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Digital 3D Reconstruction of Historical Textile Fragment

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## Transition: Re- thinking Textiles and Surfaces University of Huddersfield

Digital 3D Reconstruction of Historical Textile Fragment

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Presented by Sophie Calvert s.calvert@hud.ac.uk

Powerpoint Presentation Nov 2014



# BLACK SILK DOUBLET AND PETTICOAT BREECHES

Many pieces of historic textile fragments remain inaccessible to the wider public, too fragile to leave their storage boxes. Certain fragments are decomposing at a rapid rate.

Project Overview Aims

- To use photography and 3D scanning techniques to analyze a historic textile fragment
- To accurately record data and explore a methodology suitable for handling and testing historic textiles

Digital 3D Reconstruction of Historical Textile Fragment

### Project Overview The Fragment

- Analyzing textile fragments from the English National Trust Archive
- Fragments examined in this study loaned from Claydon House archive, Buckinghamshire
- Textiles date back to 1625c
- Fragments examined are part of a decorative mens recticella lace collar

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### Project Overview The Fragment

- A- Detail of the lace decorative collar
- B- Detail of the silk trim (seen at the base of the collar)

Digital 3D Reconstruction of Historical Textile Fragment



- Used to determine 3D yarn architecture
- Instrument used in this study-Nikon Metrology 225 Micro CT Scanner
- Each Scan contained 1583 frames which were constructed using Nikon Metrology Software

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# Computerized Tomography

6.0



- Used to determine surface and yarn measurement and structure
- Objective Lense provides small depth of focus to combine with vertical scanning to capture point height and true colour surface data

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### X-Ray Florescence (XRF)

- Used to determine constituent elements including possible links to dye process
- Qualative and semi quantitative Xray Florescence measurements were performed on different areas of the textile fragments
- Instrument used in this study-A commercially available
  Bruker Artax 400 XRF

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### X-Ray Florescence (XRF)



Credits: Working the XRF for this project Professor Sue Kilcoyne



### Conclusions

- Research has demonstrated the potential of (CT), (IFM) and (XRF) 3D scanning technique to examine both structure and fibre of historic textile fragment
- These methods non destructively unlock the data and detail which in time would fully disintegrate with the textile
- Data collected will be used within 3D software packages for advanced textile simulation modelling purposes

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### Further Research



- A range of software currently exists which takes 3D scan imagery such as the CT data within this study into reconstruction including; MATALAB, Rhinoceros, ANSYS.
- Current 3D specialist textile software work with a range of assumed fabric properties unsuitable for historic textile modeling
- A digital catalogue of data will be collated specific to historic textile fragments which will include further fabric testing procedures.

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