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# Korta meddelanden

## The Metrology of the Timboholm Hoard Revisited

A gold hoard was found in 1904 at Timboholm near Skara in the province of Västergötland (Arne 1906). It consists of two bars, two smooth arm rings and 26 heavy gold spirals hooked together as two irregular chains, consisting of 10 and 16 rings respectively. One of the two smooth rings is permanently closed, while the other is open in a fashion similar to so-called Kolben armlets. These are commonly associated with the Migration Period elite (Hagberg 1985, p. 107; Arrhenius 1997, p. 125 f). The accepted dating of the hoard to the Migration Period is based on the Kolben-like armlet and on punched decoration on the ends of one of the gold spirals in the shorter chain. The crescent punch motif on the Timboholm spiral also occurs on other Migration Period gold objects such as the massive neck ring from Tureholm in Södermanland (Arne 1906, p. 95; picture in Stenberger 1964, p. 471).

The total weight of the hoard is 7084 g. Co-author Jan Gullman (1995) weighed each component individually and concluded that all hold a gold content of 23 or 24 carats and have weights related to a pound of 335.7 g. It is tempting to assume that the objects would be calibrated against the Roman *libra* of 327 g, since very pure gold, such as that in the hoard, was not produced in Scandinavia. Gullman thought the most likely source for this gold to have been Roman *solidus* coins, an idea supported by the date of the hoard. It was, however, clear to Gullman that the material at hand, whose apparent base weight was approximately 170 g (or its double, 340 g), did not quite fit the Roman weight system. Gullman was left with a mean weight of c. 336 g, a pound weight that he was unable to find duplicated anywhere else.

### *All is bound with bangles – but how?*

We have surveyed a number of single archaeological finds as well as a large number of objects contained within Viking Period hoards. While

our point of departure was silver objects contained within the Spillings, Asarve and Ocksarve silver hoards, with the help of a number of kind colleagues, we were also able to incorporate objects interpreted as having a Scandinavian origin, but which were found outside of Scandinavia (e.g. in Russia, Scotland and Ireland) into our research. During this process, it became apparent to us that Scandinavian traders during the Viking Period used a completely different system for reckoning weight than the Roman one. We became familiar with the method of reckoning weight using wheat grains that was common in the Caliphate under the Abbasids. That same custom is echoed in the Russian method of weighing, in use up until the 1917 revolutions, and we duly noted that the same method was applicable to the Viking Period hoards that we had surveyed.

Once we coupled this information with Omeiljan Pritsak's 1998 study of ancient weight systems, we realized that the units of weight in use during prehistory corresponded to one of two kinds of ideal weights, which we were able to determine represented a grain of wheat and a barley corn (Pritsak 1998). In the Russian method of counting weight by grains, for example, the smallest unit is the *dolya*, equal to a grain of wheat of 0.04444 g. Since the Russian system was used until reasonably late in history, it has been carefully calibrated against the gram. 96 *dolya* – i.e. 96 grains of wheat – made one *zlotnik* of 4.266 g, 96 of which in turn made 1 *fun*t of 409.5 g, which served as the Russian equivalent of a pound.

On the other hand, it is generally accepted that the English Troy and Avoirdupois systems along with the Roman weight system are based not on the wheat grain but on a barley corn of 0.0634 g. The consensus regarding the grain-weight method of reckoning used before the Troy and Avoirdupois systems were introduced is, however, that the earlier Tower pound was based on the *wheat* grain, thus making the Troy and

the Tower methods of weighing differ significantly from one another (Gemmill & Mayhew 1995, p. 86 & passim).

There was also a Saxon pound, a term dating back to the 8th century. Previous commenters have generally assumed that the Saxon pound was brought to England when the Anglo-Saxons migrated across the Channel from the Continent. King Offa's Saxon pound was equal to 240 penny weights (or denarius weights, dwt), each weighing 32 grains of wheat. It remained in use until the Middle Ages, when it was re-named the Tower pound. It was not replaced entirely until 1527 when the Troy system based on the barley corn took over.

Applying the same weight of a wheat grain to the Saxon way of reckoning as in the Russian way of reckoning, we find that 1 *zlotnik* equals 3 pennies, i.e. 240 pennies is the same as 80 *zlotnik*. In other words, one Saxon pound equals 80 *zlotnik*. A Saxon pound would thus equal  $80 \times 4.266 \text{ g} = 341.3 \text{ g}$ . Because 40 *zlotnik* is the same as  $40 \times 96 = 3840$  *dolya* and 3840 grains of wheat by definition equals half a Saxon pound, it is also possible to assign the Saxon pound a very exact weight in grams:  $80 \times 4.2658 = 341.3 \text{ g}$  and hence half a pound is 170.6 g. We now recognize that weight as the same basic unit as the one identified by Gullman in the Timboholm hoard. Only object number 1 in the Timboholm hoard deviates from a weight divisible by the Saxon pound. It is a tenth of a Saxon pound (34 g) short of 3 pounds. One tenth of a pound equals exactly 24 pennies.

It seems clear to us that the wheat grain weight used in the Timboholm hoard corresponds to the Russian *dolya*. This discovery leads us to re-evaluate the findings of the 1995 study. Among other things, the new findings shows how ancient the Russian system really was; it seems to be a tradition of reckoning grain weights that was used in international trade at least as far back as the Migration Period. If this is true, the *dolya* remained in use in excess of 1500 years without much distortion. Historical and archaeological sources suggest a strong cultural connection between Scandinavia and England in the 5th and 6th centuries. Given that this connection can be shown in the trade of goods, burial styles, art and the spread of ideas (Näsman 1986; Carver 1992, p.

181 ff; Newton 1993, pp. 27 & 110), why not also in the art of weighing?

