

Scar pattern analysis method. Testing the procedures.

1. Research project objectives/ Research hypothesis

The main idea of the project is to verify experimentally an archaeological method recently introduced and steadily gaining popularity, a method used for bifacially knapped stone tools analyses, which is called the scar pattern analysis (SPA, also known as working step analysis). SPA is a method of stone tools analysis which allows to reconstruct their knapping process. It became a useful method especially for analysing bifacial tools because it does not require the presence of debitage, thus giving a rare and extremely important opportunity to conduct the technological analysis of stone assemblages with scarce debitage and numerous bifacial tools which rarely allow for the use of, e.g. the refittings method. SPA analysis is based on reconstructing particular stages of tools manufacturing and repairing, as well as on identifying their function in the production process through the chronological ordering of removals visible on tool surface.

Regardless of its growing popularity, the SPA method has not been as yet standardised, verified or tested properly in order to determine its repeatability and reproducibility. The SPA method's opponents rightfully point to the fact that it lacks an empirically proven efficiency in determining even the chronology of removals on tools, which is the basic step of the SPA procedure of analysis. What is more, the distinctive traits defining the chronology of removals have not been so far objectively verified and codified and the literature of the subject does not offer comprehensive publications on the topic of SPA methodology.

The most important effect of the project will show in the experimental verification of SPA efficiency and accuracy. With the use of blind testing, the submitted project will allow to analyse the SPA method at the various stages of its procedure while fully respecting all errors that may possibly occur (intraobserver repeatability and interobserver reproducibility), and the various factors that may have impact on the results of analysis (i.e. tool surface preservation state, type of analysed tool).

2. Research project methodology

The SPA method testing will be conducted with the use of blind tests, and every type of error will be analysed in a series of previously prepared experiments. The basic rule for every blind test will remain the same, namely: a certain group of people will conduct an indicated stage of SPA analysis; the results they obtain will be then compared with refittings created from debitage left after tool knapping.

In order to preserve strict laboratory conditions, replicas of six types of tools will be knapped especially for the purpose of those tests. The chosen tool types will be: leaf points, bifacial knives, bifacial axes, uni-platform blade cores, double-platform blade cores, and discoidal cores. All of this will permit to determine how much the overall number of errors made during the analyses is influenced by the tool type and its morphology. Altogether, the analysis will be performed on 30 artefact replicas whose knapping debitage will be used to create complete refittings for comparative purposes.

The intraobserver repeatability analysis will be based on comparing the results received by one person repeatedly making the same tool assessment at defined time intervals. The interobserver reproducibility analysis will be divided into two stages. At the first stage, results obtained by individuals with identical level of SPA use competence will be compared, whereas at the second it will be the results obtained by individuals with varying degree of SPA use competence. Additionally, the results of analyses conducted on experimental tool replica with perfect surface preservation state will be compared with the original artefacts that often bear traces of surface patina or striation. This will have as its aim establishing how much the tool surface preservation state affects the number of errors made in analyses.

The blind test will be conducted separately for several different stages of SPA analysis so as to determine where most errors occur, and how much their presence at earlier stages affects the results generated during further SPA steps.

3. Expected impact of the research project on the development of science, civilization and society

The most important effect of the project will show in the verification of SPA efficiency and accuracy. The results will permit to determine the number and type of errors made at particular stages of analysis. On the other hand, they will allow to build a comprehensive list of good practices and procedures which reduce the possibility of error-making by a researcher. Testing the bifacially knapped tools on such a large scale will bring a better recognition of the spectrum of possibilities offered by the use of SPA method for artefact analysis. Especially large hope is placed in the results of tests performed on cores since these are the forms that have been most rarely analysed with the use of SPA so far.

Owing to the proposed project, SPA will finally become a fully verified and codified stone tool analysis method, which will enhance its reliability and will elevate it to the status of a method with a firm scientific and empirical basis. The effectuation of this project will add to the development of research in the field of tool knapping technologies in Stone Age, as well as provide solid grounds for SPA application in a much wider artefact context than it has been this far. It will be especially precious to define SPA usefulness in the technological analyses of various core types.