Univerzita Karlova, Filozofická fakulta, Český egyptologický ústav

Teze disertační práce

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Společenský kontext mědi ve starověkém Egyptě do konce Střední říše

The social context of copper in Ancient Egypt down to the end of Middle Kingdom

2020

Školitel: Prof. Mgr. Miroslav Bárta, Dr.

The thesis is focused on the reconstruction of the *chaîne opératoire* of copper in ancient Egypt from its earliest occurrence in the fourth millennium BC until the end of the Middle Kingdom (c. 4000–1700 BC). As copper was the metal most widely used in ancient Egyptian society, its study can offer statistical "big data" otherwise rarely available for ancient cultures.

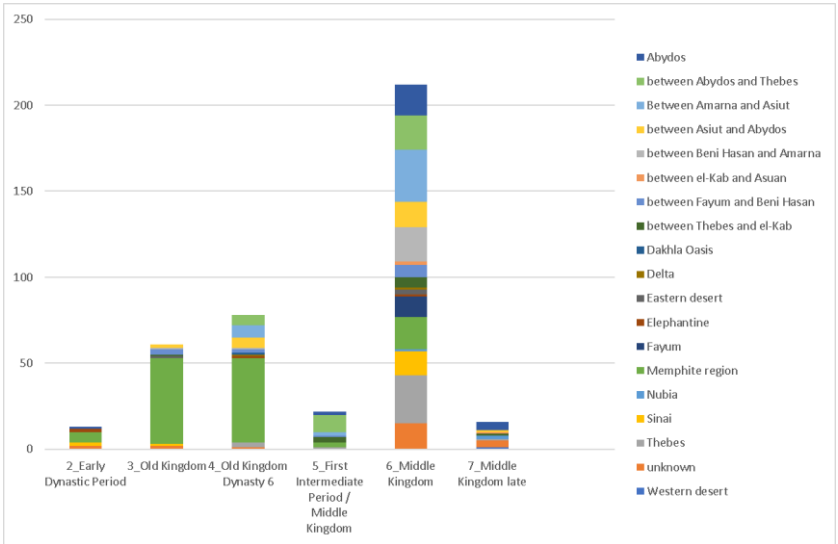
This topic interested already J. F. Champollion and K. R. Lepsius (Lepsius 1872). The standard lexicographical work is until today (Harris 1961), and for copper also (Graefe 1971), with important palaeographic updates by (Herslund 2011, 2015). The Nile valley itself did not have any natural ore sources, and expeditions to Eastern Desert and Sinai were necessary for the procurement, as well as was the exchange with the areas further away vital (Seyfried 1981; Eichler 1993; Altenmüller 2015). The ancient Egyptian institution storing copper and other materials was so called Treasury (*pr-ḥḏ*) (Desplancques 2006). The metalworking craft was studied in the context of other crafts (Drenkhahn 1976; Quirke 2003), and in the specific context of the metalworking scenes (Scheel 1985, 1986; Davey 2012). Among the most prolific iconographic sources on the copper objects are the so called object friezes (Jéquier 1921), besides their occurrence in two-dimensional and three-dimensional renderings of other crafts, again the most important is (Drenkhahn 1976). Copper artefacts themselves were published in the form of catalogues (Petrie 1917; Kühnert-Eggebrecht 1969; Lilyquist 1979; Radwan 1983; Davies 1987; Philip 2006; Petschel 2011). Archaeometallurgical analyses were rather infrequent, with some exceptions of important analytical programmes (Cowell 1987; Philip and Cowell 2006; Rademakers et al. 2018). The author of the thesis contributed to the discourse in several aspects (Odler 2015a, 2015b; Odler and Dulíková 2015; Odler 2016, 2017; Kmošek et al. 2018). The thesis represents an attempt to synthesize the knowledge on the use of copper in ancient Egyptian society, bringing new insights and interpretations.

After defining the subject (Chapter 1) and addressing general theoretical issues (Chapter 2), the history of research in the periods under study from the Badarian culture until the end of Middle Kingdom is discussed in Chapter 3 in the form of a bibliographical essay, dealing consecutively with written and iconographic sources, archaeological sources (material culture, i.e. artefacts), and archaeometallurgical sources. Then the analytical regions in the thesis are presented in the form of an inventory of the sites and sources.

Three large groups of sources are then discussed successively. First, the main terms used for copper are established in Chapter 4. Copper was named *bjꜣ* and read [byr] in the periods under study (Takács 1999, 50–92, 273–275, 2001, 122–126), while an interpretation as arsenical copper with a low and high content of arsenic, respectively, is proposed for so-called Asian copper and *ḥsmn*. In the Middle Kingdom, the term *ḥsmn* begun to be used also for tin

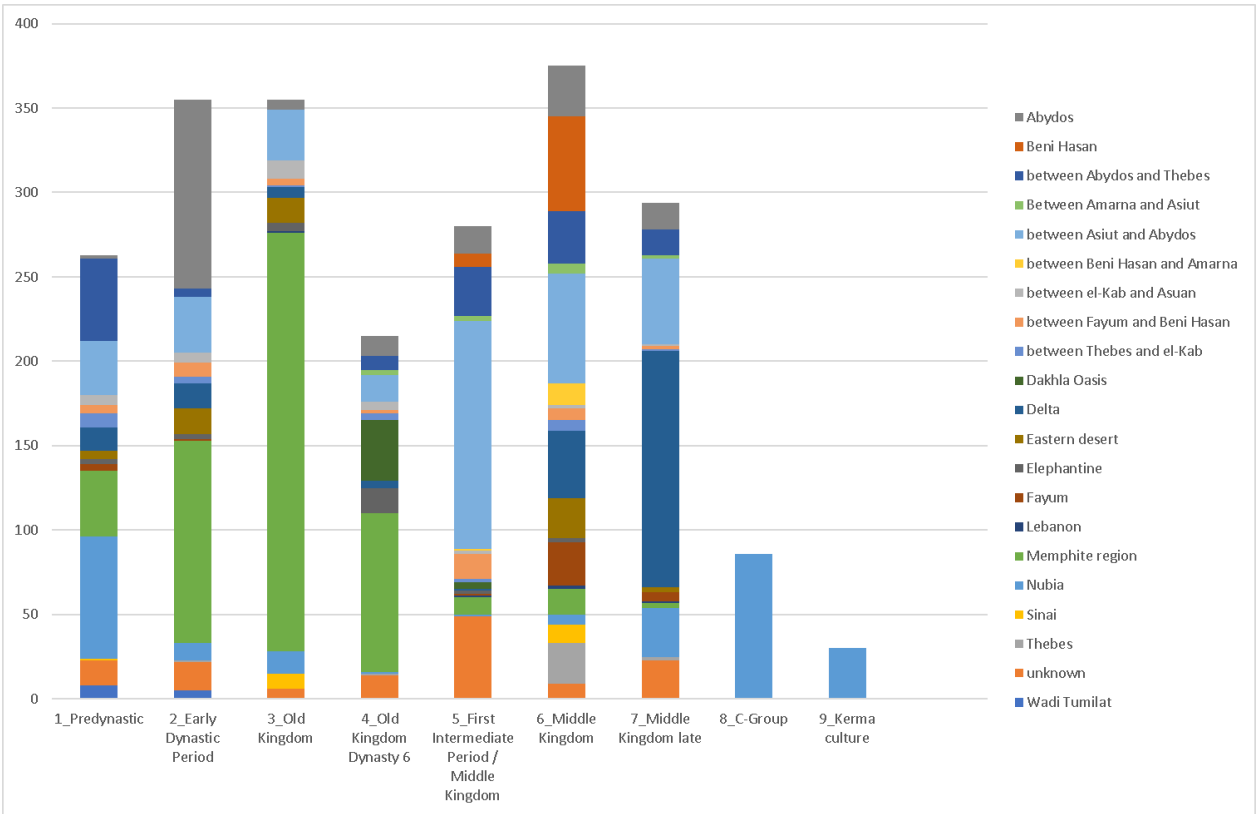
bronze. The word for crucible was *bḏ*(*.t*) and the word for metalworker (incorporating both metallurgists and smiths) was *bḏ.ty*. There is no substantial Egyptian evidence from the periods under study for the current Egyptological reading of copper as *ḥm.t* and metalworker as *ḥm.ty*, which are both mistaken. The confusion was caused by the two similar words in ancient Egyptian, presumably of a single origin. The original meaning of *bj3* was "hole in the ground", thus also "mine" and materials mined in the ground, such as copper, also *bj3*, with slightly different pronunciation and etymological analogies. The word *bj3* as a mine denoted originally any "hole in the ground", including e.g. wells, and the word is often determined by a sign of "well", in Gardiner's Sign List as N41. This sign is also read in ancient Egyptian as *ḥm*. Although (Harris 1961, 61) claimed that "none of the words of the *bi*- or *bi3*- roots is ever written with N34 ideogram", it was demonstrated that these instances are, in fact, many, and even combined writings of N34 and N41 do occur. The research of this type is possible only in last decades, as the publications render by photographs and drawings correct and precise form of the hieroglyphic signs.

Traditional Egyptological written and iconographic sources (including palaeographic ones) are then divided into several consecutive stages of the *chaîne opératoire*: the procurement, initial processing and transport of the ore through expeditions and exchange; the storage, revenues and transactions with unspecified copper; metalworkers as the social group responsible for copper processing; and, finally, the use, reuse and discarding of copper objects in the periods under study, incorporating professions working with copper artefacts, together with presumed foreign material culture present in Egypt. Gradual regionalization of their provenance can be followed in the sources, in total counts 402 tombs, stelae, literary works, etc. While the Old Kingdom sources are clearly skewed towards Memphis, Middle Kingdom sources are well distributed over Egypt and many of its regions.



