Image capture techniques for analysing text: IR and IS for the Dead Sea Scrolls

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with thanks to Greg Bearman and Pnina Shor

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www.cch.kcl.ac.uk/research/projects/

Research projects

| Projects by status | Projects by funder | Projects by discipline area | Projects by partner institution |

Contents
> **Research projects in progress**
> **Second phase projects**
> **Completed research projects**
> **Embedded activities**
> **KVL projects**

Research projects in progress

> Jane Austen's Fiction Manuscripts
> British Printed Images to 1700
> Catalogue of English Literary Manuscripts 1450-1700
> Chopin's First Editions Online
> Centre for the History and Analysis of Recorded Music
> Cultures of the Lusophone Black Atlantic
> Corpus of Romanesque Sculpture in Britain and Ireland
> Early Modern Spain
> Integrating Digital Papyrology
> Electronic Sawyer
> Fine Rolls of Henry III
> Greek Bible in Byzantine Judaism
> Henslowe Alleyn Digitisation Project
> Inscriptions of Roman Cyrenaica

> London Theatre Bibliography
> Modern World Poetry in English Translation
> Language of Landscape
> Nineteenth-Century Serials Edition
> Paradox of Medieval Scotland
> Digital Schenker
> Sherpa DP2
> Stellenbibliographie zum Parzival Wolframs von Eschenbach
> Swift project
> Pliny: A note manager
> Regional Information Collection Centre
> TEI by example
> Digital Access Strategy for the John Murray Archive
> Desmond Tutu Digital Archive

Second phase projects

> Clergy of the Church of England Database
> Corpus Vitrearum Medii Aevi
> Digital Image Archive of Medieval Music

> Online Chopin Variorum Edition
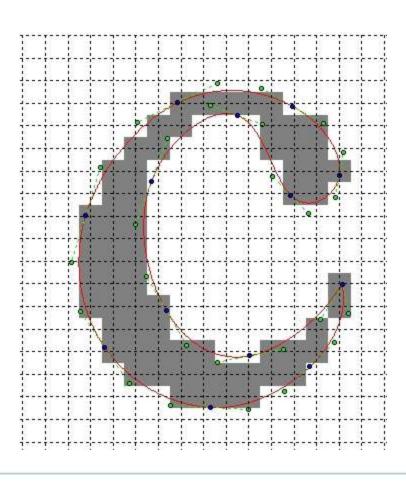> Prosopography of Anglo-Saxon England

Some image analysis techniques for text

- Attenuating noise
- Vectorisation
- Kernel binarisation
- Page curl correction
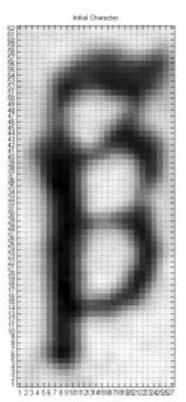- Character identification and segmentation

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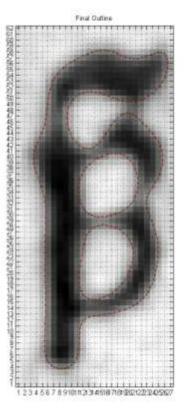
Third-order Bezier curves

Outlining of Old Gothic character with third-order Bezier curves

H. Balk, IBM "Responding to the challenges in mass digitization of historical printed text", In *The IMPACT workshop at the*

EVA MINERVA Conf., Jerusalem, Israel, November 2008.

Dead Sea Scrolls: IAA benefits

- Support conservation and documentation
- Create high quality images:
  - colour
  - infra-red
  - multi-spectral
- Unify the IAA's rich digital resources
- Reflect the past, determine the future

Dead Sea Scrolls: Scholarly benefits

- Deliver the highest quality images ever seen by scholars of the DSS

- Provide interactive tools within a supportive research framework

- Integrate scholarly resources
  - Transcriptions, translations, bibliographies, indexes, maps, etc.

- Honour 60 years of scholarship, provide opportunities for future research perspectives
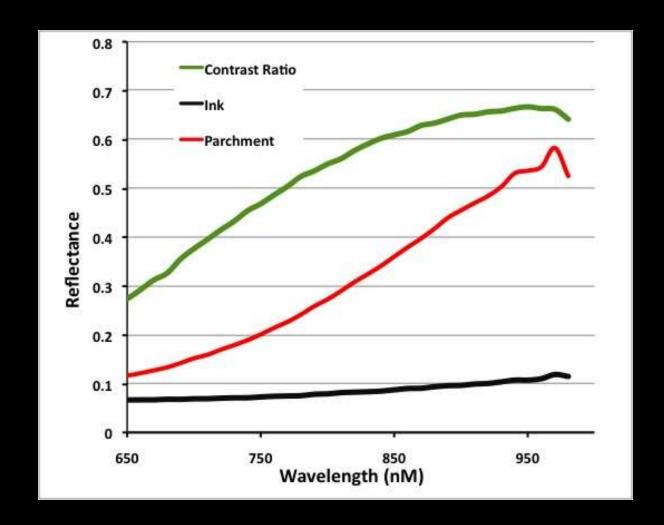
לות תעשר ולו ועשר

