TOOLS AND TECHNIQUES OF VIKING AGE GOLDSMITH'S

HERRAMIENTAS VIKINGAS DE ORFEBRE

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This paper deals with the study of ancient jewellery manufacture, in particular the presentation of details concerning the tools and techniques implied in filigree and granulation work during the Viking Age. The art of Viking Age goldsmithing is part of a research project of the "Centre National de Recherche Scientifique", at Toulouse University, about the evolution of metal working in Europe, from the very beginning of metallurgy up to the early medieval times. Tools used for fine metal work are known from several important central places in southern Scandinavia and in the ancient Rus from the late 8th to the beginning of the 11th century A.D, such as Hedeby, Ribe, Lund, Sigtuna, Borgeby, and Staraja Ladoga. Tools were found in different archaeological contexts such as settlement sites, graves, hoards or as isolated finds.

Various categories of fine metal working tools are directly documented as artifacts. Furnace stones, crucibles and stone or clay casting moulds bear evidence of melting and casting processes. Iron tongues, anvils, stakes, swage blocks and hammers are recorded for forging massive rods as well as sheet metal or thick wires. An other kind of tools for plastic deformation are bronze dies, used for pressed sheet work. Dies are preserved in large quantity and particularly well known from a hoard of 41 dies found at the harbour of Hedeby. Draw plates and special tongues for pulling, documented from various sites, were needed for wire production. Lead plates are known to be used for restricted kinds of pressed sheet work and others as punching pads. Clasps of iron, bone or antler are usefull for fixing the unfinished object during manufacture. Grinding and polishing stones are recorded for finishing the metal objects surface. Pairs of scales and weights for weighing and touchstones for assaying give evidence for measuring techniques.

Other categories of tools, lacking in the archaeological record, must be deduced and reconstructed by the study of tool marks and by analogies. Tool marks at the metal surfaces indicate, that various types of punches and special tools for the production of beeded wire have been in use. Points and chisels must have been applied for perforating and cutting sheet metal. We suppose, that dividers and other instruments for metrical mesurements, as well as tweezers and little pliers for bending the filigree wires were known.
An explanatory model will be given for the manufacture of the most important Viking Age types of the Hiddensee-style and the Terslev-type including cross-shaped pendants and disc-shaped fibulae. The decoration patterns of these filigree and granulation ornaments are based on a combination of animal patterns and western European entrelac motifs.

The technological informations were obtained by the examination of tools as well as of gold and silver jewellery. The scientific study of the technological aspects of ancient metal work needs a interdisciplinary approach, combining information of the archaeological context, the optical study using macro- and microscopy, as well as the SEM, the identification of tool marks, experimental archaeology, analogies from ethnoarchaeology, medieval iconographic depictions and literary descriptions, radiography and material analyses (EDX).