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Prices have gone up (2010: £470 return Paris-Florence/Rome, exclusive use of sleeping compartment both ways) probably because of the weakness of the pound against the euro.

### THE NEXT ISSUE

The Michaelmas issue of CULIB will take as its theme 'Modern Collections'. If your library has interesting modern collections, you are faced with the challenge of archiving modern multimedia, emails, or other digital content, you are weighing the pros and cons of buying texts in print or electronic form, or would just like to tell us which books you would load on the e-reader you'd take to that mythical desert island, the editors would love to hear from you. Email: [ucam-culib@lists.cam.ac.uk](mailto:ucam-culib@lists.cam.ac.uk). Deadline for submissions 31 August 2011.

## **CAMBRIDGE UNIVERSITY LIBRARIES INFORMATION BULLETIN**

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### EDITORIAL

This issue is on the theme of conservation and preservation. Melvin Jefferson and Edward Cheese give us an overview of the work of the Cambridge Colleges' Conservation Consortium. Dorothy Johnston of Nottingham University discusses the careful balancing act required to satisfy the conflicting demands of access and preservation when caring for medieval manuscripts, focussing on the Wollaton Collection. Ben Outhwaite gives a fascinating insight into the ways in which conservation can go further, and lead to reconstruction, describing the painstaking work underway to reassemble Genizah fragments and the possibilities and limitations of the technology to do so. Books and manuscripts are not the only items in Cambridge libraries requiring specialist conservation techniques. The Scott Polar's Freeze Frame project provides a wonderful example for those of us with photographic materials of what can be achieved in digitisation, conservation, and access.

Finally Stephen Howe takes us away from all this, conserving energy on a sleeper train across Europe.

### THE CAMBRIDGE COLLEGES' CONSERVATION CONSORTIUM

The Cambridge Colleges' Conservation Consortium was founded in the late 1980s to provide a centre for specialist conservation of rare books and manuscripts for the Cambridge Colleges, following the

completion of phase one of the ground-breaking Parker Library Conservation Project initiated by the Fellow Librarian at Corpus Christi at that time, Professor R. Page. The conservation project looked at the library as a whole, so that conservation work on individual manuscripts in the collection was balanced with wider improvements in preservation issues and reader services. This work generated considerable interest in the Cambridge Library community, and as funding for the project in the Parker Library was coming to an end, the Conservation Officer, Nicholas Hadgraft, and Professor Page invited other college libraries to form a Consortium so that the knowledge and experience built up at Corpus Christi would not be lost. Clare, Downing, King's and Sidney Sussex joined to form the founding membership, but since that time, under the leadership of the current Conservation Officer, Melvin Jefferson, the group has grown to include 11 member college libraries and their associated archives, along with several other associate member institutions.

Key to the Consortium's success has been the ability for it to tailor high-quality conservation work to each member's individual needs, to provide advice about preservation issues, and to help raise grants from national bodies to fund essential work on the great collections of rare and valuable material in the College libraries. The Consortium is a non-profit-making co-operative, and members pay an annual subscription which entitles them to a guaranteed amount of conservation time each year. A certain amount of external work for non-members is fitted in around these commitments, but charged at a higher rate, to cover the running costs of the workshop. In 2005, benefactors paid for the construction of a purpose-built Conservation Centre at Corpus Christi, to replace the converted student's room which had been the Consortium's home up until that point. The Conservation Centre has a meeting room/office area and a well-equipped, secure book conservation workshop with space for three members of staff to deliver a busy programme of practical conservation projects, as well as occasional courses and

Unlike the world of aviation, where English is the lingua franca, international trains are multi-lingual. The Paris-Rome sleeper service is run by an Italian company called Artesia and their employees are Italian. Even when we were stationary at Paris Bercy, I had to mutter to myself: I-must-not-say 'bonsoir'! I-must-say 'buonasera'! The default language was Italian, and the staff only switched to English if passengers were obviously linguistic dunces (i.e. British).

