

Plant Food Processing Tools at Early Neolithic Göbekli Tepe

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Cover: The archaeological site of Göbekli Tepe. Main excavation area with four monumental circular buildings and adjacent rectangular buildings (©German Archaeological Institute, Photo Erhan Küçük). D-DAI-IST-GT11-EK-0385.

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Chapter 1

Highlights of the Study

The topic

Since 2007 I had the opportunity to participate in the excavations at the Early Neolithic site of Göbekli Tepe lead by Prof. Dr. Klaus Schmidt. Since 2016 I have been analyzing the finds presented here.

The main aim of my study was to reconstruct plant food processing at Göbekli Tepe (9600-8000 BC) with an emphasis on cereals, legumes and herbs as food sources, on grinding and pounding tools for their processing, the tools implied in the consumption of meals and beverages.

The core of the analysis is constituted by grinding and pounding tools (GPT) and stone containers. Their corpus amounts to more than 7.000 objects, constituting thus the largest collection published by now from the Neolithic of Northern Mesopotamia (figures 1.1-1.2).

Excavation work and sampling was funded by the German Research foundation (165831460). Experimental work was funded by the Gerda Henkel Foundation (Grant number n/a), the German Archaeological Institute (Grant number n/a) and the Stadtmuseum Berlin Foundation (Grant number n/a).

Overview of the methods

Functional analyses are the focus of this study. They were conducted partly using classical methods of use-wear analysis like macroscopical and microscopical optical analyses. The use of tactile analyses on the other hand is new. Also new are methods to differentiate between products of cereal processing and meals made of cereals, and quantification methods of wear. Shape and surface deformations are primarily analyzed and used as parameters for the functional interpretation; contextual information was used in addition.

Experimental programs, which were designed to follow the characteristics of the finds, were carried out to secure the analysis. The reference collection is held in Museum Village Düppel, Berlin.

Optical and chemical analyses on residues, particularly phytoliths, sediments and samples from surfaces and walls of grinding stones and stone vessels were carried out as part of the project. They support the arguments presented here but are not the basis of the functional interpretation.

Specific content and structure

The core of this study is the analyses of the handstones, pestles, netherstones and stone containers from Göbekli Tepe presented in chapters 4-7. A short overview on the architecture and stratigraphy, necessary for the understanding of the contextual discussion is presented in chapter 2.

Next to find analysis, another important pillar of the work is chapter 3 which presents the methods and experiments in detail.

The study concludes with a discussion in chapter 8 of the results and of their impact on the interpretation of the site and the wider regions it is situated in from the new points of view generated by the research. All relevant data are presented in the attached tables and images, both as text and as plates.



FIGURE 1.1. The “stone garden” next to the excavation areas at Göbekli Tepe (©German Archaeological Institute, Photo Mehmet Gülebak). D-DAI-IST-GT16-MG-0070.



FIGURE 1.2. The “stone garden” next to the excavation areas at Göbekli Tepe, 3D (1) and detail (2) (©German Archaeological Institute, Photos Laura Dietrich and Hajo Höhler-Brockmann, 3d Laura Dietrich). DAI-IST-GT17-LD/HHB-0268-0269.

Highlights of the study

Surprisingly, the impressive amount of GPT as integral part of the find inventory of Göbekli Tepe was not analyzed until now and has played no role in the much discussed and partly speculative interpretation of the site. The main explanation for this research gap is the previous focus of the research on other topics, including the monumental architecture and its symbolism. The special character of the site, its unusually large size, expressively male imagery, hunters and hunt as basis of the subsistence dominated the discourse on Göbekli Tepe. This image changes to some degree with the present study, which brings into attention an almost unknown economic and social dimension of the site.

A second explanation for the research gap at Göbekli Tepe lies in the character of the objects analyzed here. Grinding stones, for different reasons, are usually neglected in archaeological analysis. This study lists and describes several thousands of GPT and stone containers, including metrical data and photographic illustration of a selection of finds, constituting the most comprehensive study for Anatolia and the Northern Levant by now. It underlines the importance of the GPT and stone containers in the interpretation of an archaeological site. Certainly, numerous studies at other sites will follow and the data presented here can then be used for comparison to investigate foodways in the wider region.

The functional analysis, which is the core of the study, shows that GPT were widely used at Göbekli Tepe, predominantly for processing cereals to coarse flour, most probably for the production of porridge-like meals in large stone containers. Cereals and especially fluid meals made of them seem to have played an important role in the subsistence at the site. At the same time, bread-like products were produced, but the number of tools with specific wear markers is significantly smaller both concerning active and passive parts of the grinding gear. The use-wear analysis methods to differentiate products of cereals and to measure intensity use were developed especially for this study.

The processing of legumes to paste seems to have played an important role in the economy of the site, too. The consumption of legumes has to be investigated through further studies in the region. Generally, studies on foodways should concentrate more on the tools used for preparation and consumption than exclusively on preserved macroremains, which for some sites, between them Göbekli Tepe, are largely missing or do not offer sufficient information on the extent of certain food habits.

Context analyses help to reconstruct the loci of the processing of plant food, which clearly are oriented around the well-known monumental buildings of Göbekli Tepe, on terraces and the roofs of the so-far not much discussed rectangular buildings. Possibly, large-scale food production can be linked to activities which center in the partly contemporary monumental buildings, including specific social practices like commensality and feasting, especially when the large quantities of processed food are taken into account.