



## PROBLEM OF STATISTICAL GROUNDING OF THE CRITERIA FOR IDENTIFICATION OF THE MOUSTERIAN FACIES IN THE CENTRAL ASIA

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In the Stone Age archaeology, the most difficult aspect in differentiation of archaeological cultures is not the matter where "to draw the line" between them. The problem is that we cannot yet offer the rules and prove the validity of all suggested divisions (DEREVIANKO *et al.* 1989: 48). Our attention had been already focused on standard models of scientific explanation in archaeology (KHOLUSHKIN 1981: 12-15), the criteria of sufficiency and validity of explanations (KHOLUSHKIN 1983: 143-149; KHOLUSHKIN and KHOLUSHKINA 1985), schemes of formation and development of ideas (DEREVIANKO *et al.* 1989: 246) and problems of qualitative analysis of archaeological publications (DEREVIANKO and KHOLUSHKIN 1994: 24-32). All of the above mentioned studies were directed to working out the research technique of objective, systematic and quantitative description of the "creative kitchen" of researchers, laws and mechanism of functioning of the scientific activity.

Within the framework of the mentioned studies, we tried to identify those fundamental standards an archaeologist leans upon in his searching and analysis of laws in empiric data.

This problem bears a direct relation to Mousterian of the Central Asia. The following purely descriptive criteria for identification of the archaeological technical/typological subdivisions have been suggested by V.A. Ranov for this region: the Levallois facies is characterized by significant prevalence of polar (uni- and double-platformed) cores (orthogonal and close to prismatic cores of Oby-Rakhmat as a variant) and extremely rare utilization of discoid cores. High values for the indices of blades and facetting are assumed. Blanks are dominated by Levallois blades, so high

values of the Levallois indices are conjectured. Blanks of large sizes are the most typical. The sites, with an exception of Oby-Rakhmat, have yielded a small amount of finished tools.

The Levallois-Mousterian facies is close to the previous one, though polar and discoid cores are presented here in approximately equal quantities. There are a lot of unilateral-discoid cores for blades. The blade and facetting index is about the same as in the Levallois facies: Levallois blanks play a conductive role in the group of blanks, though the number of atypical blanks increases. The Levallois type of tools prevails. The Mousterian local group, despite apparent similarities with Levallois/Mousterian sites, has some significant distinctions. Polar cores are not numerous and feebly marked. Discoid, unilateral and bilateral cores prevails. Radial system of scars is typical for them. The blade and Levallois index decreases. In the group of finished tools Mousterian deliberate processing covering not only laterals, but a part of a tool's dorsal side is often encountered.

The Mousterian-Soanian group is dominated by unilateral, discoid core type with "unsystematic" flaking. At Kara Bura site, the cores of this type are four times more numerous than the polar ones. A low percentage of blades and facetting is recorded. Levallois blades are very rare, so a low Levallois index is conjectured. Atypical flakes of shortened outlines are common. They are thick, with broad smooth platforms. Tools are of the Mousterian kind of processing. Presence of pebble tools of chopping type is a specific feature of the group.

The above mentioned criteria for singling out facies in the Mousterian record of

the Central Asia have been considered by some researchers as insufficiently grounded (KULAKOVSKAYA 1990: 210). Some others think that the Mousterian record of the Central Asia lacks any distinctive types of tools of its own. For this reason the above mentioned concluding schemes by V.A. Ranov and R.X. Suleimanov actually "hang poised in mid air", since the constructions laying in their basis are absolutely unfounded, and the "statistical method" in fact comes to the declarations that have not been supported by serious analysis" (VISHNYATSKY 1996: 1967).

It is not our aim to identify the controversial points associated with singling out the facies in the Central Asia. In the given case the main objective is to answer the questions: How and proceeding from what criteria has V.A. Ranov singled out the above mentioned groups? In what way has the logical splitting of the aggregate of Mousterian sites been executed? Whether has it been done purely speculatively? Or has a series of special variables with precise quantitative characteristic been utilized to single out the above mentioned groups?

This evaluation urgently requires a wide statement of tasks for statistical analysis of actions performed by researchers in singling out of archaeological cultures. The main objective of the research of this kind is to understand the system of values of a researcher, his aspirations and aims. Giving preference to one theory over another, any scholar tries to optimize his choice in the light of that system of values he, sometimes purely intuitively, adheres to. It is known that in number of cases the researcher has his own opinion about the base for constructing a typology. He himself has already created an empiric typology by means of data transformation. All he wants is to make it more precise. For this purpose, in the suggested algorithm the possibility is envisaged for the beginning to use starting division by a variable that was given by the researcher.

To reveal the logic of grouping of the four Central Asian facies executed by V.A. Ranov and constructed with respect to IL, ILty., IF, IFst., ILam, ILamstr variables, cluster analysis has been applied that was based on dispersion analysis sharing many

similarities with methods of constructing of logical solving rules.

At the first stage of division of the Central Asian Mousterian sites by technological traits, the massif has got grouped by IL attribute. Sites with indefinite value of the Levallois index up to 14.5 constituted the first group and sites with IL of 20.2-44.0 formed the second group.

At the second stage these two groups have been subdivided as follows. The first group has been separated into two types by ILty attribute. The first type (the Mousterian-Soan facies) has been distinguished by ILty. attribute with values of 1.1- 3.6. Kara-Bura and Georgievsky Bugor sites have been attributed to this type. The second type was formed by the sites with ILty sysmiss (indefinite values) 10.0 that were referred by V.A. Ranov to Levallois-Mousterian: Khudji, Tossor, Kairak-Kumy.

Two types (3 and 4) have been also identified within the second group, but with respect to IL attribute. The first type has been isolated by IL with values ranging from 20.2 to 32.7. The following sites of Mousterian Typical have been attributed to it: Semiganch and Ogzi-Kichik. The second type has been singled out by IL of 37.8 - 44. Sites of the Levallois facies have been attributed to it: Djar-Kutan and Khodjikent.

SITE	IL	ILT	IF	IFS	ILam	ILamSt	FACIES	GROUP	TYPE
Khudji	14.5	-1.0	27.0	6.0	62.0	-1.0	2	4	2
Tossor	12.2	10.0	25.6	4.4	20.6	5.1	2	4	2
Djar-Kutan	37.8	13.6	55.0	13.6	53.0	25.8	1	6	4
Georgievsky Bugor	13.2	3.6	44.3	8.8	10.8	3.4	4	3	1
Kara-Bura	4.2	1.1	23.6	11.5	6.3	1.7	4	3	1
Semiganch	20.2	8.5	37.1	14.2	30.7	18.0	3	5	3
Ogzi-Kichik	32.7	7.3	35.9	4.6	44.0	22.8	3	5	3
Khodjakent	44.0	-1.0	33.0	5.0	26.0	-1.0	1	6	4
Kairak-Kumy	-1.0	-1.0	38.0	-1.0	56.0	-1.0	2	4	2

The typology obtained coincides with the grouping intuitively executed by V.A. Ranov. Splitting by IF, IFst, ILam, ILamstr. parameters is absent. Thus, the Levallois general and Levallois typological indices were sufficient to single out the facies indicated by V.A. Ranov.

In this paper we have not touched upon the problem of stability of this kind of grouping. Is the result obtained accidental or not? Is it possible that quite different structures of data and interrelations between the variables will be identified after the repeated collection of data? The logic utilized by V.A. Ranov in differentiation of the Mousterian sites has been of main interest for us.

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