Plant Food Processing Tools at Early Neolithic Göbekli Tepe

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Contents

List of Figures .......................................................................................................................... ii
List of Tables ........................................................................................................................... vi
Chapter 1: Highlights of the Study ....................................................................................... 1
Chapter 2: The Site with Oliver Dietrich and Jens Notroff ................................................. 4
Chapter 3: Methods, Experiments and their Results ......................................................... 10
Chapter 4: Handstones ......................................................................................................... 33
Chapter 5: Pestles ............................................................................................................... 87
Chapter 6: The Netherstones ............................................................................................... 97
Chapter 7: Stone Containers and Platters ......................................................................... 125
Chapter 8: Discussion of the Results of the Analysis ....................................................... 153
Chapter 9: Plants and Landscapes in the art of Göbekli Tepe (Excursus) ....................... 166
Appendices ......................................................................................................................... 169
Bibliography ....................................................................................................................... 226
List of Figures

FIGURE 1.1. The “stone garden” next to the excavation areas at Gobekli Tepe (©German Archaeological Institute, Photo Mehmet Gülebak). D-DAI-IST-GT16-MG-0070. .......................................................... 2
FIGURE 1.2. The “stone garden” next to the excavation areas at Gobekli Tepe. 3D (1) and detail (2) (©German Archaeological Institute, Photos Laura Dietrich and Hajo Höhler-Brockmann, 3d Laura Dietrich), D-DAI-IST-GT17-LD-HHB-0268-0269. .......................................................... 2
FIGURE 2.1. The archaeological site of Gobekli Tepe. Main excavation area with four monumental circular buildings and adjacent rectangular buildings (©German Archaeological Institute, Photo Erhan Kücük, Graphics André Beuger). .................................................................................................................. 6
FIGURE 2.2. Stratigraphy of Gobekli Tepe. Eastern profile of area L9-78 in the main excavation area, cutting through building D (©German Archaeological Institute, compilation Jens Notroff). .......................................................... 7
FIGURE 3.1. Schema for the spatial description of wear (©Laura Dietrich). .................................................................................................................. 14
FIGURE 3.2. Replicas of handstones and pestles from Gobekli Tepe used in the experimental program (©Laura Dietrich). .................................................................................................................. 15
FIGURE 3.3. Production of coarse and fine flour and spreading pattern of the flour after 5min of grinding (coarse: above, fine: below) (©Laura Dietrich). .................................................................................................................. 18
FIGURE 3.4. 3D-models of L13 (©Laura Dietrich). .................................................................................................................. 18
FIGURE 3.5. 3D-model of L13 with the microscopically analyzed spots marked (©Laura Dietrich). .................................................................................................................. 19
FIGURE 3.6. Micrographs of L13 (working face) (©Laura Dietrich). .................................................................................................................. 20
FIGURE 3.7. Microphotos of L13 (working face) (©Laura Dietrich). .................................................................................................................. 21
FIGURE 3.8. 3D-models of L10 (©Laura Dietrich). .................................................................................................................. 22
FIGURE 3.9. 3D-models of L10 (©Laura Dietrich). .................................................................................................................. 23
FIGURE 3.10. 3D-model of L10 with the microscopically analyzed spots marked (©Laura Dietrich). .................................................................................................................. 24
FIGURE 3.11. Macrophotos of L10 (working face) (©Laura Dietrich). .................................................................................................................. 25
FIGURE 3.12. Microphotos of L10 (working face) (©Laura Dietrich). .................................................................................................................. 26
FIGURE 3.13. Wear-markers (WM) 1, 2 and 3 formed during EP1 (©Laura Dietrich). .................................................................................................................. 27
FIGURE 4.1. Handstones from Gobekli Tepe (©German Archaeological Institute, Photo Laura Dietrich), D-DAI-GT18-LD-0001. .................................................................................................................. 34