עשר נבוא וחיל

נשוגע אל הי

תמתה לספר ב

שלוט בורקבן עמ
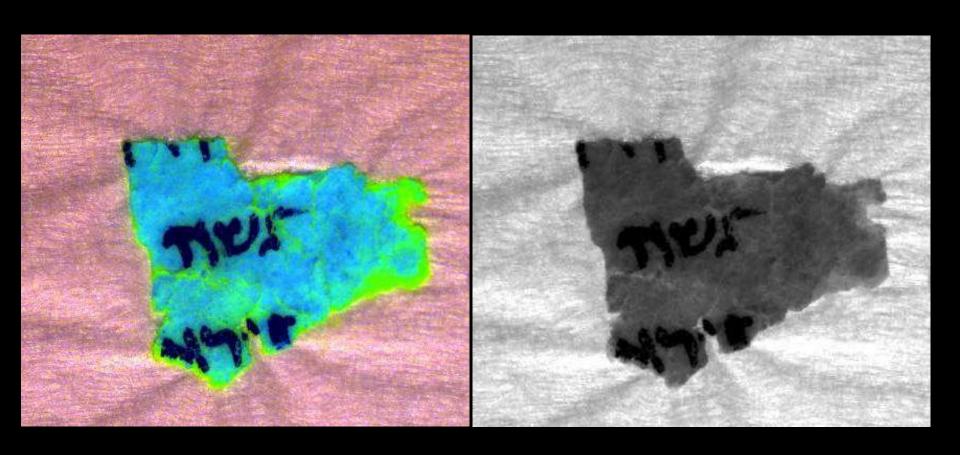
Imaging Spectroscopy for Scroll Conservation and Reading

- *Monitor changes in scroll parchment condition that affect legibility before they become visible*

- *Combine with biomedical imaging technology (scrolls are on skin, after all) to map water content. Preliminary experiments with University of California-Irvine show feasibility*

- *Spectral classification may aid reading scrolls*

Changes in reflectance spectrum in near infra-red are the major changes that affect legibility. These spectra are for a very dark fragment that is illegible with the human eye.

Spectral Classification

Use of complete spectrum separates ink, parchment, backing and background

Vision of the Digitisation Project of the Dead Sea Scrolls

The Israeli Antiquities Authority will digitise the Dead Sea Scrolls to protect the Scrolls for future generations whilst enabling all to be able to digitally view and research these artefacts of unrivalled value to world heritage

DSS Digitisation Pilot Team
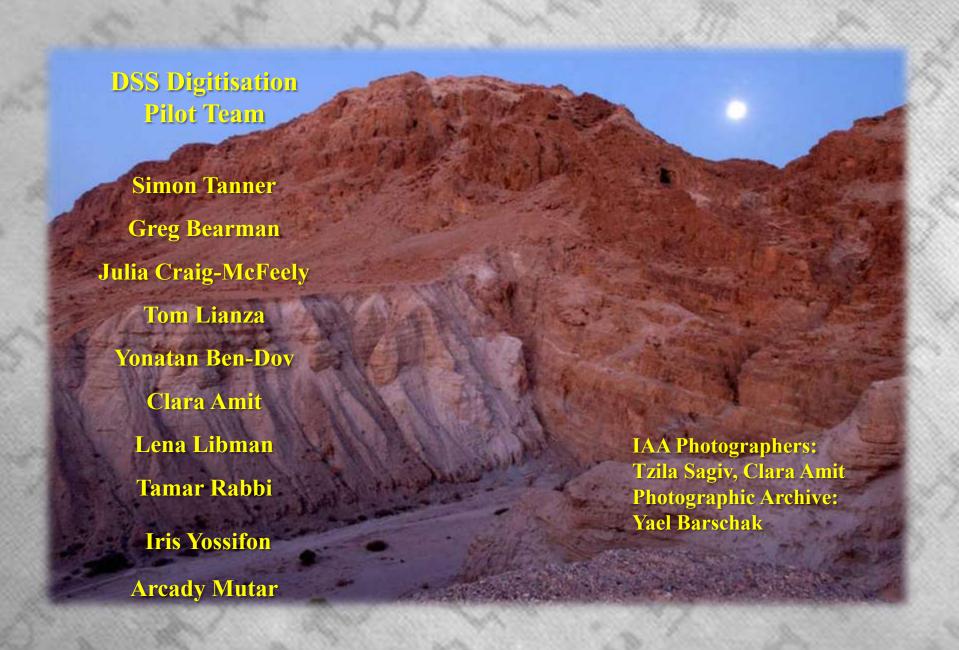
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