The main new findings of this chapter include clear information from the sources that copper was processed not only by craftsmen under the royal administration and its ownership was not restricted to the administration, either. On the other hand, copper was mentioned more frequently in the written sources as an important item of individual property only in periods of social unrest such as the First Intermediate Period, as e.g. claimed Governor Ankhtify from Moalla: "I have obtained this coffin and burial equipment with my own copper" (Vandier,Khafaga and Vandier-d'Abbadie 1950, Pl. XVIII). Another evidence of unusual times is a Dynasty-8 donation of temple equipment by a priest, because the usual practice was a donation by the ruling king (Goedicke 1994; Altenmüller 2015). Metalworking specialists could own their tools and enter market exchange with their products. However, metalworkers and other craftsmen were gradually losing their social standing through the periods under study. The highest representatives of the craft were literate, being specialists in metalwork and rituals, as they produced the statues, the images of the deities (Goyon 1959).

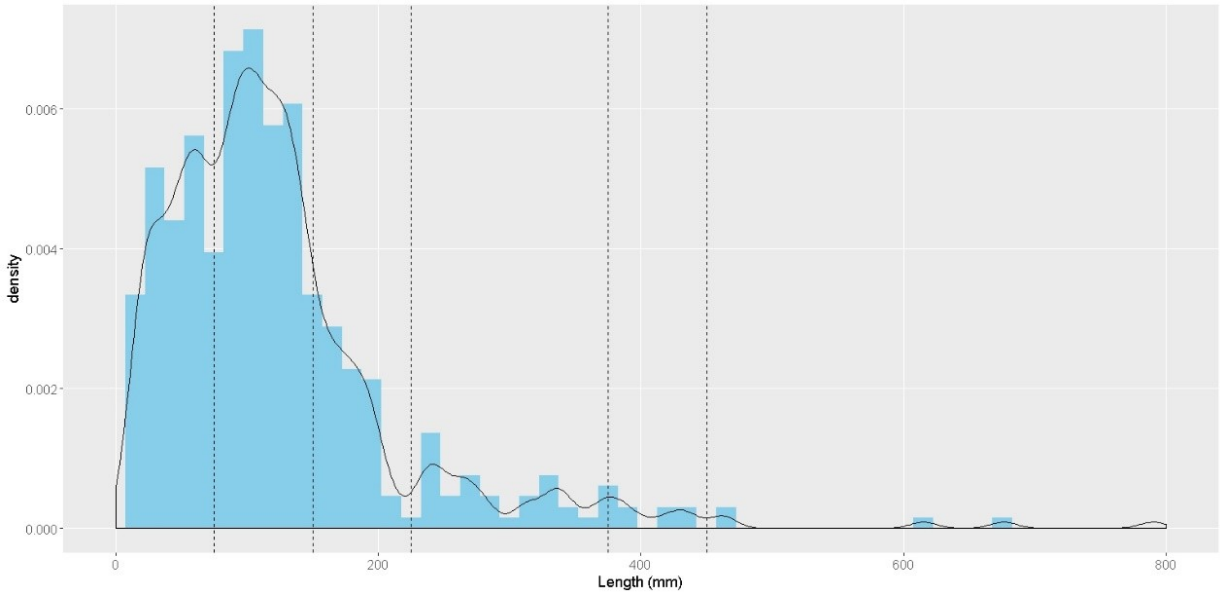
Less traditional and seldom studied archaeological sources (artefacts) are discussed in Chapter 5, once again in the order of the *chaîne opératoire*. It is demonstrated that some regions with archaeological evidence of copper mining, especially Egypt's Eastern Desert and Nubia, are lacking written sources, i.e. expedition inscriptions (Klemm and Klemm 2013). Known workshops are then briefly discussed. The main technological change in the production had the



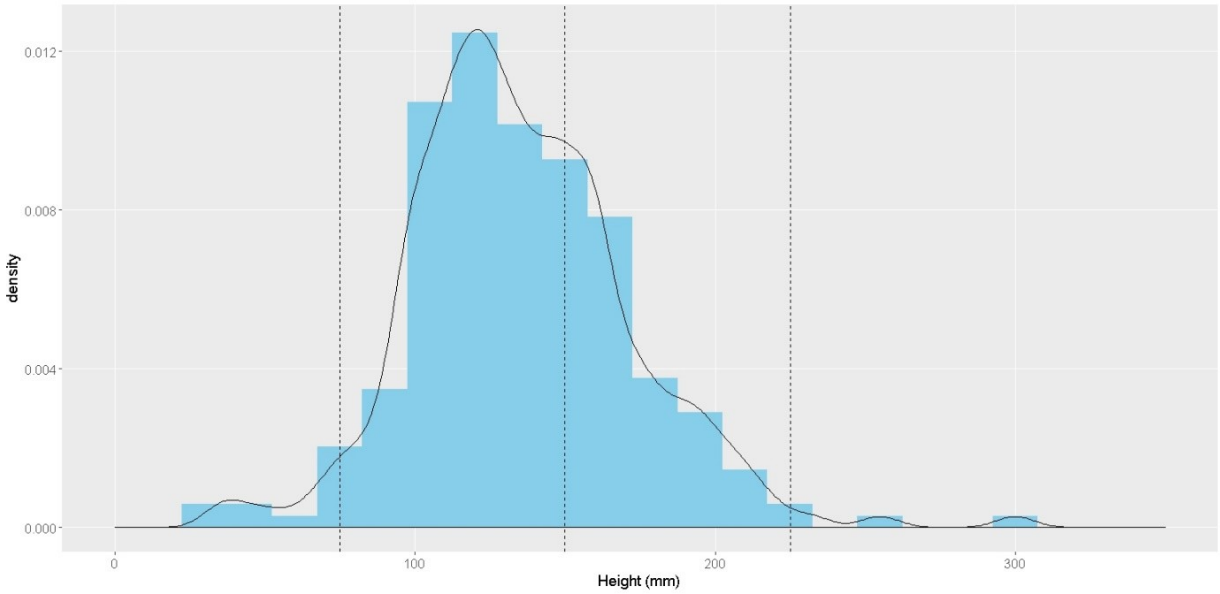
Temporal and regional distribution of the archaeological contexts, n = 2,253.

form of a change in the use of moulds: earlier specimens of moulds were adapted for the production of copper slabs and sheets, which were then worked into the final shape; later ones already had the shape of the final artefact, which was then further processed. However, in the case of crucibles, their main dimensions developed only little throughout the periods under study, most recently studied by (Claes,Davey and Hendrickx 2020). Copper artefacts are treated as a source of a serial nature in the chapter, demonstrating regularization of their shapes. 2,253 archaeological contexts were included in the study. Some of the artefact categories are quite numerous, from the periods under study was preserved 1,597 chisel blades; 1,231 axe blades; 1,097 vessels; 1,025 adze blades, 611 mirror discs.

Since the weight of the preserved artefacts was influenced by corrosion, their proxy measures of dimensions were used for the assessment of their regularization and standardization. However, a comparison of the dimensions of the artefacts to known ancient Egyptian measures of length shows an unexpected approach to these measures, with dimensions being usually either shorter or longer than the expected ancient Egyptian value. This is true not only of artefacts that were practically used and gradually shortened by the use (chisels, adzes, axes, saws) but also of artefacts that presumably retained their original size from the moment of production (mirrors, vessels). This approach to the regularization of the artefacts is unexpected and deserves further study.

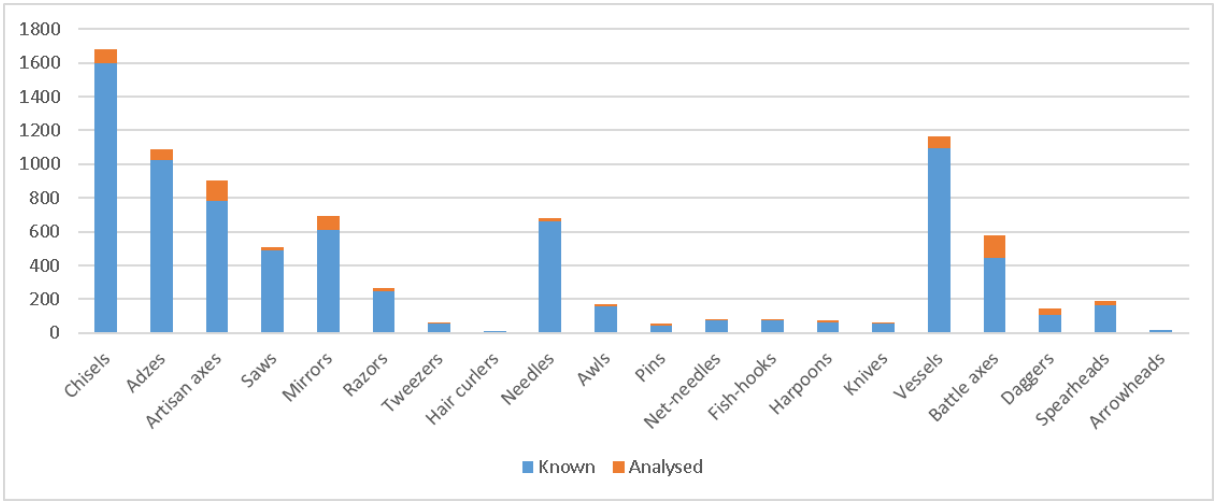


Kernel density estimate of the heights of complete axe blades, n = 430 (plotted in R).