I retired to bed at 21.30 (Dijon), because it was too dark to see out of the window. My slumbers, for several hours, were intermittent. Every time the train went round a right-hand bend, all the blood rushed to my head, and I woke up feeling as if someone was hanging me upside-down. Occasionally a blaze of light announced a station. At midnight, it was Lausanne (Switzerland). Exciting! I peered under the blind to see three Swiss yooof shuffling disconsolately through the ticket hall in the present day, while I was bowered in 1935 (or possibly 1971).

Next morning, (shaving is interesting on a swaying, braking, accelerating train) I opened up, wished the conductor 'buongiorno', and five minutes later received on a tiny tray a cappuccino and synthetic croissant, and also my passport and ticket which he had retained overnight (for the Swiss-frontier formalities?). We wound our way into Florence, arriving at 07.45. I took local trains onward to Umbria, to meet my friends in a converted abbey in the hills, safe in the knowledge that I was not doomed to endure a cheap flight in seven days' time, but blessed with a first-class sleeping compartment and a passport to the Golden Age. And I've travelled to Rome via the Artesia-sleeper three times since. Down with airlines, say I!

*Stephen Howe*  
*Assistant Librarian*  
*Faculty of Classics*

## WHAT LIBRARIANS DO IN THEIR SPARE TIME

Are you sick of being treated like diseased cattle by the polyester-clad minions of cheap airlines that-shall-not-be-named? An alternative method of long-distance travel in Europe, the overnight sleeper train, still exists, though no sleeping car has left London Victoria for the Continent since 1980. Sleeper services even exist within the UK, serving Cornwall and Scotland, but most of us are unused to the idea of a train that departs on one day and arrives on the next. And yet, the civilized ideal lives on in folk memory, where crack expresses run by the Compagnie Internationale des Wagon-Lits are forever getting stranded in snowdrifts somewhere in the Balkans in about 1935, and after red herrings innumerable, it transpires that...we all did it. But the great detective obligingly covers up this fact, to avoid the inexpressible scandal of having to arrest so many middle-class people.

And so in 2007 I travelled from London to Paris on Eurostar, and at Gare de Bercy awaited the departure of the 19.06 overnight sleeper to Florence and Rome. And I wasn't booked into any old berth: I had paid £370 for the return leg Paris-Florence in order to have my own personal, all-to-myself compartment. Well, I may be a librarian, but as they say in shampoo adverts: 'I'm worth it.'

The first-class compartments could accommodate up to three people in bunk-beds. When I arrived, the beds were shut into the wall, and instead a bench-seat sat three. The conductor had to disinter my bed, pulling levers and flinging bits of seat into the luggage rack. He came back soon after to remove a ladder that was somehow secreted under the seat (bed?) – the people in the next compartment needed it to reach their top berth. The bed was made up with sheets and thin blankets. In one corner of the compartment a flap of 1971 formica concealed the washbasin, with running hot and cold water. A mirrored cupboard contained two bottles of water, plastic pots of water for teeth-brushing, soap and midget towels.

seminars for college librarians and visiting groups.

The richness and diversity of the College collections in Cambridge is quite extraordinary and demands a high degree of practical understanding and knowledge from the conservator. From some of the oldest books in the country to rare printed books and modern literary archives, we deal with a huge range of materials, each requiring sensitive, thoughtful treatment to ensure the long-term preservation of important collections. We aim to preserve as much of the original structure and of the books we work on as possible, and use a range of minimum intervention techniques to repair fragile leaves and bindings subtly to allow them to be used by readers. Storage and handling are of great importance in this respect, and we produce made-to-measure boxes and folders for vulnerable items, as well as bespoke cradles to support books which are to be displayed in exhibitions or which are to be photographed. In recent years, the decision to digitise the Parker Library manuscripts resulted in an exciting collaborative project between Corpus Christi, Cambridge University Library, and Stanford University in the States, as well as between in-house teams of bibliographers, photographers and conservators at Corpus. This integrated approach led to the largest conservation project on the Parker collection in living memory, in which all the manuscripts were carefully examined and repaired before being photographed to ensure that they were in the best possible condition and would not be damaged by the process. Conservation work involved anything from repairing small tears in the edges of one or two leaves, to complete disbinding of large volumes which had been rebound in unsuitable and damaging modern bindings. In one alarming case, we discovered that the text on the first dozen leaves of a medieval manuscript on parchment were becoming detached and had to spend many hours using the finest miniaturist's brush and a microscope to consolidate the letters!

