function, differing from the initial one. We have already registered several cases of such reshaping. The initial cause of this « saving » attitude towards the implement is, most probably, the scarcity of the local obsidian raw material.

These are the main results of the complex (traceological, experimental and morphological) study of butchery knives from the Mousterian sites of Armenia. Let us emphasize once again that the major peculiarity of the tools of this functional group consists in the extreme stability and similarity in shape. The function and shape correlation of the tools is quite apparent. Two important aspects are worth mentioning.

Firstly, the correlation is not equally distinct for all of the morpho-features of the tools : most clearly it is found in their general shape (convergent), in the morphometric indices of the blades (small and average sharpening angle of edges and facets, straight or slightly convex plan outline of blades) and it is less distinct for the specially-shaped accommodation elements. At the same time, it is found only slightly in other morphofeatures of knives.

Secondly, the correlation of function and general shape is brought out not in simple, but in multiple correspondence : actually each of the butchery knives has a convergent configuration, but not all of the tools of this shape are butchery knives. This fact could be explained by the very nature of the point tools, that combine point and blade and thus are universal to a certain extent.

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(5) Planing tools could serve as examples of the careful attitude of the ancient dwellers of Yerevan towards their tools. Experiments show, that these implements lose effectiveness mainly when flat and sometimes rather large damage-facets appear on the ventral aspect. Consequently the working edge profile looses its smoothness and the contact with the treated surface gets abruptly worse. The resumption of the tools' working abilities by means of retouching is impossible, as the most important condition for the planing tools' efficiency is the smoothness of their ventral aspect. In the course of experiments this kind of macrodeformation appeared at great dynamic loads, when hard knobby areas of wood were being planed. On the archaeological material this kind of wear feature is hardly observed. Obviously, the ancient dwellers of Yerevan, highly appreciating and caring for their implements, tried not to subject them to extreme loads, so definite wood areas were processed by some method other than planing. Knobs were cut rather than planed. The combination of two ways of wood processing is illustrated by the numerous special polyfunctional tools : knife-planes.

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