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Einzelstudien zur Besiedlung der Troas

Ivan Gatsov – Petranka Nedelcheva

Lithic Industry of Troy I–VII: Objectives and Methods of the Excavations 1987–2006

Abstract

The article presents the Bronze Age chipped stone industry from Troy, based on the study of the lithic material recovered since 1987. The 6383 examined chipped stone artefacts make possible the formulation of certain more or less definite conclusions, as well as some general observations on the technology of the assemblages, typological structures and the construction of the lithic production chains (or chaînes operatoires).

Zusammenfassung

Gegenstand des Beitrags bildet die Herstellung geschlagener Steinartefakte im bronzezeitlichen Troia. Auf Grundlage von 6383 seit 1987 untersuchten Fundstücken lassen sich verschiedene mehr oder weniger allgemeingültige Rückschlüsse hinsichtlich Technologie, Typologie und Produktionsabläufe (chaînes operatoires) ziehen.

The study of the Bronze Age chipped stone assemblages from Troy offers many insights into the lithic technology and distribution, e. g. the organization of entire web of activities from this period and site. The restoration of the production sequence from core knapping to implement manufacturing and usage, and the distinction of the types of raw material relies on a series of analyses: technological, morphological, space, petrological, and use-wear/functional.

The entire lithic material from Troy I–VII recovered in the 1987–2006 campaigns has been subjected to those analyses.

In addition to the lithic industry of Troy, this article presents also selected results from the study of Bronze Age chipped stone assemblages from the Northeast Aegean, Northwest Anatolia, and Northern/Upper Thrace. These include materials from the settlements of Yenibademli, Gökçeada island, Küllüoba, Central Northwest Anatolia, Kanlıgeçit, Turkish Thrace, Bulgarian Northern/Upper Thrace. One of the objectives of this paper is to offer a comparison between the lithic assemblages from the different periods.

Objectives

The study outlines the basic features of the Bronze Age chipped stone assemblages from Troy. Analysis of the assemblage proceeds through the following steps:

1. Distinction of the different varieties of raw material used by the Bronze Age lithic technology. The correlation of raw material outcrops or sources with the distribution of the raw material is a key factor with impact for technological efficiency, and to some degree behavior.
2. Reconstruction of the reduction sequence for the various raw materials; it is important for the understanding of some of the most typical features of the prehistoric society in the region and the period;
3. In this phase the level of craft specialization and standardization of the lithic assemblages is determined, based on the findings of the analyses performed in phase one and two. In other words, the goal is to construct a model of lithic tool production applicable to the study area for the period in question;
4. Together with the technological and typological characteristics, analysis considers the spatial distribution of the lithic finds and their correlation to a variety of features and activities attested on Troy;
5. Devising an as large as possible database, with entries for planigraphy, chronology, and cultural association, quantitive and qualitative attributes and features, type of raw material. As a result, the most typical technological and morphometrical features are correlated with the kind of raw material;
6. Examination of the database against other Bronze Age lithic assemblages. This is done in order to gain some general insights into the Bronze Age lithic technology and to suggest research questions for future inquiries.

Methods

The study of the lithic artifacts from Troy includes technological and typological analysis, space analysis, distinction and gross description of the raw material samples, as well as application of quantitative methods. The combined results of those analyses are presented in the conclusion.

Technological analysis exposes the main features of the lithic technology and helps to establish the original share of the individual elements. It is a key in the reconstruction of the general structure of the technological process.[1]

Through the technological approach, »lithic artifacts are no longer exclusively perceived as more or less ›characteristic‹ objects to be described and classified. Instead, these artifacts are also seen as evidence of human behavior in its technical, economic, and even social dimensions. Thus, the technological approach […] overcomes […] the classic dilemma of ›culture versus function‹ posed by each tool«.[2]

Lithics are well suited for the analysis of specialization because they retain diagnostic marks from the manufacturing process which can be used to determine the stage of production. The

1 Tixier 1995, 99–101; Pelegrin1995, 297.

2 Pelegrin 1990, 116–125.

basic premise is that specific patterns of intra assemblage debitage/tool relationships reflect the level of craft specialization. [3]

The structure of the Troy lithics database

The lithic assemblages are classified into six general categories or groups. These groups are subdivided into different categories using the following criteria:

1. Cores and core fragments,
2. Cortical specimens,
3. Crested specimens
4. Debris (waste),
5. Flakes,
6. Blades,
7. Retouched tools.

Together the seven groups make up the morphological structure of the lithic assemblages; the morphological structure offers grounds for further analyses and comparisons with other assemblages.

The entries for each lithic artifact include: identification number, type of raw material, quantitative and qualitative attributes and features. Information about the database is presented below.

1. Cores and core fragments

A low number of cores are recorded. These are heavily exploited specimens.

2. Cortical specimens

Cortical specimens include flakes, with cortex visible on their dorsal side. These are divided into: entirely cortical flake, flake with more than 50 % cortex, and flake with less than 50 % cortex.

3. Crested specimen

The artefacts with crested marks are also rare, and their presence is considered to indicate a stage in the core preparation. The lithic assemblage of Troy consists of one-side crested flakes and plunging. Crested specimens are detached from the cores in order to create a ridge along the en-

3 Rosen 1997, 84–85.

tire length of it. The shapes of those plunging are concave; they are used to correct an inconveniently sharp angle of the core and overly convex surface.