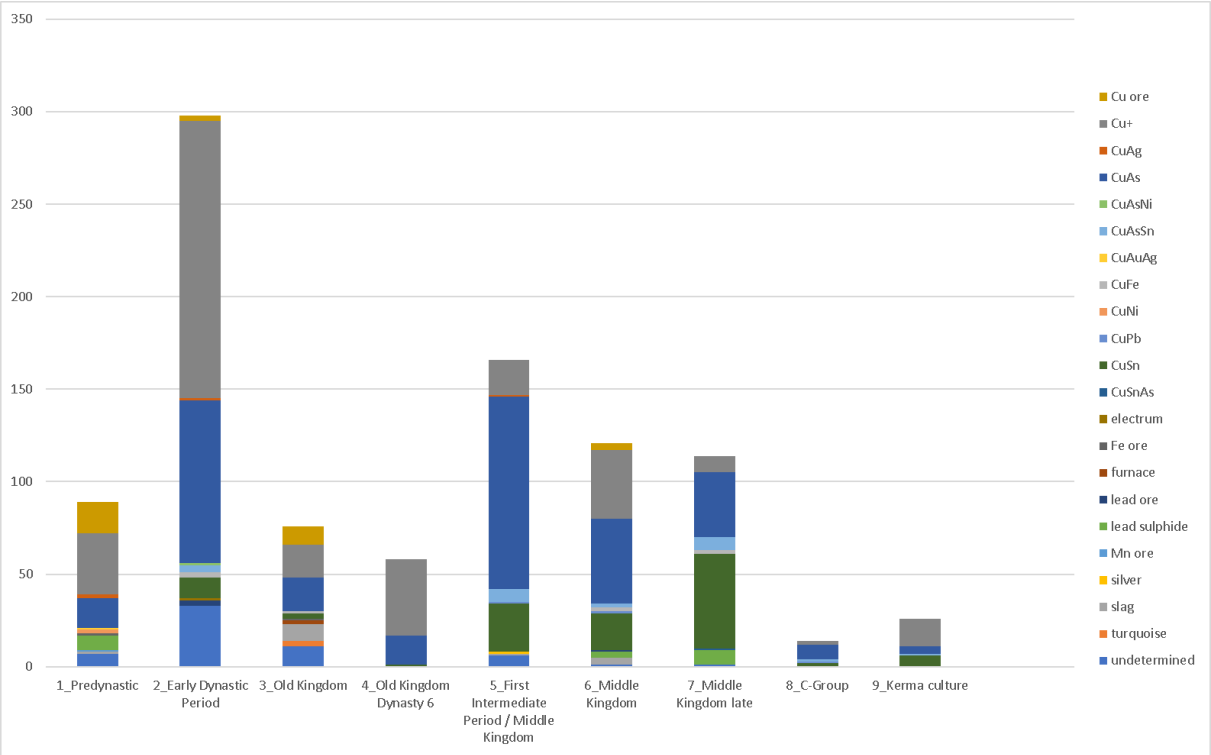


Kernel density estimate of the heights of complete mirror discs, n = 225 (plotted in R).

Finally, Chapter 6 discusses evidence on the provenance of the ores provided by the natural sciences, the chemical composition of the artefacts and their other properties, again divided according to the stages of the *chaîne opératoire*. Although 962 artefacts and ore pieces have been analysed from the periods under study, some of them repeatedly, it is shown that this is only a fraction of the total counts of the objects as presented in Chapter 5.

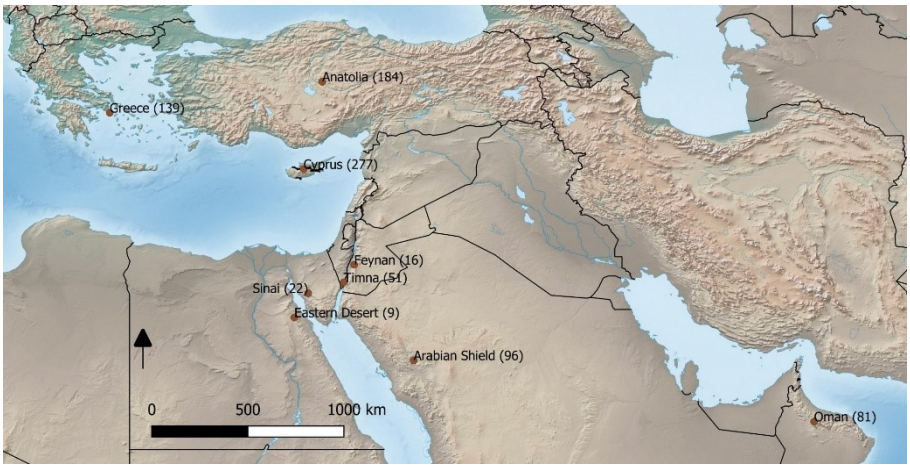


Yet even this fraction gives a statistically sound sample of the analyses, establishing the use of arsenical copper as the main alloy for practically used tools and weapons in the periods under study, with the gradual advent of tin bronze, used side by side with arsenical copper, during the Middle Kingdom (although ancient Egyptians had known tin bronze before and used it for the production of vessels).



Temporal distribution of the main alloys, n = 962.

The material was coming predominantly from Eastern Desert and Sinaitic mining regions (Abdel-Motelib et al. 2012), and seldom from elsewhere (Feynan, Anatolia). The so-called "Hyksos" are not solely responsible for the introduction of tin bronze in Egypt; it seems that Cypriot sources played an important role already in the Middle Bronze Age. The lack of a significant number of lead isotope analyses of ores and artefacts and the lack of a significant number of analyses of the artefacts themselves going beyond the present-day focus solely on the provenance and chemical composition are identified as the main problems of the current state of research.



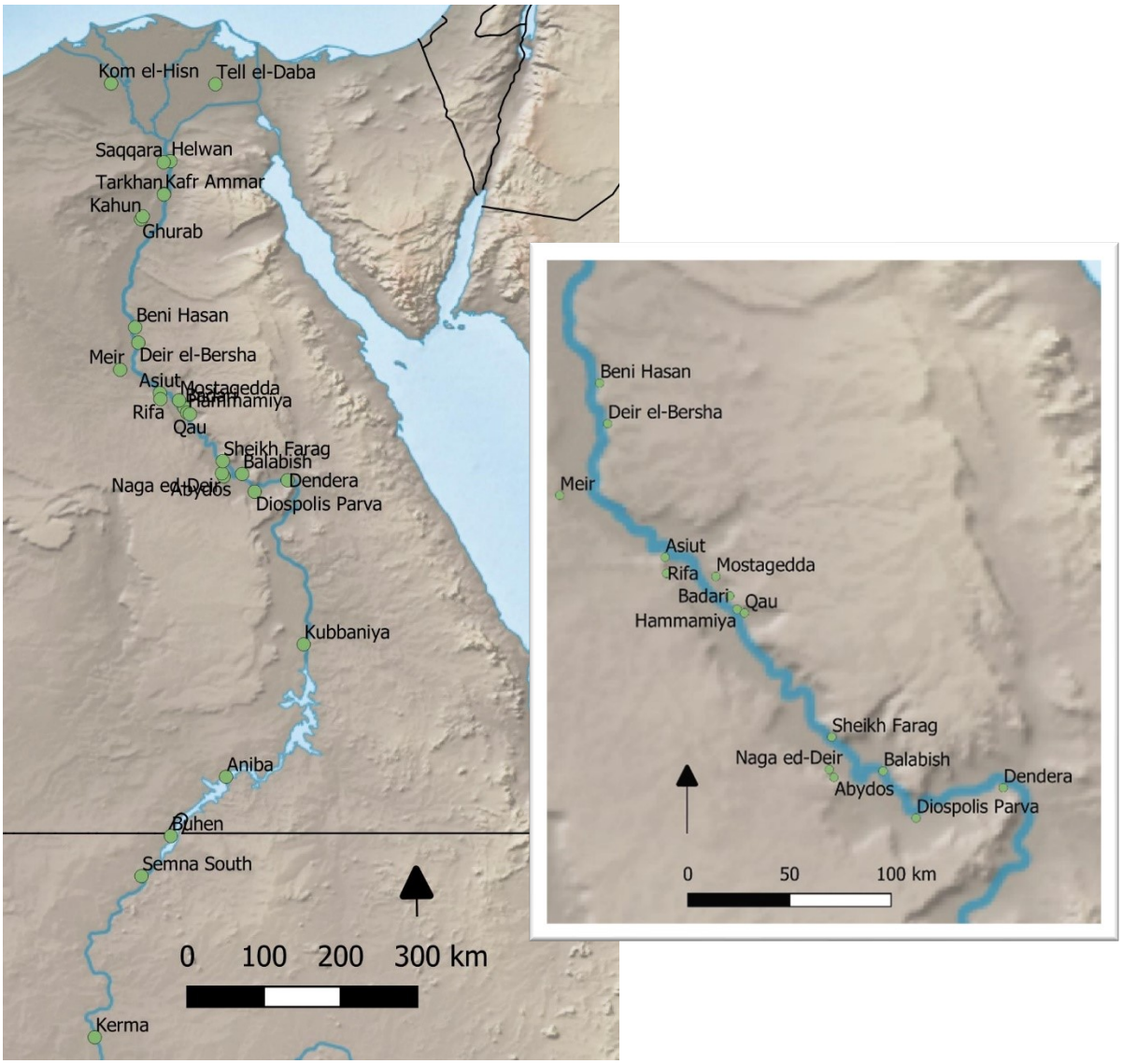
The number of the published lead isotope ratios for copper ores, potential sources for Egypt (Natural Earth).

The analysis of these source categories creates a synthesis of the social context of copper. The main findings of the thesis are presented in Chapter 7, a synthesis is chronologically divided according to the periods under study and, within them, according to the stages of the *chaîne opératoire*. Then, the described reconstruction of the past is briefly compared with the models of the development of metallurgy in the ancient Near East and the presumed "Egyptian exceptionalism" is assessed. In the fourth millennium BC, Egypt was one of many rich regions of the Eastern Mediterranean with a somewhat belated wide application of metallurgy. In the fourth and early third millennium BC, we can observe recurrence of similar phenomena over the Eastern Mediterranean. A particular trait that is analysed, is the occurrence of the copper artisan tool blades in the rich graves of the social elite. These blades occurred north of Caucasus, in Maykop culture, in eastern Anatolia – in the Royal tomb at Arslantepe, in southern Levant – in the Cave of Treasure at Nahal Mishmar, in Egypt (Davis 1983), and in Nubian A-Group rich graves of Naga Wadi, Qustul, and Sayala. The artisan tools were symbols of the attached craft specialization and ancient Egyptians elaborated complex religious ideas about the tools and crafts, in the framework of the Opening of the Mouth ritual (Fischer-Elfert and Hoffmann 1998). The thesis brings into the context evidence from the Pyramid Texts and Coffin Texts, proving that these ideas were significantly complex already in the Middle Kingdom.

