

Minimally invasive analysis: Fact or fantasy?

The challenge of ^{14}C dating early modern knitted wool & linen lace fibres



Knitted wool
Museum of London
(inventory no: 5013)



Linen lace
Northern New Mexico
Museum of Lace

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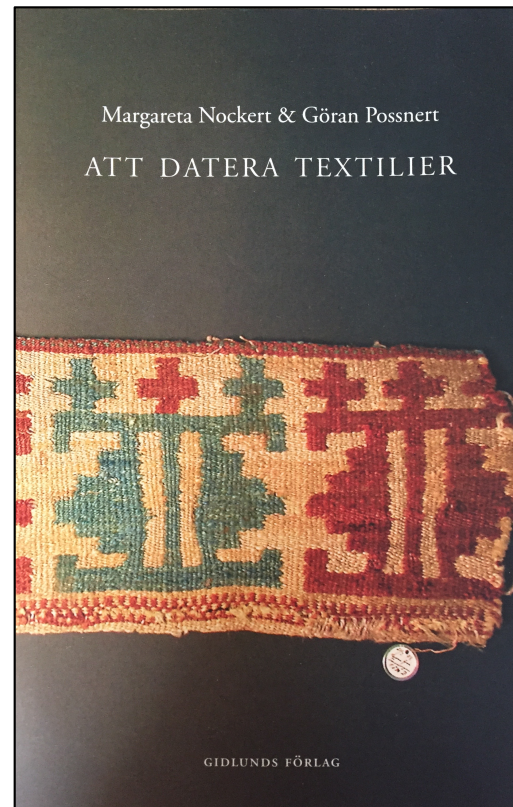


AMS dating textiles: mostly woven archaeological items



The Huldremose clothing in National Museum of Denmark (inventory number C3473) was ¹⁴C dated 350 to 41 BCE
(Mannering et al 2010)

Nockert & Possnert (2002)
Att Datera Textilier, Hedemora: Gidlund



A sprang cap from Egypt in the Katoen Natie Collection, Antwerp, Belgium (inventory number 853b) was ¹⁴C dated to between 595 & 665 CE – probability 95.4% **(Van Strydonck et al 2004)**



Few non-woven historical textiles dated



Methods of investigation: the historian's perspective

Approach 1: **Comfort zone**

Conventional art historical methods – **FAMILIARITY**

- Collect examples of object to compare and contrast
- Find references to object in documentary sources
- Gather depictions of object to understand its use

Approach 2: **New frontier**

Scientific methods of analysis – **CHALLENGING**

- Collect sample from object (a destructive process)
- Treat sample to prepare it for testing – ABA (acid – alkali – acid) options
- Interpret result using contextual evidence (calibration curve)

Slow seeing versus speed dating



14C dating results: linen (x1) & wool (x2)

Right: Bobbin lace sample 1.33 mg (private collection)

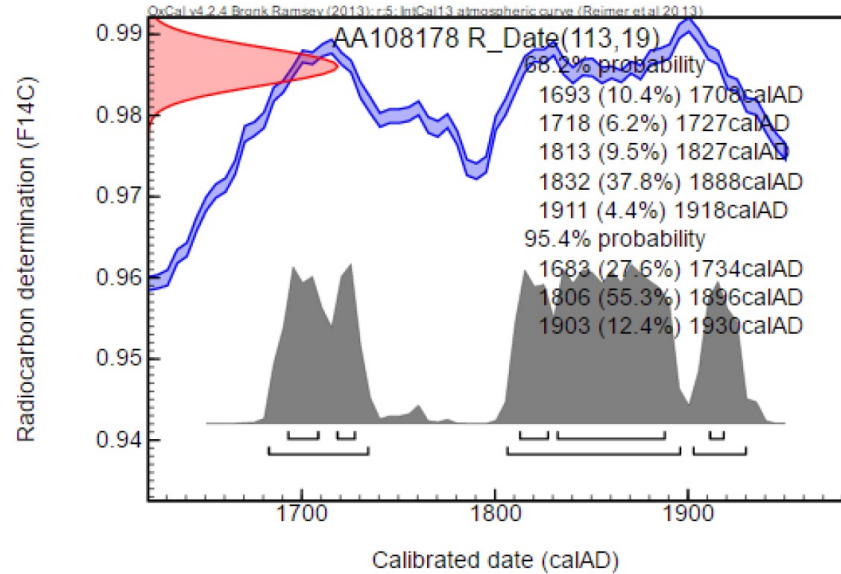
Between 1683 & 1930 CE; 292-year range (17th to 20th centuries) 95.4% probability