FIGURE 4.2. Typology of the handstones from Gobekli Tepe. Schematic depiction of shapes (white) and profiles (grey) (©Laura Dietrich). .................................................................................................................. 36
FIGURE 4.3. Handling the originals: examples of haptic possibilities (©German Archaeological Institute, Photo Laura Dietrich). .................................................................................................................. 37
FIGURE 4.4. Boulder in the basalt field (©Laura Dietrich). .................................................................................................................. 38
FIGURE 4.5. Boulders in the basalt field (©Laura Dietrich). .................................................................................................................. 38
FIGURE 4.6. Possible fragments from the production process from the excavations (©German Archaeological Institute, Photo Laura Dietrich), D-DAI-IST-GT18-LD-0004. .................................................................................................................. 39
FIGURE 4.7. Original handstones and comparison between wear progression on salt blocks after 18 respectively 22 WU and profiles of the handstones at Gobekli Tepe (©German Archaeological Institute and Laura Dietrich, Photos Laura Dietrich), D-DAI-GT18-LD-0005-0007. .................................................................................................................. 40
FIGURE 4.8. Blanks for handstones of type 6 (©German Archaeological Institute, Photo Laura Dietrich). D-DAI-GT18-LD-0008. .................................................................................................................. 41
FIGURE 4.9. Schematic depiction with the classification of the surface deformations (©Laura Dietrich). .................................................................................................................. 44
FIGURE 4.10. 3D-Meshes without color texture with surfaces of type 1 and 2 (©German Archaeological Institute, Photos and 3D-models Hajo Höhler-Brockmann), D-DAI-IST-GT17-HHB-0009-0015. .................................................................................................................. 45
FIGURE 4.11. Handstone L18_000139 and experimental handstone L13 (©German Archaeological Institute and Laura Dietrich, Photos and 3D-models Laura Dietrich and Max Haltb), D-DAI-IST-GT17-HHB-0014 (left above). .................................................................................................................. 46
FIGURE 4.12. Above: surface roughness modeled in CloudCompare and cleaned by SOR: 1-3, of the replica L13 after 1WU (1), 3WU (2) and 7WU (3); of the Neolithic handstone L18_000139. Flatter surface of the margins and edges of the Neolithic (5) and experimental (6) handstone as it was felt. Below: distance modeling in CloudCompare on replica L13 in different working stages. 1: modeling of the surface after one WU; 2: modeling of the distance between the surfaces after one and three a WU (red: erosion of the high topography; blue: grains intrusions); 3: modeling of the distance between the surfaces after three and seven WU (red: erosion of the high topography; blue: grain intrusions). Experimental work and documentation Laura Dietrich, modeling Max Haltb (©Laura Dietrich). (©Laura Dietrich, experimental work and documentation Laura Dietrich, modeling Max Haltb; tactile and optical analyses Laura Dietrich). .................................................................................................................. 46
FIGURE 4.13. Spatial distribution of the types (©Laura Dietrich). .................................................................................................................. 47
FIGURE 4.14. Above: Microwear from replica L10 (5-8) used to grind coarse flour and from the Neolithic handstone 00_000034 (1-4). Note the similar topography on the center and margins and the wear-marker for coarse flour: erratic short gouges on flattened and sinuous topography. Below: Macrotopography from both replicas L13 (9-10) and L10 (11-12) showing different wear-markers for fine and coarse flour (©German Archaeological Institute and Laura Dietrich, microscopical analyses Laura Dietrich, different magnifications), D-DAI-IST-GT19-LD-0015-0019. .................................................................................................................. 49
FIGURE 4.15. Microwear from replica L13 (9-12) used to grind fine flour and from the Neolithic handstones 18_00139 (1-4) and 00_000028 (5-8). Note the typical wear-marker for fine flour: thin striations on flattened high topography on the margins (Nr. 3-5, 7-12) visible at different magnifications both on the Neolithic handstones and on the replica. They are not present in the center of the boulders, where short erratic gouges dominate (©German Archaeological Institute and Laura Dietrich, microscopical analyses Laura Dietrich at different magnifications, Photos Laura Dietrich). D-DAI-IST-GT19-LD-0020-0029. ............................................................................................................................................50

FIGURE 4.16. Reconstruction of use for handstones of type 1: processing of cereals to coarse flour (©German Archaeological Institute and Laura Dietrich, Photos Laura Dietrich). ..........................................................................................................................52

FIGURE 4.17. Reconstruction of use for handstones of type 1: processing of cereals to fine flour (©German Archaeological Institute and Laura Dietrich and Hajo Höhler-Brockmann). ........................................................................................................................................53