In the third millennium BC, there were arguably fewer rich regions in the area. The depictions of the weaponry in the Old Kingdom funerary temples provide evidence that Egyptians had a good idea about the range of weaponry used abroad, and from time to time, as proven by the biography of Weni, militarily intervened north-east of Egypt.

In the Middle Bronze Age, Egyptians were aware of the weaponry used in the Eastern Mediterranean and their range of weapons used responded to the wider situation. Weaponry became an important part of the conspicuous display of power by the Middle Kingdom elites as other originally royal prerogatives (Doxey 1998). Weapons started to be depicted among the burial equipment in the so-called *frises d'objets*, on coffins and in the decorated burial chambers. Several scenes of siege of fortresses and other scenes of personal guards of nomarchs depicted the usual weapons of Middle Kingdom infantry. A literary hero, Sinuhe, proved his warrior prowess with a range of weapons in a fight with a giant from Retjenu. In the material culture, conspicuous numbers of the battle axes were found at late First Intermediate Period and Middle Kingdom sites, as can be seen on the last two maps.

The thesis is complemented by appendices (photographs, drawings, plots, maps, tables) in which all the sources significant for the analyses are presented and cited.



Distribution of Egyptian battle axes from the late First Intermediate Period and Middle Kingdom in Egypt and Nubia and a detail of the middle Egypt.

References

Abdel-Motelib, A. et al. (2012). Archaeometallurgical expeditions to the Sinai Peninsula and the Eastern Desert of Egypt (2006, 2008). *Metalla*, 19, pp.3–59.

Altenmüller, H. (2015). *Zwei Annalenfragmente aus dem frühen Mittleren Reich*, Studien zur altägyptischen Kultur Beihefte 16. Hamburg : Buske.

Claes, W., Davey, C. J. and Hendrickx, S. (2020). An Early Dynastic Crucible from the Settlement of Elkab (Upper Egypt): *The Journal of Egyptian Archaeology*. [Online]. Available at: doi:10.1177/0307513319885098 [Accessed 22 January 2020].

Cowell, M. R. (1987). Scientific Appendix I. Chemical Analysis. In: Davies, W. V. (Ed). *Catalogue of Egyptian antiquities in the British Museum. 7: Tools and weapons ; 1: Axes*. London : British Museum Publications. pp.96–118.

Davey, C. J. (2012). Old Kingdom metallurgy in Memphite tomb images. In: Evans, L. et al. (Eds). *Ancient Memphis: 'Enduring is the Perfection'. Proceedings of the international conference held at Macquarie University, Sydney on August 14-15, 2008*. Orientalia Lovaniensia Analecta 214. Leuven : Peeters; Departement Oosterse Studies. pp.85–108. *OEB*.

Davies, W. V. (1987). *Catalogue of Egyptian antiquities in the British Museum. 7: Tools and weapons ; 1: Axes*. London : British Museum Publications.

Davis, W. (1983). Artists and Patrons in Predynastic and Early Dynastic Egypt. *Studien zur altägyptischen Kultur*, 10, pp.119–139.

Desplancques, S. (2006). *L' institution du Trésor en Égypte: des origines à la fin du Moyen Empire*, Les institutions dans l'Égypte ancienne 2. Paris : PUPS, Presses de l'Univ. Paris-Sorbonne.

Doxey, D. M. (1998). *Egyptian non-royal epithets in the Middle Kingdom: a social and historical analysis*, Probleme der Ägyptologie 12. Bd. Leiden : Brill.

Drenkhahn, R. (1976). *Die Handwerker und ihre Tätigkeiten im alten Ägypten*, Ägyptologische Abhandlungen 31. Wiesbaden : Harrassowitz Verlag.

Eichler, E. (1993). *Untersuchungen zum Expeditionswesen des ägyptischen Alten Reiches*, Göttinger Orientforschungen Bd. 26. Wiesbaden : Harrassowitz.

Fischer-Elfert, H.-W. and Hoffmann, F. (1998). *Die Vision von der Statue im Stein: Studien zum altägyptischen Mundöffnungsritual*, Schriften der Philosophisch-Historischen Klasse der Heidelberger Akademie der Wissenschaften Bd. 5. Heidelberg : Universitätsverlag C. Winter.

Goedicke, H. (1994). Inventory of the Eighth Dynasty from Coptos (43290). *Mitteilungen des Deutschen Archäologischen Instituts, Kairo*, 50, pp.71–84.

Goyon, G. (1959). Le tombeau d'Ankhou a Saqqarah. *Kêmi*, XV, pp.10–22.

Graefe, E. (1971). *Untersuchungen zur Wortfamilie bjA-: Inaugural-Dissertation zur Erlangung des Doktorgrades der Philosophischen Fakultät der Universität zu Köln.* Köln : Philosophische Fakultät der Universität zu Köln. *OEB*.

Harris, J. R. (1961). *Lexicographical Studies in Ancient Egyptian Minerals.* Berlin .

Herslund, O. (2011). *Suns, Branding Irons and the White Cloth. Ancient Egyptian Classification of Material Culture – The Case of [copper] and [textile].* Copenhagen : Department of Cross-Cultural and Regional Studies, Faculty of Humanities, University of Copenhagen.

Herslund, O. (2015). On the pictorial meaning of the drop-shaped hieroglyph for 'copper' from the archaic period to the Middle Kingdom. In: Nyord, R. and Ryholt, K. (Eds). *Lotus and laurel: studies on Egyptian language and religion in honour of Paul John Frandsen*. CNI publications 39. Copenhagen : Museum Tusculanum Press. pp.103–120.

Jéquier, G. (1921). *Les frises d'objets des sarcophages du Moyen Empire*, Mémoires publiés par les membres de l'Institut français d'archéologie orientale 47. Le Caire : Imprimerie de l'Institut français d'archéologie orientale. *OEB*.

Klemm, R. and Klemm, D. (2013). *Gold and gold mining in ancient egypt and Nubia: geoarchaeology of the ancient gold mining sites in the Egyptian and Sudanese eastern deserts*. New York : Springer.

Kmošek, J. et al. (2018). Invisible connections. Early Dynastic and Old Kingdom Egyptian metalwork in the Egyptian Museum of Leipzig University. *Journal of Archaeological Science*, 96, pp.191–207. [Online]. Available at: doi:10.1016/j.jas.2018.04.004.

Kühnert-Eggebrecht, E. (1969). *Die Axt als Waffe und Werkzeug im alten Ägypten*, Münchner Ägyptologische Studien 15. Berlin : Hessling.

Lepsius, C. R. (1872). Die Metalle in den ägyptischen Inschriften. *APAW : philol.-hist. Kl. 1871*, pp.27–143. *OEB*.

Lilyquist, C. (1979). *Ancient Egyptian mirrors: from the earliest times through the Middle Kingdom*, Münchner Ägyptologische Studien Heft 27. München ; Berlin : Deutscher Kunstverlag.

Odler, M. (2015a). Adzes in the Early Dynastic Period and the Old Kingdom. In: Rosińska-Balik, K. et al. (Eds). *Copper and trade in the South-Eastern Mediterranean: trade routes of the Near East in antiquity*. BAR international series 2753. Oxford : Archaeopress. pp.85–109.

Odler, M. (2015b). Copper model tools in Old Kingdom female burials. In: Walsh, C. et al. (Eds). *Current research in Egyptology 2014: proceedings of the Fifteenth Annual Symposium, University College London and King's College London, April 9-12, 2014*. Oxbow Books : Oxford; Philadelphia. pp.39–58. *OEB*.

Odler, M. (2016). *Old Kingdom Copper Tools and Model Tools. With contributions by Jiří Kmošek, Ján Dupej, Katarína Arias Kytnarová, Lucie Jirásková, Veronika Dulíková, Tereza Jamborová, Šárka Msallamová, Kateřina Šálková and Martina Kmoníčková*, Archaeopress Egyptology 14. 1st ed. Oxford : Archaeopress.

Odler, M. (2017). For the temples, for the burial chambers. Sixth Dynasty copper vessel assemblages. In: Bárta, M., Coppens, F. and Krejčí, J. (Eds). *Abusir and Saqqara in the Year 2015*. Prague : Czech Institute of Egyptology, Faculty of Arts, Charles University. pp.293–315.

Odler, M. and Dulíková, V. (2015). Social context of the Old Kingdom copper model tools. *World Archaeology*, 47 (1), pp.94–116. [Online]. Available at: doi:10.1080/00438243.2014.991805.

Petrie, W. M. F. (1917). *Tools and weapons: illustrated by the Egyptian collection in University College, London, and 2000 outlines from other sources*, British School of Archaeology in Egypt and Egyptian Research Account [30] (22nd year). London : Constable & Co.; Bernard Quaritch.

Petschel, S. (2011). *Den Dolch betreffend: Typologie der Stichwaffen in Ägypten von der prädynastischen Zeit bis zur 3. Zwischenzeit*, Philippika - Altertumskundliche Abhandlungen 36. Wiesbaden : Harrassowitz.

Philip, G. (2006). *Tell el-Dab'a XV: Metalwork and Metalworking Evidence of the late Middle Kingdom and the Second Intermediate Period*, Untersuchungen der Zweigstelle Kairo des Österreichischen Archäologischen Institutes 26; Österreichische Akademie der Wissenschaften, Denkschriften der Gesamtakademie 36 15. Wien : Verlag der Österreichischen Akademie der Wissenschaften.