Below: Knitted cap lining sample 4.2 mg (V&A Museum inv no 1562A-1901)

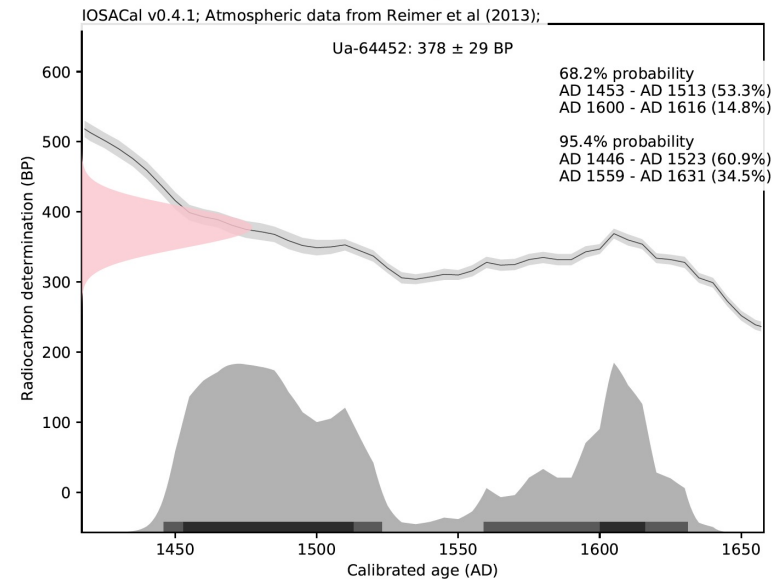
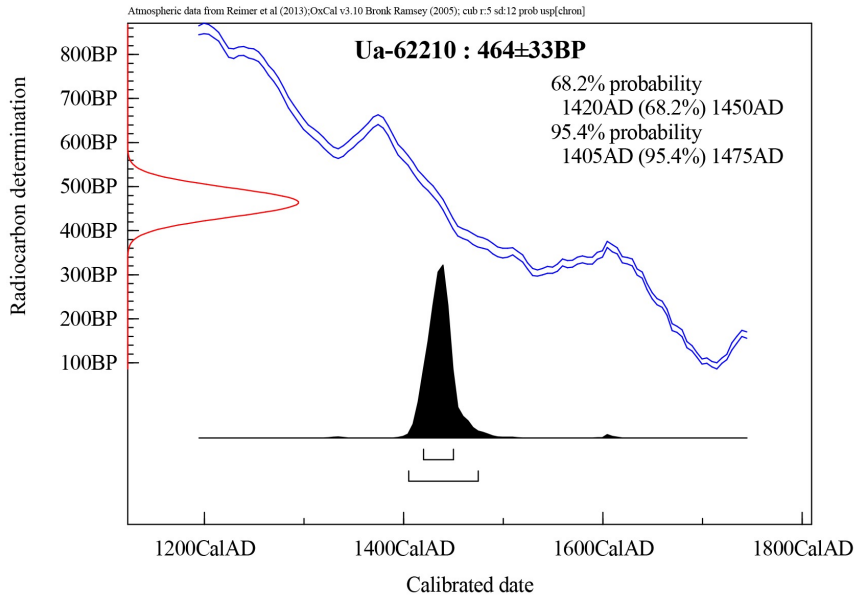
Pilot result - **Between 1405 CE & 1475 CE; 70-year range (15th century) 95.4% probability**

Below right: Phase 2 result - **Between 1446 & 1523 CE; 77-year range (15th to 16th centuries) 95.4% probability**

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The End

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Agnes
Geijer
Foundation
Stockholm

Mannering U, Possnert G, Gleba M, Heinemeier J (2010) Dating Danish textiles and skins from bog finds by means of 14C-AMS. *Journal of Archaeological Science* 37, 261-8.



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Van Strydonck, M, De Moor, A and Bénazeth, D (2004) 14C dating compared to art historical dating of Roman and Coptic textiles from Egypt. In *Radiocarbon*, 46, 1, 231–244.



The Bibliography

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