
A comparative study of the models of environmental adaptation of the Final Palaeolithic societies of the Polish Lowland

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RÉSUMÉ

Cet article concerne les résultats préliminaires produits par l'étude comparative de l'adaptation des chasseurs de l'Alleröd et des Dryas récents qui vivaient dans les basses terres polonaises. L'analyse, réduite à l'interprétation de traces de micro-usure trouvées sur les outils en silex, n'a pas montré de différences réelles de stratégies d'adaptation entre les tarnoviens et les svidériens. Les résultats indiquent la nécessité d'une analyse plus détaillée de ces matériels dans le contexte archéologique ainsi que d'une discussion sur les possibilités cognitives et les limites des études de micro-usure.

ABSTRACT

This paper refers to the preliminary results of the comparative study of adaptation of Allerod and Youngest Dryas hunters living on the Polish Lowland. Analysis reduced to the interpretation of microwear traces found on flint tools only showed no real differences in adaptation strategies between Tarnovianlike and Sviderian peoples. The results indicate the necessity of a more detailed analysis of these materials in the archaeological context as well as of a discussion about the cognitive possibilities and limits of microwear studies.

This paper is a preliminary report concerned with the project devoted to the comparison of the models of environmental adaptation of two different Final Palaeolithic cultures, namely the Tarnovianlike and Sviderian cultures. The main purpose of this project is to answer to the key question : is it

possible on the basis of microwear studies to demonstrate the differences in adaptation strategies of the societies living during two different climatic periods, *i. e.* in Allerod and the Youngest Dryas ? I also hope that this project allows us at least partially to recognize the cognitive possibilities

of microwear analysis in this kind of research. The materials I took into consideration comprise three assemblages which were found at the site Calowanie in central Poland. The site of Calowanie was excavated by Romuald Schild in the sixties and seventies (Schild, 1975). It is located within the pre-glacial valley of the Vistula river, on the isolated, sandy island surrounded by the peatbog. This island consists of two sedimentation series: lower layers are of alluvial origin whereas the upper part of the island is built of dune sands. Both main sedimentation zones are linked with the adjacent organogenic sediments. ^{14}C dates as well as palynological data (Dabrowski, 1982) show that the beginning of the island, connected with the alluvial sedimentation, dates to the early Allerod period (*ca* 9800-9700 bc). The end of dune sedimentation is dated to about the half of the Youngest Dryas (more exactly before 8500 bc). During the excavation of the site eight main settlement levels were found, and almost every level comprised several homogeneous concentrations – so-called kshemenitshas – according to R. Schild's concept (Schild, Marrezak, Królit, 1975). The materials I have investigated come from two levels – no. IV and VI. Level no. IV is connected with the Allerod period whereas level no. VI with the Youngest Dryas. Comparing the environment of the climatic periods mentioned above in the area of the central part of the European lowland, one can see some distinct differences. At the beginning of the Allerod birch and pine-birch forests appeared whereas in the later part of this period pine forests predominate. The most common species of the fauna were elk, deer, roe-deer, aurochs, boar horse and reindeer. As a result of the climatic change at the beginning of the Youngest Dryas the Allerod forests disappeared and were replaced by step-tundra and park tundra formations. The climatic changes lead also to the replacement of the forest fauna by the tundra fauna, mostly reindeers.

These briefly characterized environmental changes were the main reason for the distinction by Janusz and Stefan Kozłowski's (1983) of two different adaptation strategies, namely forest model and tundra or forest-tundra model. The first model is connected with the Allerod period and the Tarnovian-like culture. The tundra and forest-tundra model is related to the last Dryas period and the Sviderian culture.

For project completion, several assemblages of the Tarnovian-like and Sviderian cultures, comprising retouched tools as well as the debitage, will be investigated. However, here, to show the preliminary results only retouched tools of two Tarnovian-like and one of Sviderian culture have been taken into consideration.

For the observations a metallographic microscope was used. Observations of macrotraces, like edge rounding, edge damage or striations, were accomplished with a magnification of 10 to 20 times, whereas for microscopics observations I used magnifications in the range of 100 to 500 times. The first tool assemblage, known as the western concentration of level IV, is composed of 69 end-scrapers made of blades and flakes, 4 backed pieces and 2 burins. Among them 58 per cent of tools were used and 16 per cent were abandoned unused. The third category – others – comprise tools carrying post-depositional or unidentified traces. Among 81 of used tools with characteristic, identified traces 93 per cent have working traces of animal origin; only 7 per cent of all the tools showed wood working traces. The second analyzed assemblage – an eastern concentration from the same level as the first one – comprise a quite similar set of tools, but there are many more backed pieces. Altogether, 76 end-scrapers, 2 racettes, 47 backed pieces, 12 burins and 6 truncations have been found in this concentration. 57 per cent of the tools were used, 14 per cent were unused and 29 per cent of the tools carry post-depositional or unidentified microtraces. Among the used tools 78 per cent were working with animal materials, and 22 percent have traces of wood-working origin. The third investigated assemblage is a small Sviderian concentration (no. I) from level VI. Its tool set is composed of 1 end-scraper, 7 burins, 4 Sviderian tanged points and 3 micro-truncations. 75 per cent of the tools were used whereas 6 per cent were left unused. 19 per cent have post-depositional or unidentified traces. Among the used tools 82 per cent were working with animal materials, and 12 per cent with wood.