Philip, G. and Cowell, M. J. (2006). Metallurgy at Tell el-Dab'a. In: Philip, G. (Ed). *Tell el-Dab'a XV: Metalwork and Metalworking Evidence of the late Middle Kingdom and the Second Intermediate Period*. Untersuchungen der Zweigstelle Kairo des Österreichischen Archäologischen Institutes 26; Österreichische Akademie der Wissenschaften, Denkschriften der Gesamtakademie 36 15. Wien : Verlag der Österreichischen Akademie der Wissenschaften. pp.169–216.

Quirke, S. (2003). 'Art' and the 'artist' in late Middle Kingdom administration. In: Quirke, S. (Ed). *Discovering Egypt from the Neva: the Egyptological legacy of Oleg D. Berlev*. Berlin : Achet-Verlag. pp.85–106. *OEB*.

Rademakers, F. W. et al. (2018). Copper for the afterlife in Predynastic to Old Kingdom Egypt: Provenance characterization by chemical and lead isotope analysis (RMAH collection, Belgium). *Journal of Archaeological Science*, 96, pp.175–190. [Online]. Available at: doi:10.1016/j.jas.2018.04.005.

Radwan, A. (1983). *Die Kupfer-und Bronzegefäße Ägyptens*, Prähistorische Bronzefunde Abteilung II 2. München : C. H. Beck Verlag.

Scheel, B. (1985). Studien zum Metallhandwerk im Alten Ägypten I. Handlungen und Beischriften in den Bildprogrammen der Gräber des Alten Reiches. *Studien zur altägyptischen Kultur*, 12, pp.117–177.

Scheel, B. (1986). Studien zum Metallhandwerk im Alten Ägypten II. Handlungen und Beischriften in den Bildprogrammen der Gräber des Mittleren Reiches. *Studien zur Altägyptischen Kultur*, 13, pp.181–205.

Seyfried, K.-J. (1981). *Beiträge zu den Expeditionen des Mittleren Reiches in die Ost-Wüste*, Hildesheimer ägyptologische Beiträge 15. Hildesheim : Gerstenberg.

Takács, G. (1999). *Etymological dictionary of Egyptian. Volume One: A Phonological Introduction*, Handbuch der Orientalistik. Erste Abteilung 48. Bd., 1. Boston : Brill.

Takács, G. (2001). *Etymological dictionary of Egyptian. Vol. 2., b-, p-, f-*, Handbuch der Orientalistik. Erste Abteilung 48. Bd. 2. Boston : Brill.

Vandier, J., Khafaga, Y. and Vandier-d'Abbadie, J. (1950). *Mo'alla: la tombe d'Ankhtifi et la tombe de Sébekhotep.*, Bibliothèque d'étude. Le Caire : Institut français d'archéologie orientale. *OEB*.

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Citations (Google Scholar): 63

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h-index (Google Scholar): 5

Education

Academic Education

PhD degree	2012–
Course	Egyptology, Faculty of Arts, Charles University, Prague
Master's degree	**2006–2012**
Course	Egyptology – Classical Archaeology, Faculty of Arts, Charles University, Prague
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Course	Prehistoric and Early Mediaeval Archaeology, Faculty of Arts, Charles University, Prague
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Employment and service

2011–	researcher, Czech Institute of Egyptology, Faculty of Arts, Charles University, Prague
2014–2017	researcher, Institute of Oriental Studies, Slovak Academy of Sciences, Bratislava
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2019	editor of the journal Prague Egyptological Studies

Grant projects (principal investigator)

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Action spécifique no. 19463 de l'Institut français d'archéologie orientale du Caire, "Restarting Archeometallurgy in Modern Egypt"

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Grant Agency of Charles University, Grant No. 38715 "Early copper metallurgy in Ancient Egypt – a case study of the material from Ägyptisches Museum der Universität Leipzig"

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Internal Student Project of Faculty of Arts, Charles University, Grant No. FF_VG_2015_016 "Early copper metallurgy in Ancient Egypt – a case study of the material from Kunsthistorisches Museum Wien"

2012-2014

Grant Agency of Charles University, Grant No. 526112 "Ancient Egyptian copper objects up to the end of the Middle Kingdom"

Awards

2016 Honorable mention in the Best Student Poster Award competition, awarded by the Society for Archaeological Sciences (USA), 41st International Symposium of Archaeometry, Kalamata, Greece

2018 28th position for the monograph *"Old Kingdom Copper Tools and Model Tools"*, main author Martin Odler, published in Oxford, Archaeopress, 2016; in the Contest of the high-quality monographs of the Charles University, Prague

Archaeological missions

I have been involved in the Czech Institute of Egyptology, Faculty of Arts, Charles University excavations at Abusir since **2009** on a regular basis (at least once a year), and since **2011** also in Sudan, at the Czech concession at Sabaloka, at Sixth Cataract. Since **2014**, I have also participated in a project at Tell el-Retaba in Egypt (joint Polish-Slovak mission led by Professor

Sławomir Rzepka from the Warsaw University and Dr. Jozef Hudec from Slovak Academy of Sciences in Bratislava). In **2009**, I took part in the archaeological survey of the Sherabad district in Southern Uzbekistan, as a member of the mission of Institute of Classical Archaeology, Faculty of Arts, Charles University.

Lectures (principal lecturer)

Odler, M. (2015). *An Introduction to Ancient Egyptian Metallurgy / Sommersemester*. series of lectures at the university, Ägyptologisches Institut der Universität Leipzig.

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Odler, M. (2017). *Egyptská archeologie (pohřbívání od paleolitu po konec Střední říše, nekrálovské pohřby a hrobky) / summer semester*. series of lectures at the university in cooperation with Jaromír Krejčí, Czech Institute of Egyptology, Faculty of Arts, Charles University, Prague.

Invited lectures on conferences

Kmošek, J., **Odler, M.**, Fikrle, M., and Kochergina, Y. V. (2016, October 13). *Recent research in the metallurgy of Ancient Egypt in the 3rd millennium BC. Material culture and archaeometallurgy*. Plenums-Tagung des Cluster 2 "Innovationen: technisch, sozial", Deutsches Archäologisches Institut, Berlin.

Kmošek, J., **Odler, M.**, Fikrle, M., Kochergina, Y. V., and Racek, M. (2019, December 13). *Archaeometallurgical investigation of copper metallurgy remains from the Fourth Dynasty settlement at Giza*. Archaeological Finds and Analytical Methods, Naturhistorisches Museum Wien.

Odler, M. (2014, November 12). *The interpretation of Old Kingdom copper model tools*. 4. Steindorff-Tag, Leipzig.

Odler, M. (2016, December 2). *Metal model tools in their ancient Egyptian contexts*. Modelle im Alten Ägyten/Egyptian Models-Objects of Ancient Knowledge, Hannover.

Odler, M., Kmošek, J., Kochergina, Y. V., and Fikrle, M. (2018, November 14). *New insights into the ancient Egyptian copper alloy metallurgy from the collection of the Egyptian Museum of Leipzig University*. 8. Steindorff-Tag, Leipzig.

Other conferences (presentations and posters)

Arias Kytnarová, K., Jirásková, L., and **Odler, M.** (2015, September 17). *Miniature and model vessels in the Old Kingdom – between the centre and periphery*. 5th International Congress for Young Egyptologist, Wien.

Arias Kytnarová, K., Jirásková, L., **Odler, M.**, and Peterková Hlouchová, M. (2017, May 24). *Old Kingdom rituals above and below ground – A comparison of the mortuary temple and tomb inventory of vessels*. XIth Tempeltagung — The Discourse between Tomb and Temple, Czech Institute of Egyptology, Faculty of Arts, Charles University, Prague. http://cegu.ff.cuni.cz/en/research/conferences-since-2013/

Bárta, M., Arias Kytnarová, K., **Odler, M.**, and Sůvová, Z. (2017, June 24). Ritual of Breaking the Sherds and Archaeology. Abusir South Ritual Structure 74. *Abusir and Saqqara in the Year 2015*.

Havelková, P., **Odler, M.**, Dulíková, V., Peterková Hlouchová, M., Jirásková, L., and Arias Kytnarová, K. (2019, November 21). *Jmenovaní a bezejmenní: Antropologická a sociologická analýza vybraných hlavních a vedlejších pohřbů v jižním Abúsíru*. Archaeologie and Antropologie IV: Sociální marginalita v minulosti. Na okraji společnosti tehdy a/nebo na okraji zájmu dnes?, Národní muzeum, Praha.

Jirásková, L., and **Odler, M.** (2016, May 5). Reassessing the production of Old Kingdom stone vessels. *Current Research in Egyptology XVII*.

Kmošek, J., and **Odler, M.** (2016, April 26). *New analyses of early Egyptian and Nubian copper alloy artefacts in the collection of Ägyptisches Museum—Georg- Steindorff—Der Universität Leipzig*. 10th International Congress on the Archaeology of the Ancient Near East, Institute for Oriental and European Archaeology, Vienna.

Kmošek, J., and **Odler, M.** (2016, May 26). New data about the metal artefacts from the collection of the Ägyptisches Museum—Georg Steindorff—Der Universität Leipzig. *Neue Forschungen Leipzig 26 5*. 46. Neue Forschungen, Leipzig.

Kmošek, J., **Odler, M.**, Fikrle, M., Erban, V., and Kochergina, Y. V. (2017, October 18). *Archaeometallurgical study of Early Bronze Age copper alloy artefacts from Egypt*. BUMA IX – The Ninth International Conference on the Beginnings of the Use of Metals and Alloys, The Korean Institute of Metals and Materials; Dong A University, Busan (South Korea).

Kmošek, J., **Odler, M.**, Fikrle, M., Kochergina, Y. V., and Racek, M. (2019, September 13). *Archaeometallurgical investigation of copper metallurgy remains from the Fourth Dynasty settlement at Giza*. Jahrestagung "Archäometrie und Denkmalpflege 2019," Wien.