Unfortunately, it is not always possible to repair extremely

degraded and damaged bindings, nor advisable to keep some of the more inappropriate bindings which were applied to ancient volumes in past rebinding programmes. In these cases, and following consultation with the librarians, the books are carefully dismantled, with a careful record being kept of their structures. Parchment leaves can then be humidified in a specially conditioned chamber until they become flexible and distortions can be eased out. Friable pigments are then consolidated and the leaves repaired so that they can be resewn in a traditional medieval style and rebound in conservation-grade bindings. Printed paper books can be washed, deacidified, and resized as necessary using the purpose-built art sink in the conservation workshop. Well aware of damage caused by heavy-handed repair work carried out in the past, we try to make our work as easily reversible as possible, and make our repairs weaker than the original documents so that the repairs, rather than the fragile historically significant material, break under stress. Similarly, our manuscript bindings rely on sound sewing structures so that there is no need to apply adhesives and linings to the spines of ancient books, as was the fashion from the introduction of printing until at least the middle of the twentieth century. We seek to combine the best of modern and traditional materials and methods, and the variety of objects we work on certainly keeps our problem-solving faculties sharp!

*Melvin Jefferson, ACR and Edward Cheese  
Corpus Christi College, Cambridge*

#### THE WOLLATON LIBRARY COLLECTION AT THE UNIVERSITY OF NOTTINGHAM

A recent project at the University of Nottingham provides a practical example of the tension that can arise between preservation and access and how this familiar professional topic has played out in the case of a particular group of medieval manuscript volumes.

Information and Library Services Manager. Ange is on secondment from her role as Authority Control and Cataloguing Specialist at the University Library. **Meg Westbury** has joined the team in the newly created post of Information and Library Services Projects Officer. Meg began her career with the Bill and Melinda Gates Foundation, helping to design and install computers in libraries around the United States. Since then, she has worked in the library technology field and in public and academic libraries, most recently for Jones International University, a 100% online university. She is very interested in how to bring traditional library services into the online environment using new social technologies. Her hobbies and interests include English/American folk dancing and Ashtanga yoga.

Warm congratulations go to **Kirsty Taylor** on the birth of her daughter Isobel in January.

**Sue Soame** retired after 16 years at the Pendlebury Library of Music. We welcome **Sophie Tiesel** who will be replacing her as Library Assistant. Prior to taking up this post, Sophie worked at the Music Department of the Bodleian Library.

At classics, graduate trainee **Rebecca Woods** is now covering the full time Senior Library Assistant post. Congratulations go to **Alicia Periel** on the birth of her daughter. **Becca Watts** joins the Classics team as Library Assistant. She has recently returned to Cambridge from Grasmere, Cumbria, where she was working for the Wordsworth Trust. She will be dividing her working time between the Classics library, Downing College library and Gonville and Caius College archive.

more time in her beautiful garden, to becoming more involved in her local history society and to learning to swim! The FML staff look forward to welcoming **Joanne Burroughs** as the new Assistant at the beginning of the Easter Term.

The Materials Science & Metallurgy library welcomed **Alison Chew** as their new Senior Library Assistant with responsibility for the running of the library. Alison joins us from the Royal Institute of British Architects (RIBA).

