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# Korta meddelanden

## The brazing package that King Olof's goldsmith forgot to open

Among the tools and crucibles used in Early Medieval metalworking, ceramic packages for the brazing process are among the more exciting. In particular, the “melting bowls” are interesting; spherical bowls of clay modelled around iron weights prior to brazing (i.e. coating them with brass). The bowls are keys to our understanding of production sites and metrology in Early Medieval Scandinavia.

Briefly put, the purpose of these closed ceramic shells was to create an anaerobic environment where bronze or brass would adhere to iron without the aid of fluxing agents. The method was prevalent from the Iron Age and up into historic times, in the brazing of padlocks which can be plainly seen from fragments with imprints of padlocks on the inside (fig. 1; cf. Jakobsson Holback 1999).

The idea that the melting bowls were linked to mass production of weights, however, has been held for a probability since the mid-1990s (Söderberg 1996) without being supported by any irrefutable evidence. Existing evidence has been circumstantial: e.g. similarities with the packages from padlock brazing, the size that never exceeds the sizes of the most common weights, along with contextual circumstances. Large deposits of melting bowls were, for example, found directly associated with the environment around the early-11th century “mint of King Olof” in Sigtuna, Sweden.

Several authors beside myself (cf. Söderberg 2011) have leaned on the assumption that the melting bowls do indeed mark sites where weights were made (Gustin 1997; Malmer 2010; Kilger 2011). Although the interpretation has relied on strong probabilities, the idea of King Olof Skötkonung's parallel minting and weight production workshop has remained rather weakly founded, being supported by an interpretation leaning solely on circumstantial evidence.

But in 2010 an almost unbelievable opportunity presented itself: in the store of Sigtuna Museum, among ten kilograms of melting-bowl fragments from the minting site, a melting bowl that the king's artisans never opened was found (fig. 2). The bowl measures 23 mm in diameter and is fused with the remains of three others. The latter is common as weights were brazed together in large numbers why the bowls came to adhere to each other in the intense 1000-degree heat. In this case, the craftsmen had opened three of them, but forgot to open the fourth. The weight master must have been busy on that particular day.

In 2014, X-ray examination showed that the package does indeed contain a weight, a small cubo-octahedral one (figs 3–4). Cubo-octahedral weights have also been shown to consist of brazed iron, just like the common sub-spherical weights with flat poles (Sperber 1999). Judging from the new X-ray examination these weights were part of King Olof's production too, alongside the manufacture of the ordinary sub-spherical weights.

With this, our understanding of the melting bowls has come quite far from Hans Drescher's 1983 suggestion that they served as ingredients in the blacksmiths' practice of ritual and magic. We may easily fall into such explanations when faced with archaeological observations we do not immediately understand. This may serve as a reminder that we should still search for interpretations linked to practical functions in the first place, before we can completely exclude them.

*The X-ray examination was done within the project “11th century glass-working and silver processing in the Sigtuna mint”, supported by the Berit Wallenberg Foundation.*



Fig 1. A fragment of a ceramic brazing package with the imprint of a barrel-shaped padlock. The Professorn 4 site, Sigtuna. Find no 3702. Photo: author/Sigtuna Museum.



Fig 2. Brazing package of the round “melting bowl” type, found during the 1990–91 excavations at the Urmakaren site in Sigtuna. The object (find no 6642) was found in building A 195, a kitchen connected to the workshop A 89, the late 10th century precursor to the mint. A 89 was most likely involved with the minting like its successor. Photo: author/Sigtuna Museum.

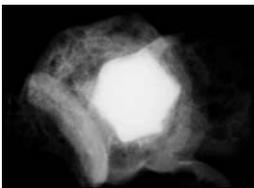


Fig 3. X-ray image of the brazing package showing an enclosed cubo-octahedral weight. The rectangular bump connected to the lower right facet is probably remains of the brass solder, enveloped in the clay together with the weight itself. The weight is approx. 10 mm wide. X-ray photo: Folkvandvården Sigtuna.

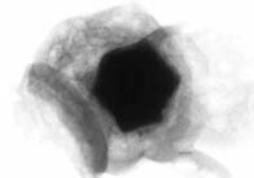


Fig 4. A cubo-octahedral weight, slightly smaller than the one in the X-ray image, approx. 6 mm wide. The Professorn 1 site, Sigtuna. Find no 13049. Photo: author/Sigtuna Museum.



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