Kmošek, J., **Odler, M.**, Jamborová, T., Šálková, K., Kmoníčková, M., and Msallamová, S. (2016, May 15). *Diachronic changes of ancient Egyptian and Nubian metallurgy. Case study of material from the Egyptian Museum of Leipzig University (poster)*. 41st International Symposium on Archaeometry, Kalamata, Greece. https://www.academia.edu/25587015/Diachronic_changes_of_ancient_Egyptian_and_Nubian_metallurgy_-_Case_study_of_material_from_the_Egyptian_Museum_of_Leipzig_University

Kmošek, J., **Odler, M.**, Kochergina, Y. V., and Fikrle, M. (2018, May 22). *Archaeometallurgical study of Bronze Age copper alloy artefacts from Egypt: Early Dynastic and Old Kingdom artefacts in the collections of Egyptian Museum of Leipzig University (poster)*. 43rd International Symposium on Archaeometry, Mérida, Yucatán, México. https://www.academia.edu/25587015/Diachronic_changes_of_ancient_Egyptian_and_Nubian_metallurgy_-_Case_study_of_material_from_the_Egyptian_Museum_of_Leipzig_University

Kmošek, J., **Odler, M.**, Kochergina, Y. V., and Fikrle, M. (2019, June 20). *Recycling in New Kingdom Egypt: A case of copper alloy artefacts from Aniba in Nubia*. Archaeometallurgy in Europe 2019, University of Miskolc, Hungary.

Odler, M. (2011a, March 10). *Svedectvo prameňov z Abúsíru o hrnčiarskom kruhu v Starej ríši*. Orientalia Antiqua Nova, Filozofická fakulta Západočeskej univerzity, Plzeň.

Odler, M. (2011b, July 6). *The Potter's Wheel of the Old Kingdom: Do We Get What We See?* Old Kingdom Pottery Workshop 2, Institute of Archaeology, University of Warsaw.

Odler, M. (2012, May 7). *The Chronology and Morphology of Adzes in the Early Dynastic Period and Old Kingdom*. Copper and Trade in South Eastern Mediterranean, Jagellonian University, Kraków.

Odler, M. (2013a, November 28). *Archeologické vs. Písomné pramene a „archaické" myslenie-prípad medených nástrojov a ich modelov v starovekom Egypte*. Archeologie and Antropologie: studium archaické kultury a společnosti, Národní muzeum, Praha.

Odler, M. (2014a, April 9). *Old Kingdom copper model tools in the female burials*. Current Research in Egyptology XV, University College London and King's College, London.

Odler, M. (2014b, July 4). *Understanding Old Kingdom copper model tools*. Old Kingdom Art and Archaeology VI, Institute of Archaeology, University of Warsaw.

Odler, M. (2014c, October 2). *A Travelogue of Slovak Poet Rudolf Fabry "Salam Alekum. Stories From the Old and New Egypt" (1958)*. Egypt and Austria X: Visualizing the Orient, Film and TV School of Academy of Performing Arts (FAMU) and the Faculty of Humanities (FHS UK) of the Charles University, Prague.

Odler, M. (2015, July 25). *Late Sixth Dynasty copper funerary assemblages – cases of Ancient Egyptian "potlatch"?* Abusir and Saqqara in the Year 2015, Czech Institute of Egyptology, Faculty of Arts, Charles University, Prague.

Odler, M. (2017a, May 5). *Use of R in Egyptian archaeology: A case study of Old Kingdom copper model tools*. Current Research in Egyptology 2017 Napoli, Università degli studi di Napoli L'Orientale, Palazzo du Mesnil.

Odler, M. (2017b, August 31). *Metallurgists and their colleagues in Early Bronze Age and Middle Bronze Age Egypt*. 23rd Annual Meeting of the European Association of Archaeologists – Session #263: Early Mediterranean metallurgy: technological innovation and cross-craftsmanship, Maastricht.

Odler, M. (2017c, September 5). *Ancient Egyptian metal model tools as the evidence of the patron-craftsman dependence and dependent craft specialization*. Generous Patrons, Loyal Clients, Czech Institute of Egyptology, Faculty of Arts, Charles University, Prague. http://cegu.ff.cuni.cz/en/research/conferences-since-2013/

Odler, M. (2017d, September 13). *Early Dynastic copper tools from Abu Rawash (poster)*. Egypt at Its Origins 6, Institut für Ägyptologie, Universität Wien.

Odler, M. (2013b, June 13). *Sociálny kontext medi v starovekom Egypte do konca Strednej ríše alebo Na čo je archeológovi dobrý staroveký Egypt?* Doktorandský seminář, Ústav archeologie a muzeologie FF Masarykovy univerzity, Brno - Ústav pro archeologii FF Univerzity Karlovy, Praha; Brno.

Odler, M., Dulíková, V., and Juřičková, L. (2013, January 29). *Cihly jako pramen přírodního prostředí Staré říše*. Konference environmentální archeologie IX, Jihočeská univerzita, České Budějovice.

Odler, M., and Dupej, J. (2015, October 11). *Old Kingdom full-size stone- and wood-working tools with copper blades*. Copper and Trade in South Eastern Mediterranean II, Jagellonian University, Kraków.

Odler, M., and Dupej, J. (2016, May 31). *Tešly v Starej ríši. Aplikácia geometrickej morfometrie na veľké súbory archeologických dát*. Počítačová podpora v archeologii 2016, Velké Pavlovice. https://www.youtube.com/watch?v=AmQdI-E_728

Odler, M., and Hudáková, Ľ. (2012, September 28). *Teaching the history of Egypt and Nubia-the s schoolbooks of the Slovak grammar school in Revúca*. Egypt and Austria VIII, Ljubljana.

Odler, M., and Hudáková, Ľ. (2013, October 21). *The Travelogue of the First Slovak Intellectual in Egypt-Ján Roháček (1910)*. Egypt and Austria IX, The Perception of the Orient in Central Europe (1800-1918), Slovak National Museum, Betliar Museum.

Odler, M., and Kmošek, J. (2017a, February 6). *Arzén náš každodenný? Používanie arzénu v starovekom Egypte a dosah na človeka a krajinu*. 13. konferencia environmentálnej archeológie, Katedra archeológie FF UKF v Nitre.

Odler, M., and Kmošek, J. (2017b, September 13). *Early Dynastic metal finds in the collection of Egyptian Museum of Leipzig University (poster)*. Egypt at Its Origins 6, Institut für Ägyptologie, Universität Wien.

Odler, M., Kmošek, J., Fikrle, M., Erban, V., and Kochergina, Y. V. (2017, November 6). *Diachronic changes of early Egyptian and Nubian copper metallurgy*. Science of Ancient Egyptian Materials and Technology Conference, Manial Palace, Cairo.

Odler, M., Kmošek, J., Fikrle, M., Erban, V., Kochergina, Y. V., Uhlir, K., Griesser, M., Hölzl, R., and Engelhardt, I. (2017, July 3). *Latest research into Old Kingdom copper alloy artefacts*. Old Kingdom Art and Archaeology VII, Biblioteca e Archivi di Egittologia - Università degli Studi di Milano.

Odler, M., Kmošek, J., Fikrle, M., and Kochergina, Y. V. (2018, September 6). *The Interpretation of lead isotopes. Case study of Bronze Age copper alloy artefacts from collection of the Egyptian Museum of Leipzig University*. 24th Annual Meeting of the European Association of Archaeologists – Session # 520: Archaeometallurgy in the 21st Century, Barcelona.

Odler, M., Kmošek, J., Fikrle, M., and Kochergina, Y. V. (2019, November 5). *Research of ancient Egyptian copper alloy metallurgy at the Czech Institute of Egyptology and cooperating institutions: Results and future prospects*. 12th International Congress of Egyptologists, Cairo.

Odler, M., Kmošek, J., Kochergina, Y. V., and Fikrle, M. (2018, September 12). *C-Group and New Kingdom copper alloy artefacts from Aniba*. 14th Congress of the Nubian Studies, Paris.

Odler, M., and Peterková Hlouchová, M. (2019, June 17). *One mastaba, two dynasties: A new tomb of Niankhseshat (AS 104) excavated in Abusir South*. Current Research in Egyptology 2019, Alcalá de Henares, Spain.

Odler, M., Uhlir, K., Griesser, M., Hölzl, R., and Engelhardt, I. (2016, April 26). *Between centre and periphery: Early Egyptian and Nubian copper alloy artefacts in the collection of the Kunsthistorisches Museum Vienna (KHM)*. 10th International Congress

on the Archaeology of the Ancient Near East, Institute for Oriental and European Archaeology, Vienna.

Salzmann, E., Rose, T., Birch, T., and **Odler, M.** (2018, September 6). *Session # 520: Archaeometallurgy in the 21st Century (co-organizer)*. 24th Annual Meeting of the European Association of Archaeologists, Barcelona.

Suková, L., Varadzin, L., Bajer, A., Cílek, V., Čuláková, K., Havelková, P., Juřičková, L., Lisá, L., Novák, J., **Odler, M.**, Pacina, J., Pokorná, A., Pokorný, P., Řídký, J., Sůvová, Z., and Wodzińska, A. (2014, September 2). *Prehistoric Research at Jebel Sabaloka (West Bank)*. XIIIth International Conference of the Society for Nubian Studies, Neuchâtel.

Sůvová, Z., Suková, L., Varadzin, L., **Odler, M.**, Cílek, V., and Pokorný, P. (2014, September 1). *The production and consumption of ostrich eggshell beads at the Mesolithic settlement of Sphinx (SBK.W-60), Jebel Sabaloka (West Bank) (poster)*. XIIIth International Conference of the Society for Nubian Studies, Neuchâtel. https://www.academia.edu/8404474/_The_production_and_consumption_of_ostrich_eggshell_beads_at_the_Mesolithic_settlement_of_Sphinx_SBK.W-60_Jebel_Sabaloka_by_Z._S%C5%AFvov%C3%A1_L._Sukov%C3%A1_L._Varadzin_M._Odler_V._C%C3%ADlek_P._Pokorn%C3%BD_

Public lectures

Hudáková, Ľ., and **Odler, M.** (2013a, January 2). *Egypt v slovenskej kultúre 19. storočia (1800–1918)—Bratislava* [Mestské múzeum Bratislavy, 2. bratislavský cyklus egyptologických prednášok Výpravy do starovekého Egypta].