In November, the Cambridge Theological Foundation said farewell to **Marie Elisa Jaramillo-Garrido** as she and her family returned to Chile. The Federation now welcomes **James Harratt** from Cambridge Central Library to the library team. James worked at the Central Library for almost 2 years and lists his hobbies as reading, walking and trout fishing.

Congratulations to **Carol Reekie**, librarian of the CTF, who has successfully defended her thesis and has received her PhD from the Department of Information Science at Loughborough University. The research investigated the changing nature and delivery of theological education within ministerial training colleges and the implications for library resource provision.

The Haddon Library has said goodbye to **Liz Russell**, after twelve years' service as a classifier. And eleven of those years were entirely voluntary! See her article in *CULIB* 59, Michaelmas 2006 <http://bit.ly/fhivSq>. The Haddon team will miss Liz's rare expertise with the Bliss Bibliographic Classification - not to mention her stories of adventures in historical dancing.

The Judge Business School library and information service welcomes two new members to the library team. January saw **Ange Fitzpatrick** joining the Business Information Centre at Judge Business School to cover **Kirsty Taylor's** post as Deputy

The following article focuses on general management and reader concerns; a separate technical study would be needed to provide detail of the conservation choices and treatments referred to here.

The collection in question contains just eight manuscript volumes, the last associated survivals of what was once a fine gentry library, owned by the Willoughby family and formerly located at Wollaton Hall, Nottinghamshire.<sup>1</sup> Until recently the manuscripts have been known mainly through their description by W H Stevenson in his *Report on the Manuscripts of Lord Middleton at Wollaton Hall* (Historical Manuscripts Commission, 1911). The *Report* focused on the substantial family archive, and the library volumes remained in relative obscurity. Several of the most important texts were subsequently acquired by the British Library or other institutions. The remainder came to the University of Nottingham in 1947, originally as part of the Middleton Collection. In 2007 their distinct literary nature was made explicit in their reconstitution as the Wollaton Library Collection (WLC). In addition to the manuscript volumes, this includes two medieval fragments and a series of early printed books.

From their first arrival in the University library these manuscripts were a cause for preservation concern. Three of the volumes lacked any evidence of original boards and another, the important early 13<sup>th</sup> century *Romances et Fabliaux*, had only one surviving board. Priority was given to prevention of further deterioration; they were microfilmed and boxed; enquiries were generally answered by microfilm access. The curators were not at that time able to embark on an active conservation programme.

In the late 1980s, with pressure on access growing, advice was sought from external conservation consultants. At this point, although several manuscripts had signs of very early repairs, only one (*Breviary*, WLC/LM/1) had received modern conservation attention. The neglect of centuries was now seen as offering an

exciting opportunity, for it meant that the volumes retained an unusual level of evidence of their medieval creation. Those with surviving fragile binding structures revealed details of sewing and materials that an intact binding would normally conceal. The advice that this evidence should be preserved, and that handling could destroy it, presented an obvious dilemma. Whose interests had priority – those who wanted access to content, or those who primarily valued the artefact?

Two of the volumes presented different problems, as they so clearly required early conservation. Both John Gower's *Confessio Amantis* and the French *Romances* contained detached leaves that were severely distorted. Their sewing structures had broken down to the extent that neither volume could safely be handled. Mould damage had affected the text area, and pigment consolidation was needed to protect the historiated initials in the *Romances*. In the light of these factors, it was agreed that they should be conserved and rebound. The work was undertaken in the early 1990s by Dr Nicholas Pickwoad, funded by the Wolfson Trust, through the British Library.

Ten years later the condition of the manuscripts again received expert assessment. This time, the context was that of a major Heritage Lottery Fund bid to enable the University to establish the Wollaton Library Collection as a distinct group and to embark on a development and access programme. The new report made an even stronger case for minimal intervention. It recommended that the manuscripts should be made safe for future limited handling by strengthening existing binding structures and consolidating pigments at risk, and that only essential parchment repairs should be undertaken. No full rebinding was considered, though several of the original bindings would need extensive attention to ease their movement and to address acute risks of further damage (e.g. split board of WLC/LM/11). From the start it was obvious that the volumes would remain fragile and vulnerable even after

Associates – **Sophie Defrance**, **Anne Secord** and **Francis Neary**. **Nadia Vidro** has joined the Genizah Unit as a Research Associate.

