

# The ISOS Project – A Digital Library Of Irish Scripts On Screen

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## Abstract

This paper describes a collaborative project between the School of Celtic Studies, Dublin Institute for Advanced Studies and the School of Computer Applications, Dublin City University, the purpose of which is to produce high resolution digital images of Irish manuscripts together with ancilliary text and commentary for display on the WWW.

## Introduction

Manuscripts in the Irish language are to be found throughout the world, in libraries and in private collections. Roughly five thousand survive and, not surprisingly, the biggest collections are located in Ireland, Scotland, England and Wales. These manuscripts, as is well known, range in date from the 12<sup>th</sup> to the 19<sup>th</sup> centuries, and are made from vellum down to about the middle of the 16<sup>th</sup> century when paper starts to take over, paper finally predominating from the early seventeenth century onward. The ongoing need for primary access to these books by scholars becomes an increasing concern to librarians depending on the physical state of the documents. In the past, the use of surrogates such as facsimiles and photostats was advocated from time to time. In more recent times microfilm copies of a significant number of manuscripts have been made and, while this has facilitated access, it is very rarely that such copies can be considered even half-adequate as surrogates.

The present paper outlines a project which demonstrates how, using modern information technology, it is possible to make images of these manuscripts available to a wide audience without endangering the

originals, while coming as close as is possible to realising the concept of the true surrogate, and thus resolving the previously conflicting concerns of access and conservation. The ISOS project is on-going and some material is already accessible.

## Overview of the ISOS Project

Irish Script on Screen (ISOS) is a joint project between the School of Celtic Studies, Dublin Institute for Advanced Studies, and the School of Computer Applications, Dublin City University to digitise images of Old Irish manuscripts and make them available for scholarly and for casual use on the WWW. Much advice and guidance has been provided by the Bodleian Library at Oxford University who are running a similar project to ISOS. The present phase of the project is being run in partnership with Trinity College Library, Dublin.

This project, then, combines the ostensible polarised interests of the humanities and the sciences in a unique and, we hope, fruitful collaboration. For the School of Celtic Studies, ISOS represents a natural extension of its statutory responsibilities with regard to research and publication of research in the area of Irish manuscripts. The potential for combining texts, either diplomatic or normalised, with images of the sources themselves; or for linking those images to manuscript catalogues - something which has been achieved already - that potential is an exciting one, deserving of investment of time, money and research.

For the School of Computer Applications, having already worked with organisations such as the *Irish Times* and RTÉ on information retrieval projects, the attraction of the ISOS project is that it connects to a core research interest of the School, namely the development of digital libraries.

The work of the project is divided between the partners as follows: the School of Celtic Studies selects the material to be digitised (in consultation with the holding library), prepares the catalogues, and is responsible for image capture and quality control. Processing and storage of the images, creation and maintenance of the website, are the responsibility of the School of Computer Applications.

The ISOS project, therefore, is setting out to digitise Irish manuscripts of various dates between the late eleventh century and the nineteenth, and to make them available for educational and research purposes on the WWW. The contents of the manuscripts have been recorded, in fine detail, into digital form by scanning them with a high resolution colour camera. Global access to the material is ensured by placing them on the WWW. There are several reasons for, and benefits from, the ISOS project:

- Digitisation is contributing to the long-term conservation of the manuscripts. Technology has allowed the material to be digitised into ultra high resolution detail which has reduced the need for consulting the originals themselves, therefore helping in their long-term preservation.
- Remote access to the digitised material is being provided to scholars of Celtic Studies throughout the world, thus increasing their availability to this community.
- The development of a WWW site of the images along with the provision of relevant information has resulted in the creation of an electronic resource which is of cultural and educational interest to the casual web browser as well as to schools.

## Technical Overview of the ISOS Project

A Dicommed Studio Pro XL digital camera is used to capture images. This is a non-intrusive capture mechanism which does no damage to the manuscripts as the light levels required to scan a picture of a manuscript page are much less than that required for copying. Images are digitised at 600 dpi with each pixel being 24 bit colour. The file size of any given image varies according to the physical size of

the manuscript page but in general an uncompressed digital image (TIFF) of a manuscript page may vary from 60Mb to 120Mb.

After scanning, the image is loaded onto a PC and the brightness of the images is adjusted slightly using Adobe Photoshop so that the images match the physical pages, in as far as possible. The images are transferred to 1GB Jazz disks and sent to DCU for further processing. Equilibrium's Debabelizer is then used to process the images in batch mode. Each image has a ruler added to it to give a scale for the image, and each image is also stamped with an identifier on the top and a copyright notice on the bottom. The resultant TIFF images are then archived onto DLT tapes each of which generally stores about 25 GB of images and these are then stored at different locations for security purposes.