FIGURE 4.18. Reconstruction of use for handstones of type 2: processing of cereals to fine flour (©German Archaeological Institute and Laura Dietrich, Photos Laura Dietrich). ........................................................................................................................................54

FIGURE 4.19. Reconstruction of use for handstones of type 2: mixed use for coarse and fine flour (©German Archaeological Institute and Laura Dietrich Photos Laura Dietrich). ........................................................................................................................................55

FIGURE 4.20. Notched boxplots with the lengths of the complete and fragmented handstones of types 1 and 2 (©Laura Dietrich). ...............................................................................................................................................58

FIGURE 4.21. Distribution of grinding stones (©German Archaeological Institute and Laura Dietrich, map Laura Dietrich and André Beugger). The phytolith analyses of grinding stone surfaces were performed on the single finds marked with triangles. ......................................................................................................................................59

FIGURE 4.22. The distribution of the handstones in the rectangular buildings (©Laura Dietrich). ...............................................................................................................................................60


FIGURE 4.26. Area L9-07 with Building 134 (old number 17) (©German Archaeological Institute, Photos Klaus Schmidt). D-DAI-IST-GT12-KS-5364. ........................................................................................................................................65

FIGURE 4.27. Handstones (©German Archaeological Institute, Photo Klaus Schmidt). D-DAI-IST-GT12-KS-0379. ........................................................................................................................................66

FIGURE 4.28. Sets of grinding stones at the pillar in area L9-27 (©German Archaeological Institute, Photo Klaus Schmidt). D-DAI-IST-GT12-KS-2798. ........................................................................................................................................66

FIGURE 4.29. “Fallen” grinding stones in area L9-27 (©German Archaeological Institute, Photo Klaus Schmidt). D-DAI-IST-GT12-KS-PXL-8664. ........................................................................................................................................67

FIGURE 4.30. Handstone 18_000358 found on the floor next to pillar 18 in monumental Building D (©German Archaeological Institute, Photos Laura Dietrich). D-DAI-IST-GT18-LD-0030. ..............................................................................................................................69


PLATES 4.1-17. Handstones (©German Archaeological Institute, Photos Laura Dietrich). D-DAI-IST-GT18-LD-0030-0214. ........................................................................................................................................70

FIGURE 5.1. Types of pestles from Göbekli Tepe (©Laura Dietrich). .......................................................................................................................................................88

FIGURE 5.2. Pestle nr. 97_000651 (©German Archaeological Institute, Photo Klaus Schmidt). D-DAI-IST-GT97-KS-5926. .......................................................................................................................................................90

FIGURE 5.3. Pestle nr. 10_000309 (©German Archaeological Institute, Photo Nico Becker). D-DAI-IST-GT10-NB-0113. .......................................................................................................................................................90

FIGURE 5.4. Pestle nr. 98_000169 (©German Archaeological Institute, Photo Laura Dietrich). D-DAI-IST-GT18-LD-0215-0216. .......................................................................................................................................................90

FIGURE 5.5. Pestle nr. 95_000819 (©German Archaeological Institute, Photo Laura Dietrich). D-DAI-IST-GT18-LD-0217. .......................................................................................................................................................90

FIGURE 5.6. Pestle nr. 99_000302 (©German Archaeological Institute, Photo Laura Dietrich). D-DAI-IST-GT18-LD-0218. .......................................................................................................................................................90

FIGURE 5.7. Pestle nr. 11_000028 (©German Archaeological Institute, Photo Nico Becker). D-DAI-IST-GT11-NB-354390. .......................................................................................................................................................90

FIGURE 5.8. Pestle nr. 11_000031 (©German Archaeological Institute, Photo Nico Becker). D-DAI-IST-GT11-NB-3546. .......................................................................................................................................................91

FIGURE 5.9. Pestle nr. 98_000510 (©German Archaeological Institute, Photo Laura Dietrich). D-DAI-IST-GT18-LD-0219. .......................................................................................................................................................91

FIGURE 5.10. Pestle nr. 09_000145 (©German Archaeological Institute, Photo Nico Becker). D-DAI-IST-GT09-NB-0189. .......................................................................................................................................................92

