External Examiner's Report on the Dissertation of Martin Odler
"The social context of copper in Ancient Egypt
down to the end of Middle Kingdom"

Submitted in 2020 at the Czech Egyptological Institute
Charles University of Prague, Faculty of philosophy

I. Brief summary of the dissertation

The dissertation deals with the metalworking in Ancient Egypt from the beginning in the fourth millenium BC through the end of the Middle Kingdom at about 1600 BC. The author describes the „chaîne opératoire" (a special terminus developed by the French ethnologist Leroi-Gourhan) of copper production in Ancient Egypt. First, he deals with various lexemes of copper, such as (a) regular copper (bjA), (b) Asian copper (sTt) and (c) arsenic copper (Hsmn) and their relevant sub-groups. He argues that the well-known lexeme Hmt „copper" is used only in the late period of Egyptian history and does not belong to the Egyptian dictionary of the Old and Middle Kingdoms. The main research of the author concerns however the modality of the production of copper in ancient times. He compares the iconographic material as illustrated in the private tombs of Old and Middle Kingdoms representing metalworkers at work (ch. 4) with the archaeological material as found in the excavations and as kept in the museums of the world (ch. 5). He touches on the different modern methods of analysing metal artefacts from ancient Egypt.

II. Brief overall evaluation of the dissertation

The dissertation comprises ten paragraphs. After having explained the history of research, the author presents a very interesting new methodological approach and the central aim of his research (ch. 1 and 2). He starts with a well-founded and detailed study of the different lexemes of copper and investigates the provenance of copper in early Egypt (ch. 3). He compares the textual, iconographic and archaeological material as found in Prehistory and early times through the end of the Second Intermediate Period at about 1600 BC (ch. 4). Then he describes the exploration of the ore mines in Egypt and abroad and enumerates an enormous large number of copper tools discovered in excavations (ch. 5). He investigates the different methods of metallurgy in Egypt and in other places such as the eastern desert, Sinai, Nubia, Anatolia, Cyprus, Saudi Arabia and so on (ch. 6). He closes with a synthesis of his research (ch. 7). At the end of his research he compares the Egyptian copper tools with the production of copper and its alloy in various other early cultures in the Ancient Near East (ch. 8). A short conclusion (ch. 9) and a voluminous bibliography (ch. 10) close the first volume. The material and all sources are presented in extenso in the appended second volume.

III. Detailed evaluation of the dissertation and its individual aspects

1. Structure of the argument.

The aim of the dissertation is to find out the „chaîne opératoire" of metalworking in the Egyptian industries between the prehistory of the 4th millennium and the end of the Middle Kingdom and the Second Intermediate Period at about 1600 BC. The dissertation has a very clear setting. It is divided, corresponding to the „chaîne opératoire", in a first chapter dealing with the mining places, then continuing with the production of metal tools and vessels for the temple, palace and the cult installations including the personal requirements. He investigates the social position of the metalworker in ancient Egypt. At the end, the author gives an outlook to the future research in dealing with the different techniques of non-invasive and invasive analyses for to identify the provenance of the metal products as found in archaeological sites. The argumentation of the author is clear and lucid. It is easy to catch what the author is attempting to express and for what reason he is choosing his research method.

2. Formal aspects of the dissertation.
The formatting of the thesis and the division in two volumes is clear and convincing. The footnotes are arranged in a coherent manner, the so called “Chicago system” which is well established in Egyptology. The author gives an extensive bibliography of about 50 pages (p. 313-365). The indication of the online addresses of nearly every title (URL) is particularly useful. The English grammar is correct and free of linguistic infelicities,
The second volume contains the complete documentation, presented in tables, lists, charts and graphs. It is easy to use the material exhibited in this volume.

3. Use of sources and material
The dissertation comprises all known find complexes of copper in Egypt and the surrounding countries. It includes more than 2.250 archaeological contexts that contain an enorm amount of metal tools, such as 1597 chisel blades, 1231 axe blades, 1097 metal vessels, 611 mirror blades. The enormous source material is presented and discussed in the catalogue. The objects are studied in depth and discussed in a clear scientific and methodological manner. The provenance of the objects is given, the measurements are indicated. It becomes apparent, that the copper tools tended to a certain regulation in size and weight in the course of time. At the end of the development stands the use of moulds for almost all important and frequently fabricated tools and weapons.

4. The dissertation is an important research work of very high scientific standard. The author employs mainly primary sources to propose an original and organically formulated contribution to the problem of metallurgy at the beginning of the Egyptian history. The results of his investigations are well documented, excellent and far reaching. He employs the collected primary and secondary sources to propose an original, good formulated contribution to the field of metallurgy. We must congratulate him on his successful research work and its clear presentation. His dissertation will certainly become a longstanding standard-work for metallurgy of the ancient world and the early cultures. His achievement is excellent.

IV. Questions to the author
The author deals with several aspects of the administration of metalworking in the Old and Middle Kingdoms of Ancient Egypt (p. 122-126). He distinguishes (a) metal workers of the Great House (pr-aA), (b) metalworkers of the House of the King (pr njswt), (c) metalworkers of Both Houses (prwj), probably the White and Red Houses, (d) metalworkers of the Wabet-workshop (wabt) and (e) metalworkers of the funerary estates (pr Dt) of a private individual.
Are there significant differences in the administration of the various workshops and of the metalworkers attached to these workshops? Are there any differences between the metalworkers? Is it possible to distinguish specialised from unspecialised workshops?

V. Conclusion
I recommend the submitted excellent dissertation with the tentative grade of pass.

Date
23.6.2020 Prof: Dr. em. Hartwig Altenmüller