Imaging Services welcomed back **Nicola McDermott** after her maternity leave, while **Ngaio Vince-Dewerse** from the Conservation department started her maternity leave. **Sharon Catlin** returned to the Bindery, having been away for a few years.

The Bindery bid farewell to **Paul Crack**, and to **Graham Laman** who had clocked 37 years of service. **Eleanor Heath** retired after serving the UL for 27 years. After her first stint in Periodicals, Eleanor had left in 1974 when her family moved, and then had returned to Periodicals in 1996. We wish all three of them very happy retirement.

A couple of appointments at the start of the academic year which just missed the cut-off date for the last issue were the new Librarian at Christ's College, **Nazlin Bhimani**, previously at Middlesex University, and the new Librarian at Sidney Sussex College, **Alan Stevens** who moved from Materials Science. A belated welcome to both.

Congratulations are in order for **Sarah Anderson** at Pembroke College, who has been awarded an MA with distinction at UCL and has been promoted to Assistant Librarian, and for **Katie Turner**, Library Assistant at Selwyn, who has gained a City and Guilds IT User ITQ NVQ, being the first member of College staff there to complete the course. Well done Sarah and Katie.

At Murray Edwards, **Jan Waller** will be Acting Librarian from 25 April to 26 September to cover **Kirstie Preest's** maternity leave.

After three years as the part-time Library/Archives Assistant in the Forbes Mellon Library, Clare College, **Christine Patel** retired at the end of the Lent Term. Christine is looking forward to spending

March, and will bring together three groups of people: information professionals and technologists, patients and carers, and healthcare professionals. Details are available at <http://www.iip-symposium.info>

**Josh Hutchinson** joined European cataloguing from the Tower project. **Angela Fitzpatrick** is on secondment from English cataloguing to Judge Business School where she is Assistant Librarian. **Fiona Grant** has taken her place as Authority Control and Cataloguing Specialist. **Starlit Harris** has begun her maternity leave. **Karen Davies** has joined the Manuscripts Department as Research Assistant. Jardine Matheson Archive saw the addition of **Liam Sims** as temporary Research Assistant, and **Laurence Brooks** as library assistant.

Near Middle Eastern bid farewell to **Roberta Borghero**.

**Sarah Fletcher** is the new Saturday assistant in the Entrance Hall. **Priyanka Pais** returned to the Entrance Hall after her stint in the West Room.

**Chris Knowles** left Periodicals to begin a degree in Mathematics at Warwick University. **Patrick Diston** moved to Periodicals from Rare Books.

**Ian Pittock** is the new assistant in Manuscripts, having moved from the Map Department.

The ESS department welcomed two new DataTrain Project Officers – **Dr. Lindsay Lloyd-Smith** (Archaeology) and **Irene Peano** (Social Anthropology). The department bid goodbye to **Rachel Kress** who had been working both in the DRA and in the Journal Co-ordination Scheme.

The Darwin Correspondence Project welcomed three new Research

completion of the planned work; access constraints would continue.

It is not easy to plan a lottery funded project when the heritage objects in question are going to remain largely inaccessible to the public. The project activities therefore focused on other forms of access and public benefit. The manuscripts would be digitised so that future remote access could be developed (though online digital delivery was deliberately excluded from the objectives at this stage), and a combination of leaflet and virtual publications was proposed. An exhibition would provide at least one opportunity for public viewing of the manuscripts. The Heritage Lottery Fund approved the programme and the project was launched in 2007. <sup>2</sup>

By happy coincidence, academic colleagues secured an AHRC award to undertake research into the Wollaton medieval manuscripts, including the associated Wollaton Antiphonal, which had been housed in Wollaton Hall for about 350 years before returning to the ownership of Wollaton parish church in 1924. Deposited in the 1970s at the University, it too was the object of acute preservation concern, and since 2001 had been undergoing conservation treatment. With funding from a variety of sources, but particularly the National Manuscripts Conservation Trust, the work was led by Dr Nicholas Hadgraft, and – after his untimely death in 2004 – by his colleague Cheryl Porter.