FIGURE 5.11. Pestle nr. 10_000311 (©German Archaeological Institute, Photo Nico Becker). D-DAI-IST-GT10-NB-0121. .......................................................................................................................................................92

FIGURE 5.12. Pestle nr. 01_000353 (©German Archaeological Institute, Photo Klaus Schmidt). D-DAI-IST-GT01-KS-6764. .......................................................................................................................................................92

FIGURE 5.13. Pestle nr. 95_001743 (©German Archaeological Institute, Photo Laura Dietrich). D-DAI-IST-GT18-LD-0220. .......................................................................................................................................................93

FIGURE 5.14. Pestle nr. 12_000579 (©German Archaeological Institute, Photo Nico Becker). D-DAI-IST-GT12-NB-1108. .......................................................................................................................................................93
List of Tables

TABLE 3.1. Zones of the filling of the rectangular and apsidal buildings as defined for the statistical purposes of the present study. .....................................................................................................................................................11

TABLE 3.2. Description schema for optical macroscopical and microscopical investigations. ..........................................................13

TABLE 3.3. Overview on the experimental work with handstone L10 for the production of coarse flour (own work; average of 31 working hours). .....................................................................................................................16

TABLE 3.4. Overview on the experimental work with handstone L10 for the production of fine flour (own work, average of 16 working hours). ................................................................................................................................16

TABLE 3.5. Overview on the additional experimental work with different participants. .....................................................................................16

TABLE 3.6. Wear-markers defined on originals and replicas. ........................................................................................................... 29

TABLE 4.1. Documentation of the handstones. .............................................................................................................................. 34

TABLE 4.2. Typology of the handstones from Göbekli Tepe (compare FIGURES 4.1 and 4.2). .................................................................35

TABLE 4.3. Blanks collected during the survey of the basalt field (survey and data Devrim Sönmez). ..........................................................41

TABLE 4.4. Natural surfaces and surface deformations on handstones. .............................................................................................. 43

TABLE 4.5. Distribution of the surface deformations on handstones of type 1. .................................................................................. 51

TABLE 4.6. Distribution of the surface deformations on handstones of type 2. .................................................................................. 55

TABLE 4.7. Distribution of the surface deformations on handstones of type 3. .................................................................................. 56

TABLE 4.8. Distribution of the surface deformations on handstones of type 4. .................................................................................. 56

TABLE 4.9. Distribution of the surface deformations on handstones of type 5. .................................................................................. 56

TABLE 4.10. Distribution of the surface deformations on handstones of type 6. ............................................................................... 57

TABLE 4.11. Distribution of the surface deformations on handstones of type 7. ............................................................................... 57

TABLE 4.12. Distribution of the surface deformations on handstones of type 8. ............................................................................... 57

TABLE 4.13. Distribution of the surface deformations on handstones of type 9. ............................................................................... 57

TABLE 4.14. Distribution of the surface deformations on handstones of type 10. ............................................................................. 58

TABLE 4.15. Chronological distribution of the analyzed finds. ........................................................................................................ 60

TABLE 4.16. The distribution of the handstones in the rectangular buildings and outside (except the fills of the monumental buildings). ............................................................................................................. 60

TABLE 4.17. Distribution of grinding stones in a selection of buildings in the main excavation area. ................................................. 61

TABLE 5.1. Distribution in the fillings of the rectangular buildings. ........................................................................................................ 96

TABLE 6.1. Boulder shapes at Göbekli Tepe. ........................................................................................................................................ 99

TABLE 6.2. Contexts of the netherstones. ..........................................................................................................................................104

TABLE 7.1. Small and medium-sized vessels from Göbekli Tepe: description of shapes. ........................................................................... 127

TABLE 7.2. In situ limestone troughs at Göbekli Tepe. ........................................................................................................................... 130

TABLE 7.3. Macroscopical and microscopical analyses on troughs, vessels, and platters from Göbekli Tepe. ......................................................... 131

TABLE 7.4. Find contexts of the stone vessels and troughs from Göbekli Tepe. .................................................................................... 133

TABLE 7.5. Platters from Göbekli Tepe: shape description. .....................................................................................................................134

TABLE 7.6. Find contexts of the platters from Göbekli Tepe. .................................................................................................................... 139
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/HBB-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 macrorests, 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.