

Electrotyping in Nature Printing: physico-chemical reconstruction of a cutting edge technology of the 1840s

Valentina Ljubić Tobisch^a, Albina Selimović^a, Anna Artaker^b, Martin Klobassa^c
Wolfgang Kautek^a

^a University of Vienna, Department of Physical Chemistry, A-1090 Vienna

^b Academy of Fine Arts Vienna, Elise-Richter-Research Fellow, A-1090 Vienna

^c Sculptor and Metal Designer, A-1060 Vienna

The first step in the process of nature printing, the technique developed and patented by Alois Auer and the Austrian National Printing Office (k. k. Hof- und Staatsdruckerei) in 1852 [1] was the creation of an original imprint of the object in lead by means of a printing press. From this original imprint, a copper intaglio printing plate was produced using the process of galvanoplasty or electrotyping, which was a cutting edge technology at the time.

In the present study, new plates for nature printing were produced using the historic process in order to gain a better understanding of the production



technique [2]. One of the main challenges was the production of electrodeposited copper printing plates usually preceded by the coating of the motif with an electrically conductive material. Three different conductive layers, copper, graphite and silver powders, were investigated in respect to their efficacy by morphological investigations using electron microscopy, optical microscopy, and cyclic voltammetry (Fig.). The suitability of the electrochemically deposited printing plates could be related mainly to the various grain sizes and the electrical conductivities of the conductive powders, as well as the polishing treatments. Graphite came out as the best electrochemical conductor in the manufacture of printing plates with high faithfulness to the original motif.

[1] A. Auer, “The discovery of the Nature Printing-Process”, K.K. Hof- und Staatsdruckerei; Wien 1853, p. 541.

[2] V. Ljubić Tobisch, A. Selimović, A. Artaker, M. Klobassa, W Kautek, *Heritage Science* **7** (2019) 20.