The data presented above lead us to several conclusions. The first is that the comparison of the results of microwear analysis of these assemblages is limited by the divergence in the number of observed artifacts. It is also difficult due to the different typological compositions of the tool groups. Within the Tarnovian-like assemblages

end-scrapers and backed pieces predominate, which are almost not present in the Sviderian concentration. Contrary to that, there are no micro-truncations and tanged points in Tarnovian materials, which are relatively numerous in Sviderian assemblages.

For these reasons we can only follow the statistical distribution of some parameters. It is easy to notice (fig. 1) that all assemblages are similar when we consider the proportion of used and unused tools (in Tarnovian assemblages 57 and 58 per cent of the tools were used), whereas in the Sviderian concentration 75 per cent were used. There are also no differences in the destination of tools – over 75 per cent of tools in all three

assemblages carry traces indicating the processing of animal materials (bones, antler, skin and meat or the combination of mentioned traces). However, some functional specialization of some tool types was recorded. This is especially true for backed pieces from the western concentration. On one hand, compared with other types of tools, they were much more intensively used for processing wood. On the other hand, at least some of them were hafted. Additionally, one backed piece has characteristic MLIT traces suggesting it was used as an arrow head. Instead, except for one hafted piece, Sviderian tanged points were used as knives – for cutting animal carcass. Worth noticing are burins from the Sviderian assemblage. Among all burins only one has rotation movement traces at its end. The rest of the burins carry perpendicular or longitudinal movement traces, which is unusual considering the results of the functional analysis of other Sviderian sites (Winiarska-Kabacinska, in press).

The preliminary results presented above indicate that on the basis of the analysis of microwear traces found on flint tools it is difficult to demonstrate some really distinct differences in the adaptation strategies of the Tarnovian and Sviderian cultures. Such non-spectacular results lead us to question the reasons for this. Among others two basic answers can be suggested :

- 1. Deficiency, or even fallacy, of the conducted microwear analysis. This could be, for instance, using retouched tools only for analysis.
- 2. General uselessness of functional analysis for such kinds of comparative studies.

These topics seem to be unsolved for now. However, in my opinion, the main problem and difficulty as well are the lack of rules translating real traces observable on flint tools into cultural behavior. When making functional interpretation we must realize that different cultural behavior creating a specific model of adaptation can be seen as identical from the point of view of microwear analysis. On the other hand, some cultural behavior can be reflected in a very different way on flint tools.

Future work will focus on two issues :

- 1. Continuation of microwear observations
- 2. Analysis of all obtained data in respect to archaeological context.

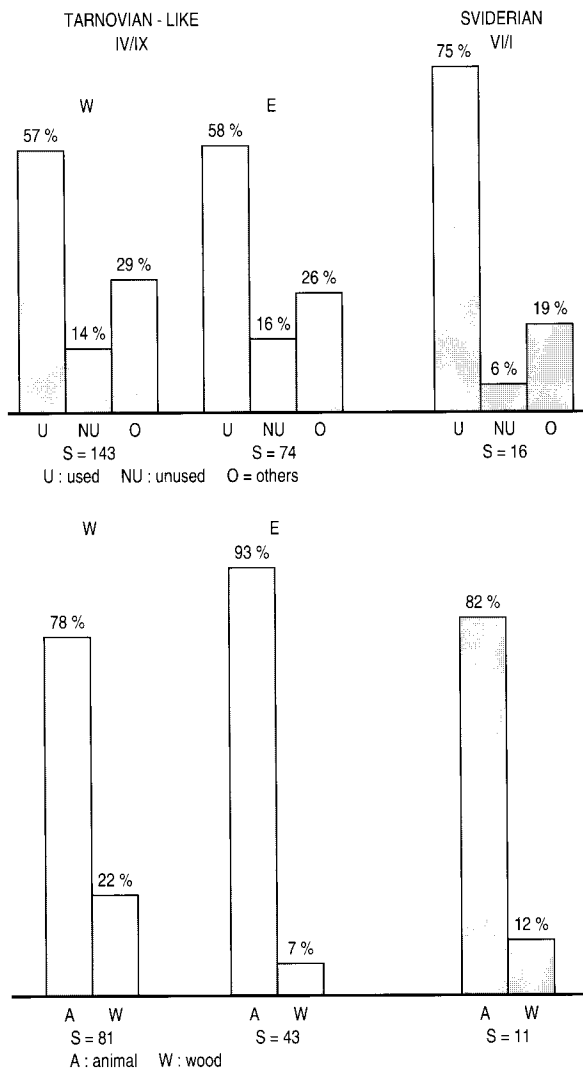


Fig. 1. Basic statistical data of Tarnovian-like and Sviderian assemblages.

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