4. Debris (waste)

The debris, or waste materials, has little or no definite characteristics[4]. Debris is also often applied to lithic material considered to be knapping discard. The category includes flake fragments with no preserved butts, small flakes less than 15 mm long and undetermined fragments. As chips from retouching are not found, these are not included within the category.

Flake fragments include incomplete or fragmentary specimen with an identifiable dorsal and ventral surface, but no preserved butts. As small flakes are classified artifacts too small to have been selected as a possible blank for tool manufacturing. Undetermined piece is not a section of an artifact, but is characterized by a lack of distinctive features, which make impossible determination of the ventral surface.

5. Flakes

The flakes make up a negligible share of the Troy lithic assemblage. The few studied unretouched flakes were classified according to direction of the dorsal scars, type of butts and method of detachment; additionally, mean values of length, width and thickness are taken into account. According to the direction of the dorsal scars, can be distinguished flakes with unidirectional scars and multidirectional; the dorsal surfaces scars preserve negatives from previous removals from the core.

6. Blades

Blade artifacts are also few. These are classified according to the following criteria: size, dorsal pattern, shape, cross section, fragment, type of butt and marks of detachment and profile. The criteria are judged according to the following arbitrary selected attributes. Dorsal pattern: unidirectional; Shape: parallel side, converging sides, diverging sides, irregular; Section: triangular, trapezoidal, multifaceted; Fragment: distal, mesial, proximal, intact; profile: straight, convex, twisted.

4 Crabtree 1982, 32.

7. Retouched tools

For the purposes of the typological analysis a typological list of retouched tools is created. The short version of the list contains the major typological groups, while the longer version reflects the frequency of the different tool types. The tool types are defined by retouch location and blanks morphology. The idea is to record the trends and frequencies of morphological types of implements and to evaluate the degree of quantitative and qualitative differences and similarities within the lithic assemblages of Troy.

The principle typological groups discussed below are: end-scraper, retouched blade, denticulated tool, perforator and drill, truncation, retouched flake, splintered piece, arrowhead, combined tool, fragment of retouched tool, various. This typological list has a limited application and is based on the different types of the retouched tools from the lithic assemblages of Troy.

Butts

The intact pieces and fragments with preserved proximal part present the following types of butts: natural, flat, dihedral, linear, undetermined, splintered, and retouched.

Detachment

Special attention is given to the combination of traits characteristic of the developed variants of blade flaking:[5] regularity of the lateral edges and arris, morphology of buts and their shoulders, appearance and localization of bulbs, appearance of ripples – general and those in the bulb area; convexity of profiles, the maximal width:thickness: length ratio as indicator of a specific knapping technique, etc.

The qualitative attributes, such as butt, dorsal pattern and detachment, directly reflect the production technology. In case of Troy lithic industry, these attributes may be considered function of the production objective, the purpose was to receive mostly flakes.

Analysis of exchange patterns

The analysis is based on the identification of the kind of raw material used in the make of the stone artifacts from the investigated sites. The spatial distribution of raw material worked into different categories of artifacts reflects the specialized production and exchange system of sedentary societies.

All artefacts are grouped according to the different types of raw materials. The latter are based on the petrography criteria.

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5 Pelegrin1988, 73; Tixier 1984, 57–70; Inizan et al. 1992.

Spatial analysis

Spatial analysis examines the different ways of spatial organization in the archaeological sites, the relations between the features and artifacts, and between the artifacts. This approach makes possible inquiry into the functional reconstruction of human activities from the period. It accounts for the spatial distribution and the connections between chipped stone artefacts and the other archaeological finds.

The three-dimensional map of the chipped stone assemblages reveals the spatial distribution of all types of chipped stone artefacts. The spatial distribution varies considerably within the excavated units, illustrating numerous horizontal arrangements of the two principle categories debitage and retouched tools.

Overall, analysis aims to determine the spatial properties across the separate units that define areas from the different stratigraphic layers without activities.

Statistical methods used in data analysis

This analysis is contributed by Petranka Nedelcheva, New Bulgarian University, Department of Archaeology.

Data description

Much of the conclusions of this research are based on the results of descriptive statistical analysis. There are two types of statistical variables in the data base: metric (continuous, quantitative) and categorical (nominal, ordinal) types. The type of the variables determined the selection of diagram, graphic or statistical values as appropriate for the presentation of the combinations of the different variables.[6]

Metric parameters (quantitative data)

A metric variable is a variable which can be counted measured or weighted against a measurement standard (as length, width, thickness and weight of the artefact).

6 Snedecor – Cochran 1989; Moore – McCabe 1989.

Categorical parameters (non-metric, nominal, ordinal)

Each variable which can be characterized like parameter and can be classified into more than two categories is described as categorical parameter or qualitative data. E. g., the different categories of the chipped stones artefacts cannot be measured. Thus they were classified into discrete types and their categorical parameter took a nominal value (1–cores; 2– flakes etc.).

In our work we used tabular and graphic presentation of the marginal and the conditional frequencies as absolute and relative values. The goal was estimating one- and two-dimensional empirical distributions of nominal and categorical parameters. To present the absolute and relative frequencies of a categorical parameter we used tables and to present the distribution of parameter characteristics classified into groups we used pie and bar diagrams.[7]

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7 Stevens1996; Kalinov 2001.

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