

# Great Parchment Book Project

Conserving, digitally reconstructing, transcribing and publishing the manuscript known as the Great Parchment Book

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## The Manuscript

The Great Parchment Book of the Honourable The Irish Society is a major survey, compiled in 1639 by a Commission instituted by Charles I, of all the estates in Derry, Northern Ireland, managed by the City of London through the Irish Society and the London livery companies. Damaged in a fire at London's Guildhall in 1786, it has been unavailable to researchers for over 200 years. The damaged manuscript has however remained part of the City of London's collections held at London Metropolitan Archives (LMA reference CLA/049/EM/02/018). As part of the commemoration of the 400<sup>th</sup> anniversary of the building of Derry's city walls in 1613, it was decided to attempt to make the document available as a central point of the planned exhibition. Given the relative paucity of archival records for early modern Ireland, the manuscript should reveal key data about landholding and population in 17<sup>th</sup>-century Ulster.



The manuscript consists of 165 separate parchment membranes, all damaged in the fire. Uneven shrinkage and distortion has rendered much of the text illegible.

Traditional conservation alone would not produce sufficient results to make the manuscript accessible or suitable for exhibition, the parchment being too shrivelled to be returned to a readable state. Much of the text is visible but distorted; following discussions with conservation and imaging experts, it was decided to flatten the parchment sheets as far as possible, and to use multi-modal digital imaging to gain legibility and enable digital access.

## Conservation and Flattening

A partnership with the Department of Computer Science and the Centre for Digital Humanities at UCL established a four year EngD in the Virtual Environments, Imaging and Visualisation programme in September 2010 (jointly funded by the EPSRC and LMA) with the intention of developing software that will enable the manipulation (including virtual stretching and alignment) of digital images of the book rather than the object itself. The aim is to make the distorted text legible, and ideally to reconstitute the manuscript digitally.

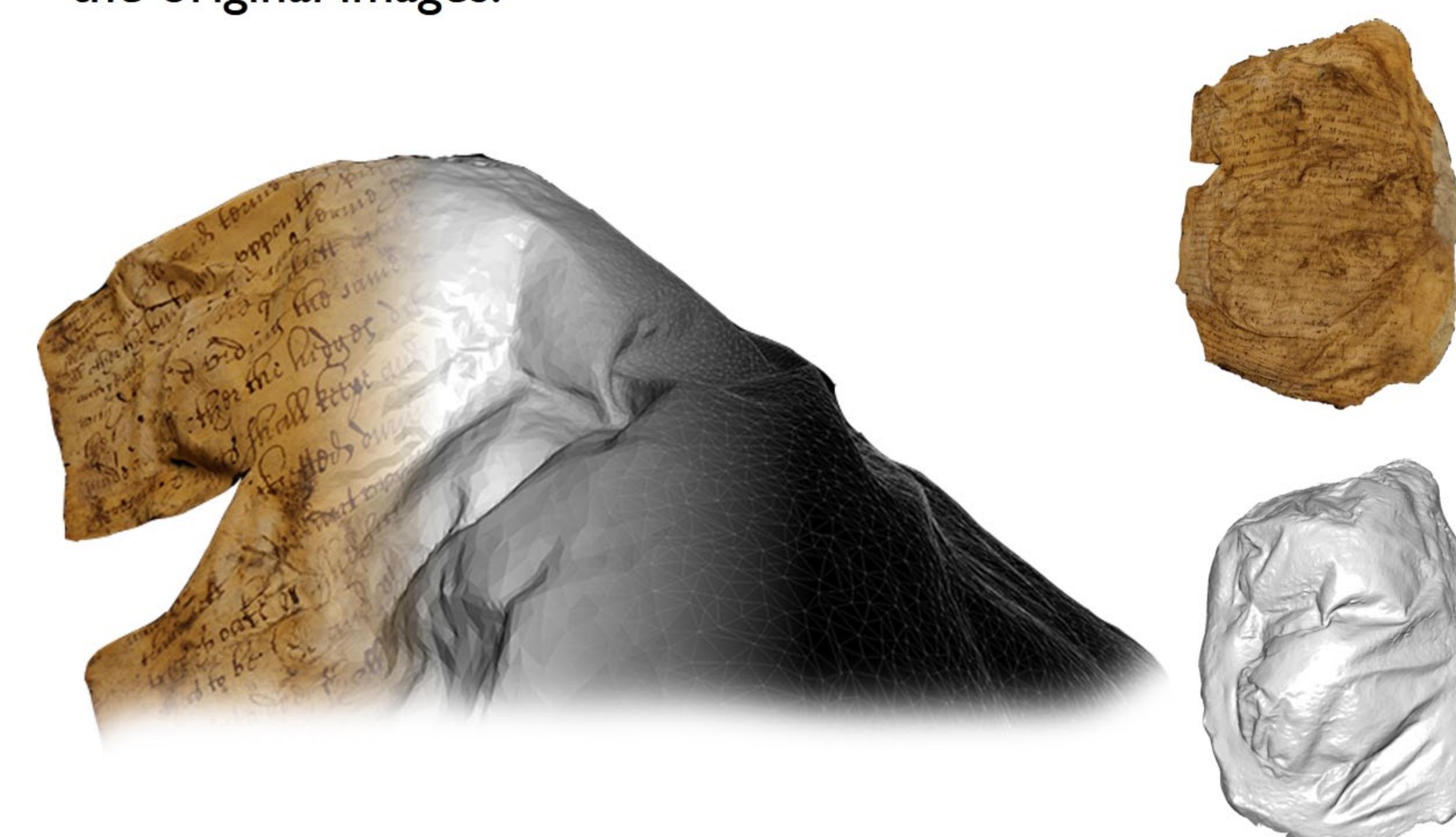
Conservation work on the membranes encompassed damage assessment and surface cleaning of soot and dirt. Each membrane was then carefully humidified to avoid catalysing the degradation processes already occurring in the parchment. Once the sheets were moistened enough, they were gently pinned on a metal sheet with felt-wrapped magnets to hold creases open during the drying process and left to dry under tension. This opened out areas of parchment where the camera could not reach the text. Once treated, the sheet were rehoused in purpose-made archival boxes.



A team from UCL Computer Science and UCL Centre for Digital Humanities, led by Dr Tim Weyrich, worked with LMA to capture 50 to 60 high resolution images of each page. Kazim Pal, a PhD student working on the project, then built software to generate a 3D model which allowed viewing of the damaged pages at archival resolution. A key feature of the software is to dynamically flatten these models virtually on screen, allowing the contents of the book to be accessed more easily and without further handling of the document.

## Virtual Flattening Results

The virtual flattening procedure begins by generating a high resolution 3D model of each page from a set of images using multi-view-stereo and surface reconstruction algorithms. This 3D model can then be explored in an interactive application which dynamically flattens local regions of the page as the user navigates over them. This region-by-region approach to flattening was demonstrated to circumvent many of the problems of global document flattening methods, which can introduce extra distortions when applied to such damaged manuscripts. The application also records the provenance of the 3D data by displaying the reconstruction side by side with the original images.



## Transcription and Publication

A readable and exploitable version of the text was also prepared, comprising a searchable transcription and glossary of the manuscript. This element of the project received a grant from the Marc Fitch Fund towards the employment of a palaeographer who also encoded the text using TEI to capture structural and semantic information about the texts. This enabled comprehensive searching of the document.

The transcript and images of the document are being made available online through the project website, to enable sophisticated online presentation and searching of the document contents.