Being able to locate the conservation work at Nottingham was an enormous bonus to this parallel research project. Changes in the Conservation Workshop facilities made this possible. Expertise was provided by a consultant, Lara Artemis, working with the in-house conservator, Robert Pearce. Their starting point was the report prepared before the lottery bid. It was possible to provide assistance so that the manuscripts could be safely handled when required by the researchers, and on-site digitisation enabled a record of work in progress.

Digitisation was central to the work and became increasingly the point at which preservation and access interests could meet. The department already had a good digitisation infrastructure, but initially planned to outsource this highly specialised work. In practice, the state of several of the manuscripts and the sequence of their repair led to the conclusion that digitisation was best done on site, at particular points in the conservation programme. Additional equipment was procured (a cradle, to support limited opening of volumes). While a significant challenge remains, in providing full access for readers, the existence of high resolution images has already transformed use of the collection. This has most obviously been through their selective delivery in web resources and by exhibition, and by the generation of microfilm masters from the digital files. But the real reader benefits have been in the detail that high resolution images have revealed. Although constraints on physical access continue, virtual access has enormously enhanced the user experience.

In reflecting on the challenge we faced as curators, and how this project has been tackled, the most obvious point to note is the extraordinary difficulty an institution can face in securing expertise and funding to tackle work of this kind. But the more surprising finding, perhaps, has been the extent to which conservation treatment involves choice and compromise – both between the interests of different categories of users, and between alternative professional conservation approaches. The policy of minimal intervention followed in the case of the Wollaton Library Collection has favoured the history of the artefact over the need for readers to handle robust volumes. This would almost certainly not have been the case some decades ago, and our successors will undoubtedly revisit the issue at a future date in the continuum of the collection's preservation.

*Dr Dorothy Johnston  
Keeper of Manuscripts and Special Collections  
University of Nottingham*

Congratulations to **Emily Dourish** of Rare Books, on the birth of her baby girl, Eleanor, who decided to arrive early. **Katie Birkwood** will join the UL as Temporary Rare Books Specialist, having successfully completed a three year project at St John's College on the collections of Sir Fred Hoyle, going out with a 'Big Bang' with a very popular Science Festival event on 19 March. [The online Hoyle exhibition and talks from this event are available on St John's College Library's website.]

**Ed Chamberlain**, Systems Librarian at the UL, was elected Arcadia Fellow for Michaelmas Term 2010. His project is centered on digitisation-on-demand in academic research libraries. As digital collections grow, libraries will need to keep reader preference for print copies in view. Scan and print-on-demand services are to be expected to become essential components of library infrastructure. Ed's project explores models for such a service - starting with initial requests and ending with delivered printed versions - taking into account the scale and multifarious complexity of Cambridge.

**Carolyn Keim** from the Seeley library was the other Arcadia Fellow elected for Michaelmas Term 2010. Her project is focussed on the changing information needs of undergraduate historians. She is investigating the ways in which the Seeley Library in the Faculty of History could enhance support for its students. Starting with the analysis of student strategies for reading and gathering of information resources, she intends to identify ways of addressing current weaknesses within library provision and in the teaching of information-skills, particularly in terms of interpreting digital primary sources.