#### *An "Old" Hoard in New Light*

Looking closer at the objects from Timboholm hoard we find that some, especially no. 9, are of a significantly lower weight than the others. Ring no. 9 consists of a ring wrapped in gold wire.

Most of the objects weigh the equivalent of 40 *zlotnik* or whole number multiples thereof. Objects 1 and 4 deviate from that rule as they lack 8 and 2 *zlotnik* respectively to reach a multiple of 40. ( $232 + 8 = 240$ ;  $240 / 40 = 6$ .  $158 + 2 = 160$ ;  $160 / 40 = 4$ .) Ring no. 4 is a heavy, smooth ring with an opening, used to hook rings 3 and 11 together. It may have been a solid ring that was opened up for the purpose of attaching it as a link in the chain, thus lowering its weight.

Ring no. 3 is heavier than the average ring in the hoard, and it, too, is smooth. When we divided the weights of rings no. 3 and 4 by the number of *zlotnik* we had interpreted them to represent, the average *zlotnik* weight came to exactly 4.282 g each. Small variations in weight standards may be due to the master weight against which each object was calibrated varying from workshop to workshop. It is also possible that each object within the hoard was weighed on different scales before it was added to the hoard. However, we find it quite remarkable that 5 of the 28 objects in the hoard conform to the Russian *zlotnik* weight within  $\pm 4$  mg, i.e. they differ from the plausible *zlotnik* by  $4/1000$ !

#### *Conclusion*

We feel that it cannot be emphasised enough that the Viking Period "Swedish" system had Arabic roots rather than Roman ones and that the Swedish *mark* weight corresponded to 4608 wheat grains. It is beyond the scope of this article to explain in what way the Roman barley grain weight is related to the Saxon wheat grain weight. But all this means that the Roman weights may not have been used to define weight units in Sweden at all at this time.

#### *References*

Arne, T.J., 1906. Det stora guldfyndet från Sköfde. *Fornvännen* 1.

- Arrhenius, B., 1997. Connections between Scandinavia and the East Roman Empire in the Migration Period. Austin, D. & Alcock, L. (eds). *From the Baltic to the Black Sea. Studies in Medieval Archaeology*. London.
- Carver, M.O.H., 1992. *The Age of Sutton Hoo. The Seventh Century in North Western Europe*. Woodbridge.
- Gemmell, E. & Mayhew, N., 1995. *Changing Values in Medieval Scotland. A Study of Prices, Money, and Weights and Measures*. Cambridge.
- Gullman, J., 1995. Timboholmsskatten undersökt med modern teknik. *Fornvännen* 90.
- Hagberg, U.E., 1985. Västergötlands guldålder och dess bakgrund – en skiss av tusen år (400 f.Kr. – 600 e.Kr.). Stiftelsen Älvsborgs Länsmuseum, Vänersborg.
- Newton, S., 1993. *The Origins of Beowulf and the Pre-Viking Kingdom of East Anglia*. Cambridge.
- Näsman, U., 1986. Vendel period glass from Eketorp-II, Öland, Sweden. *Acta Archaeologica* 55 (1984–86). Copenhagen.
- Pritsak, O., 1998. *The Origins of the Old Rus' Weights and Monetary Systems. Two Studies in Western Eurasian Metrology and Numismatics in the Seventh to Eleventh Centuries*. Cambridge, Mass.
- Stenberger, M., 1964. *Det forntida Sverige*. Uppsala.

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## Nils Henrik Sjöborg som poet

Många har nog hört talas om den gamle lunda-professorn och antikvarien Nils Henrik Sjöborg (1767–1838) som i årtal reste antikvariskt och publicerade åtskilligt om forntiden. Men det är nog mindre känt att Sjöborg också hade en poetisk ådra.

Sjöborgs poetiska alster återfinns i en den danska tidskriften *Nordia*. Den ende som verkar ha uppmärksammat Sjöborg som skald är Gustaf Ljunggren som i storverket *Svenska Vitterhetens häfder efter Gustaf III:s död* diskuterar tidskriften. Ljunggren avfärdar Sjöborg som poet: »De flesta svenska poem i *Nordia* äro af mag. Stoltz och docenten i historia N.H. Sjöborg, av hvilka den förre hade någon poetisk förmåga, den senare ingen» (Ljunggren 1877, s. 558). Trots denna hårda dom finns det anledning att titta lite närmare på Sjöborg som poet.

*Nordia* var tänkt som ett nordiskt samarbetsprojekt där skriftställare från Danmark och Sverige skulle mötas. Initiativtagare var Jens Kragh Høst (1772–1844) som 1794 besökte Lund och

knöt kontakt med lärare och studenter. Då han återvänt till Danmark startade han tillsammans med Peder Horrebøw Haste (1765–1831) och Frederik Høegh-Guldberg (1771–1852) *Nordia*.

Tidskriften var riktad mot det allmänt kulturella och verkade för en litterär förening mellan Danmark och Sverige. Innehållet består av dikter, avhandlingar och uppsatser i diverse ämnen. Recensioner var tänkta som ett viktigt inslag, men dessvärre blev detta område eftersatt. Översikter av nyutgiven litteratur i de båda länderna hade säkert lockat läsare. Inledningsvis fick *Nordia* ett positivt mottagande både i Danmark och Sverige, men intresset svalnade snabbt. Kanske var de skandinavistiska tankarna för tidiga, eller innehållet för dåligt. Författarna var i många fall studenter och man lyckades inte locka mera erkända skribenter. Från svensk sida fanns få medarbetare från Uppsala och Stockholm. De svenska skribenterna var i stället som regel knutna till Lunds universitet, vilket gjorde det svenska inslaget begränsat och regionalt. Man saknade