After images are processed by adding a ruler and identifier, JPG compressed versions of the images are also created using DeBabelizer. These are done in two levels of compression with large high-quality JPG images, varying from 1.5 MB to 5 MB, as well as lower resolution JPG images of a few hundred Kbytes, and finally, thumbnails.

The JPG images are also digitally watermarked using the Digimarc Batch Embedding Tool [1]. This tool inserts an invisible digital watermark into each image which can be read using Digimarc's ReadMarc, a software tool downloadable for free over the Internet. When ReadMarc is used to read a watermark from an image a URL is given to the user, who can then go to the URL and get information about the copyright holder. Digimarc's watermarking has become very popular in allowing the tracking of image abuse on the internet.

## **Archival and Conservation Concerns**

Crucial to the success of ISOS is the attention to best practices with regard to the management of the material being digitised. Great care was taken from the outset to ensure that the camera technician was fully qualified, to degree level, in archival and conservation studies. Temperature and humidity are monitored daily in the digitisation environment, and the modalities of conservation practice - such as the use of acid-free securing implements, and so forth - are observed at all times. This means that not alone are the partners satisfied that every possible care is taken of the manuscript originals, but confidence in our ability to operate effectively in a library environment, or with library materials, is generated, resulting in the excellent relations the ISOS team have enjoyed with the libraries with which they have worked.

## **Current Status and Plans**

The ISOS project began with a pilot stage lasting from July 1998 to May 1999. This period allowed the project to explore the various technical challenges which the digitisation of Irish manuscripts presents, to experiment with the photography, and to gain valuable experience from handling a range of different bibliographic formats.

The Abbot and community of Mount Melleray Abbey, Co. Waterford, readily agreed to the temporary transfer of their collection of thirteen Irish manuscripts to the School of Celtic Studies for use in the pilot stage of the digitisation project. These manuscripts had all previously been catalogued by the School, and their availability to the project was therefore of great value. Images from this collection are now publicly available on the ISOS website. Coláiste na Rinne, Rinn Ó gCuanach, Co. Waterford, also placed some of their collection at the disposal of the project, and images from these manuscripts are available on the website



On completion of the pilot stage of the project in May 1999, ISOS entered into an agreement with Trinity College Library to undertake a programme of digitisation of some of its important collection of Irish manuscripts. For environmental and security reasons the work, which will take a further two years to complete, is being carried out in the Library in co-operation with Trinity's Conservation Laboratory and Manuscripts Department.

The project's primary target in TCD is MS 1339 (H 2 18), otherwise known as the Book of Leinster, a diplomatic edition of which was published by the School of Celtic Studies [3]. The Book of Leinster, properly *Leabhar na Nuachongbhála*, is an anthology of Irish tradition – prose, verse, and genealogy – the compilation of which spanned the second half of the twelfth century. It takes its name from an ecclesiastical foundation in Co. Laois, that of Oughaval, near Stradbally. Of the number of scribes who worked on it only one is known by name: Aed mac meic Crimthaind, coarb of Terryglass, Co. Tipperary.

ISOS also aims to digitise the complete collection of Irish medical manuscripts in TCD, the catalogue of which is nearing completion at the School of Celtic Studies. TCD's holding of twenty-eight such manuscripts accounts for over a quarter of all extant medical manuscripts in Irish.

As manuscript images are captured, post-processed, archived onto tape and placed online, there are three levels of resolution available. Thumbnails and lower-quality JPEGs are available to casual WWW users. The quality of these images is sufficient for browsing but not for detailed study so registered users, who complete and sign a registration form, are provided with access to the higher-quality JPEG images.

## TCD MS 1339, p. 29 (detail)



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## Conclusions

The roles that the different partners play in the ISOS project are complementary. DIAS are the subject experts, who are familiar with the material and who carry out the role of scholarly domain experts. DCU are the technical partners who have the know-knowledge and experience in building large digital collections for the web. The benefits of ISOS to both communities are clear. DIAS, and Celtic scholars worldwide, are provided with access to high-quality images; DCU has a very real collection of digital artefacts, with catalog information, with which to pursue its research interests in digital libraries. And, as a side-effect, casual web users have access to a previously unavailable resource.

## References

[1] <http://www.digimarc.com>

[2] <http://www.ISOS.dcu.ie>

[3] O. Bergin, R.I. Best, M.A. O'Brien, and A. O'Sullivan (eds) *The Book of Leinster, formerly Lebar na Núachongbála I-VI* (Dublin: DIAS 1954-83)