Hudáková, Ľ., and **Odler, M.** (2013b, October 23). *Egypt v slovenskej kultúre 19. storočia (1800–1918)—Rožňava* [Mestský úrad Rožňava, prednáška v rámci cyklu organizovaného Nadáciou Aigyptos počas konferencie v Betliari].

Odler, M. (2012a, March 23). *„Kováč má prsty ako krokodílie pazúry“ Meď v starovekom Egypte* [Múzeum mesta Bratislavy, 1. bratislavský cyklus egyptologických prednášok Výpravy do starovekého Egypta].

Odler, M. (2012b, December 11). *Archeologická semiotika v praxi: Staroegyptské medené nástroje a zbrane* [Faculty of Arts, Charles University, Prague, Mezioborové přednášky z humanitních věd].

Odler, M. (2013a, May 15). *Archeologická semiotika v praxi: Staroegyptské medené nástroje a zbrane* [Katedra histórie Filozofickej fakulty Univerzity Mateja Bela v Banskej Bystrici].

Odler, M. (2013b, May 16). *Cesty medi: Výroba medi v starovekom Egypte* [Štátna vedecká knižnica, Banská Bystrica].

Odler, M. (2014, February 6). *Drsné metódy otcov egyptológie* [Múzeum mesta Bratislavy, 3. bratislavský cyklus egyptologických prednášok Výpravy do starovekého Egypta].

Odler, M. (2015a, February 13). *Starovekí Egypt v slovenskej literatúre* [Mestské múzeum Bratislavy, 4. bratislavský cyklus egyptologických prednášok Výpravy do starovekého Egypta].

Odler, M. (2015b, February 17). *Prečo je dobré kopať v Egypte?* [Bratislavská vedecká cukráreň, organizovaná Národným centrom pre popularizáciu vedy a techniky v spoločnosti pôsobiaceho v rámci Centra vedecko-technických informácií SR]. https://www.youtube.com/watch?v=AmQdI-E_728

Odler, M. (2017a, March 3). *Kto postavil egyptské pyramídy? (Bratislava)* [Múzeum mesta Bratislavy, 6. bratislavský cyklus egyptologických prednášok Výpravy do starovekého Egypta].

Odler, M. (2017b, June 12). *Kto postavil egyptské pyramídy? (Banská Bystrica)* [Stredoslovenské múzeum v Banskej Bystrici, Thurzov dom, Výpravy do staroveku].

Odler, M. (2017c, December 20). *Kto postavil egyptské pyramídy? (Košice)* [Štátna vedecká knižnica, Košice, Košická egyptologická jeseň].

Odler, M. (2018a, February 9). *Egyptológia na internete: Kam ísť a kam radšej nechodiť* [Múzeum mesta Bratislavy, 7. bratislavský cyklus egyptologických prednášok Výpravy do starovekého Egypta].

Odler, M. (2018b, February 19). *Autorská prezentácia monografie—Martin Odler: Old Kingdom Copper Tools and Model Tools spojená s prednáškou Kto postavil egyptské pyramídy?* [Prešovská univerzita v Prešove, Univerzitná knižnica]. https://www.pulib.sk/web/kniznica/akcia/id/735

Odler, M. (2018c, September 25). *Zlato a další kovy Egypta* [Baťova vila, Zlín]. https://batova-vila.cz/2018/08/27/zlato-a-dalsi-kovy-egypta-prednaska-mgr-martina-odlera/

Odler, M. (2018d, November 7). *Nielen zlato – kovy v starovekom Egypte* [Štátna vedecká knižnica, Košice, Košická egyptologická jeseň]. https://www.youtube.com/watch?v=PPldUOxDf4o

Odler, M. (2019, December 11). *Drsné metódy otcov egyptológie* [Štátna vedecká knižnica, Košice, Košická egyptologická jeseň].

Odler, M., and Kmošek, J. (2017, February 6). *Arzén náš každodenný? Používanie arzénu v starovekom Egypte a dosah na človeka a krajinu*. 13. konferencia environmentálnej archeológie, Katedra archeológie FF UKF v Nitre.

Odler, M., and Kmošek, J. (2019, February 22). *Nové poznatky o staroegyptskej metalurgii II* [Múzeum mesta Bratislavy, 8. bratislavský cyklus egyptologických prednášok Výpravy do starovekého Egypta].

Odler, M., Kmošek, J., and Dupej, J. (2016, February 5). *Arzén náš každodenný. Nové poznatky o staroegyptskej metalurgii* [Múzeum mesta Bratislavy, 5. bratislavský cyklus egyptologických prednášok Výpravy do starovekého Egypta].

Odler, M., Kmošek, J., and Dupej, J. (2017a, January 24). *Nové poznatky o staroegyptské metalurgii* [Český egyptologický ústav v Městské knihovně Praha]. https://www.youtube.com/watch?v=OY_vUPf1EPM

Odler, M., Kmošek, J., and Dupej, J. (2017b, October 5). *Nové poznatky o staroegyptskej metalurgii* [Katedra archeológie, Filozofická fakulta Univerzity Komenského, Bratislava].

Bibliography

Monograph

Odler, Martin. *Old Kingdom Copper Tools and Model Tools. With Contributions by Jiří Kmošek, Ján Dupej, Katarína Arias Kytnarová, Lucie Jirásková, Veronika Dulíková, Tereza Jamborová, Šárka Msallamová, Kateřina Šálková and Martina Kmoníčková*. 1st ed. Archaeopress Egyptology 14. Oxford: Archaeopress, 2016.

Reviews

Kuhn, Robert. "Review: Odler, Martin 2016. Old Kingdom Copper Tools and Model Tools." *Kunstbuchanzeiger.de*, 2017. http://www.kunstbuchanzeiger.de/de/themen/archaeologie/rezensionen/1784/.

Legros, Rémi. "Review: Odler, Martin 2016. Old Kingdom Copper Tools and Model Tools." *Histara - Les Comptes Rendus*, 2018. http://histara.sorbonne.fr/cr.php?cr=2993.

Yasuoka, Yoshifumi. "Review: Odler, Martin 2016. Old Kingdom Copper Tools and Model Tools." *Bibliotheca Orientalis* 75, no. 5–6 (2018): 530–532. https://doi.org/10.2143/BIOR.75.5.3286485.

Web of Science indexed articles

Kmošek, Jiří, **Martin Odler**, Marek Fikrle, and Yulia V. Kochergina. 2018. "Invisible Connections. Early Dynastic and Old Kingdom Egyptian Metalwork in the Egyptian Museum of Leipzig University." *Journal of Archaeological Science* 96: 191–207. https://doi.org/10.1016/j.jas.2018.04.004.

Odler, Martin. 2013. "Petschel, Susanne. Den Dolch Betreffend. Typologie Der Stichwaffen in Ägypten von Der Prädynastischen Zeit Bis Zur 3. Zwischenzeit (Review)." *Archiv Orientální* 81 (1): 357–360.

———. 2016. "Fitzenreiter, Martin, Christian E. Loeben, Dietrich Raue Und Uta Wallenstein (Hrsg.). Gegossene Götter. Metallhandwerk Und Massenproduktion Im Alten Ägypten (Review)." *Archiv Orientální* 84 (1): 216–220.

Odler, Martin, and Veronika Dulíková. 2015. "Social Context of the Old Kingdom Copper Model Tools." *World Archaeology* 47 (1): 94–116. https://doi.org/10.1080/00438243.2014.991805.

Scopus indexed articles

Odler, Martin, Katharina Uhlir, Marie Jentsch, Martina Griesser, Regina Hölzl, and Irene Engelhardt. "Between Centre and Periphery: Early Egyptian and Nubian Copper Alloy Artefacts in the Collection of the Kunsthistorisches Museum Vienna (KHM)." *Ägypten und Levante* 28 (2018): 419–56. https://doi.org/10.1553/AEundL28s419.

Rzepka, Slawomir, Jozef Hudec, Łukasz Jarmużek, Veronika Dubcová, Lucia Hulková, **Martin Odler**, Anna Wodzińska, et al. "From Hyksos Settlers to Ottoman Pipe Smokers. Tell El-Retaba 2014." *Ägypten Und Levante* 25 (2015): 97–166.

Other peer-reviewed articles (in English and German)

Brůna, Vladimír, **Martin Odler**, Miroslav Bárta, and Mohamed Megahed. "New Geodetic Control Network at Czech Concession at Abusir." *Prague Egyptological Studies* XXI (2018): 123–126.

Dulíková, Veronika, Miroslav Bárta, **Martin Odler**, and Marie Peterková Hlouchová. "Tomb at Abusir South from a time of change belonging to Ankhires, inspector of hairdressers of the Great House (AS 98)." *Prague Egyptological Studies* XXI (2018): 3–33.

Dulíková, Veronika, **Martin Odler**, Helena Březinová, and Petra Havelková. "A Burial with a Stamp Seal Depicting a Bes-like Figure from Abusir." *Prague Egyptological Studies* XV (2015): 69–75.

Kmošek, Jiří, and **Martin Odler**. "Neueste Analysen der altägyptischen Metallartefakte des Ägyptischen Museums – Georg Steindorff – der Universität Leipzig." *AMUN* 18, no. 53 (2016): 31–34.

Krejčí, Jaromír, Katarína Arias Kytnarová, and **Martin Odler**. "Archaeological Excavation of the Mastaba of Queen Khentkaus III (Tomb AC 30) in Abusir." *Prague Egyptological Studies* XV (2015): 28–42.

Odler, Martin. "Manuelian, Peter Der: 2017 Digital Giza: Visualizing the Pyramids, Cambridge, Massachusetts: Harvard University Press, 255 Pp. [MetaLABprojects] (Review)." *Prague Egyptological Studies* XXI (2018): 121–122.

Odler, Martin, Veronika Dulíková, and Lucie Juřičková. "Molluscs from the Stone and Mud-Brick Tombs in Abusir (Egypt) and the Provenance of so-Called 'Nile-Mud.'" *Interdisciplinaria Archaeologica* 4, no. 1 (2013): 9–22.

Odler, Martin, and Ľubica Hudáková. "Neither Leisure Class nor Colonialists: Pre-Great War Slovak Travelers in Egypt." *Journal of Ancient Egyptian Interconnections* 8 (2016): 49–59.

Odler, Martin, and Marie Peterková Hlouchová. "'May You Receive That Favourite Harpoon of Yours...'. Old Kingdom Spears/Harpoons and Their Contexts of Use." *Studien zur Altägyptischen Kultur* 46 (2017): 191–222.

Odler, Martin, Marie Peterková Hlouchová, Petra Havelková, Zdeňka Sůvová, Katarína Arias Kytnarová, Vladimír Brůna, and Lucie Jirásková. "A New Tomb of Transitional Type from Abusir South: Mastaba of Nyankhseshat (AS 104)." *Prague Egyptological Studies* XXIII (2019): 49–82.

Odler, Martin, Marie Peterková Hlouchová, Katarína Arias Kytnarová, and Petra Havelková. "New Egyptian tomb type found at Abusir South? Report on the excavations of mud brick complex AS 103." *Prague Egyptological Studies*, no. XXI (2018): 27–34.

Rzepka, Slawomir, Jozef Hudec, Łukasz Jarmużek, Veronika Dubcová, Lucia Hulková, **Martin Odler**, Alena Šefčáková, and Piotr Sójka. "Tell Retaba 2014 - 2015." *Polish Archaeology in the Mediterranean* 25 (2016): 97–166.

Contributions in conference proceedings (in English)

Arias Kytnarová, Katarína, Lucie Jirásková, and **Martin Odler**. "Old Kingdom Model and Miniature Vessels from Giza." In *Proceedings of the 5th International Congress for Young Egyptologist, Vienna, September 2015*, edited by Andrea Kahlbacher and Elisa

Priglinger, 15–29. Contributions to the Archaeology of Egypt, Nubia and the Levant. Wien: Austrian Academy of Sciences, 2018.

Bárta, Miroslav, Katarína Arias Kytnarová, **Martin Odler**, and Zdeňka Sůvová. "'Killed' for Eternity. Artefacts and Ritual Behaviour from a Unique Ceremonial Structure in Abusir South." In *Abusir and Saqqara in the Year 2015*, edited by Miroslav Bárta, Filip Coppens, and Jaromír Krejčí. Prague: Czech Institute of Egyptology, Faculty of Arts, Charles University, 2017.

Hudáková, Ľubica, and **Martin Odler**. "The Travelogue of the First Slovak Cleric in Egypt-Ján Roháček (1910)." In *Egypt and Austria IX, Perception of the Orient in Central Europe (1800-1918), Proceedings of the Symposium Held at Betliar, Slovakia (October 21st to 24th, 2013)*, edited by Ľubica Hudáková and Jozef Hudec, 114–37. Kraków: Aigyptos Foundation, 2016.

Odler, Martin. "A Travelogue of the Slovak Poet Rudolf Fabry 'Salam Alekum: Stories from Old and New Egypt (1958).'" In *Egypt and Austria X: Visualizing the Orient; Central Europe and the near East in the 19th and 20th Centuries*, edited by Adéla Jůnová Macková, Lucie Storchová, and Libor Jůn, 45–60. Prague: Academy of Performaing Arts, 2016.

———. "Adzes in the Early Dynastic Period and the Old Kingdom." In *Copper and Trade in the South-Eastern Mediterranean: Trade Routes of the Near East in Antiquity*, edited by Karolina Rosińska-Balik, Agnieszka Ochał-Czarnowicz, Marcin Czarnowicz, and Joanna Dębowska-Ludwin, 85–109. BAR International Series 2753. Oxford: Archaeopress, 2015.

———. "Copper Model Tools in Old Kingdom Female Burials." In *Current Research in Egyptology 2014: Proceedings of the Fifteenth Annual Symposium, University College London and King's College London, April 9-12, 2014*, edited by Carl Walsh, Massimiliano S. Pinarello, Justin Yoo, and Jason Lundock, 39–58. Oxbow Books: Oxford, 2015.

———. "For the Temples, for the Burial Chambers. Sixth Dynasty Copper Vessel Assemblages." In *Abusir and Saqqara in the Year 2015*, edited by Miroslav Bárta, Filip Coppens, and Jaromír Krejčí, 293–315. Prague: Czech Institute of Egyptology, Faculty of Arts, Charles University, 2017.

Odler, Martin, and Ľubica Hudáková. "Teaching the History of Egypt and Nubia-the 1860s Schoolbooks of the Slovak Grammar School in Revúca." In *Egypt and Austria VIII, Meetingpoint Egypt*, edited by Irena Lazar, 153–183. Koper, 2015.

Sůvová, Zdeňka, Lenka Varadzinová, Václav Cílek, **Martin Odler**, Petr Pokorný, and Ladislav Varadzin. "The Production and Consumption of Ostrich Eggshell Beads at the Mesolithic Site of Sphinx (SBK.W-60), Jebel Sabaloka: View from Trench 2 (2012)." In *Nubian Archaeology in the XXIst Century: Proceedings of the Thirteenth International Conference for Nubian Studies, Neuchâtel, 1st-6th September 2014*, edited by Matthieu Honegger, 195–202. Leuven: Peeters, 2018.

Peer-reviewed articles (in Czech and Slovak)

Dulíková, Veronika, Miroslav Bárta, **Martin Odler**, and Marie Peterková Hlouchová. "Hrobka muže bez tváře. Předběžná zpráva o výzkumu hrobky Anchirese (AS 98), inspektora kadeřníků královského paláce." *Pražské egyptologické studie* XX (2018): 12–26.

Dulíková, Veronika, **Martin Odler**, and Petra Havelková. "Archeologický výzkum hrobky lékaře Neferherptaha / Excavation of the Physician Neferherptah's Tomb." *Pražské egyptologické studie* VIII (2011): 9–16.

Odler, Martin. "Egyptologie na internetu." *Pražské egyptologické studie* XX (2018): 79–91.
———. "Kráľovské súvislosti medi v Ranodynastickej dobe a Starej ríši." *Pražské egyptologické studie* IX (2012): 60–70.
———. "Medené nálezy z hrobového komplexu rodiny princeznej Šeretnebtej." *Pražské egyptologické studie* X (2013): 62–64.
———. "Svedectvo prameňov z Abúsíru o hrnčiarskom kruhu v Starej ríši." In *Orientalia Antiqua Nova XI*, edited by Lukáš Pecha, 104–12. Plzeň: Západočeská univerzita, 2011.
Odler, Martin, and Ľubica Hudáková. "Staroveký Egypt a Núbia v učebniciach prvého slovenského gymnázia v Revúcej." *Literárny archív* 40 (2015): 40–60.
Odler, Martin, and Jiří Kmošek. "Bronzové fragmenty z Usli (Sudán)." *Pražské egyptologické studie* XIII (2014): 56–60.
Odler, Martin, Jiří Kmošek, Tereza Jamborová, Šárka Msallamová, Kateřina Šálková, and Martina Kmoníčková. "Staroegyptské měděné a bronzové artefakty v Egyptském muzeu Lipské Univerzity. Průběžná zpráva o projektu / Ancient Egyptian Copper and Bronze Artefacts in the Egyptian Museum of Leipzig University. Preliminary Report on the Project." *Pražské egyptologické studie* XVI (2016): 37–46.
Odler, Martin, Marie Peterková Hlouchová, and Petra Havelková. "Čtyři domy z města mrtvých. Předběžná zpráva o výzkumu komplexu hrobek AS 103 pod chrámem z Nové říše v jižním Abúsíru." *Pražské egyptologické studie* XX (2018): 27–34.
Odler, Martin, Marie Peterková Hlouchová, Petra Havelková, Zdeňka Sůvová, Katarína Arias Kytnarová, Vladimír Brůna, and Lucie Jirásková. "Jedna hrobka ve dvou dynastiích. Předběžná zpráva o výzkumu mastaby AS 104 v Jižním Abúsíru." *Pražské egyptologické studie* XXII (2019): 21–42.
Varadzinová Suková, Lenka, Zdeňka Sůvová, Václav Cílek, **Martin Odler**, Petr Pokorný, and Ladislav Varadzin. "Diskovité korálky ze skořápek pštrosích vajec z mezolitického sídliště Sfinga (SKB.W-60) v pohoří Sabaloka (Centrální Súdán)." *Pražské egyptologické studie* XIV (2015): 66–71.

Public outreach (research results featured in media)

Austria 2018, November 5, Der Standard: 6.000 Jahre alte Metallgefäße belegen Handel zwischen Ägypten und Anatolien,

Canada 2018, August 12, mining.com: „Egyptian copper's origin revealed"

China 2018, August 7, xinhua.net: „Czech scientists discover connection between Ancient Egypt, Anatolia"

China 2018, August 8, Global Times: „Czech scientists discover connection between Ancient Egypt, Anatolia"

Czech Republic 2018, August 13, Czech Televison, Studio 6: „Původ starověkých předmětů"

Netherlands 2018, August 7, Elsevier press release: „Rediscovering the sources of Egyptian metals"

Slovakia 2018, August 7, Denník N: „Egyptská misa stará 5-tisíc rokov obsahovala materiál až z Anatólie, na výskume robil aj slovenský egyptológ", article by Otakar Horák

USA 2018, August 7, phys.org: „Rediscovering the sources of Egyptian metals"

USA 2018, August 7, Science Daily: „Rediscovering the sources of Egyptian metals“

USA 2018, August 7, United Press International: „Archaeologists identify sources of ancient Egyptian copper“

USA 2018, August 16, Nature Middle East: „Getting to the source of ancient Egypt’s copper“, article by Meredith Brand