**Isla Kuhn** from the Medical Library was elected Arcadia Fellow for Lent Term 2011. Her fellowship is focussed on health information on the internet. She is organising a symposium and hack day entitled "Internet-Informed Patient: collaborator or cyberchondriac?". This event will take place on 27th and 28th



has been cleaned and conserved where necessary and is now held in archival quality storage media in an environmentally controlled strong room. High-resolution tiff files are stored as digital preservation copies within the institutional repository, DSpace@Cambridge, while smaller jpegs are provided under educational licence for research access. On the web site, related resource packages have been created to help users understand the polar world and to navigate their way through the photograph collections. In addition, the Polar Museum at SPRI has reused the images and metadata from two collections in an innovative partnership with local company, Deep Visuals Ltd, to provide a means of navigating visually through large numbers of images on a touch screen, without the need for keyword searching. This has attracted further funding in the form of an East of England Development Agency grant.

Through the Freeze Frame project we have been able to address the issues of conservation, preservation and access. Conservation has been achieved through digitisation, providing high-resolution copies from the negatives, which can now be made freely available to user communities (UK Further and Higher Education in particular) through the dedicated web site, [www.freezeframe.ac.uk](http://www.freezeframe.ac.uk).

*For further information, please contact Heather Lane, SPRI Librarian & Keeper of Collections ([librarian@spri.cam.ac.uk](mailto:librarian@spri.cam.ac.uk); tel 01223 336557)*

## PEOPLE

The UL welcomed **Ed Potten** as the new Head of Rare Books. He arrived from John Rylands University Library in Manchester, where he was the Collection and Research Manager. Prior to this, he worked for The National Trust, overseeing country house libraries in the north of England and Northern Ireland.

1. The manuscripts in question are, in brief: *Breviary*, late 12th-early13<sup>th</sup> C (WLC/LM/1); Robert of Gretham, *Mirur* (WLC/LM/3); William of Waddington, *Manuel des Péchés* and another copy of Gretham, *Mirur*, 13<sup>th</sup> C. (WLC/LM/4); French verse *Romances et Fabliaux*, 13<sup>th</sup> C. (WLC/LM/6); *L'estoire del Saint Graal*, 13<sup>th</sup> C (WLC/LM/7); John Gower, *Confessio Amantis*, 15<sup>th</sup> C. (WLC/LM/8); *Speculum Vitae*, 15<sup>th</sup> C. (WLC/LM/9); Prayer Book, 15<sup>th</sup> C. (WLC/LM/11). For detailed descriptions and images see R Hanna and T Turville-Petre, *The Wollaton Medieval Manuscripts: Texts, Owners and Readers* (York Medieval Press, 2010). See also the Wollaton Library Collection in the online catalogue at <http://mssweb.nottingham.ac.uk/catalogue/>

2. Project outputs now on the Nottingham website include a resource on medieval women and research guidance on caring for collections, medieval documents and medieval books. Podcasts about the project will shortly be published.

<http://www.nottingham.ac.uk/manuscriptsandspecialcollections/learning/medievalwomen/>

<http://www.nottingham.ac.uk/manuscriptsandspecialcollections/researchguidance>

## COMPLETING THE JIGSAW:

### DIGITALLY MATCHING FRAGMENTS IN THE GENIZAH

When Cambridge scholar Solomon Schechter braved the choking dust and gathered up the Cairo Genizah fragments from the storeroom of an Egyptian synagogue in 1897 he described them as a 'mass of rugged, jumbled, dirty stuff', a collection of ancient 'disjecta

*membra'*. Now, at the beginning of the twenty-first century, the fragments themselves are clean, flat and lovingly conserved within sheets of melinex, and stacked, binder upon binder upon binder in the shelves of CUL's manuscript stacks.

The Genizah Research Unit along with CUL's Imaging Services Department is engaged in the massive project of digitising the entire Genizah archive, 193,000 medieval Jewish manuscripts in Hebrew, Arabic and other languages. Funded by the Friedberg Genizah Project (FGP), which is backed financially by the Friedberg Family of Toronto, the momentous task of digitisation is well underway and, indeed, ahead of schedule: by this time next year the University's DSpace repository should be home to more than 310,000 images of this important collection.

Cambridge possesses probably two thirds of all known Genizah fragments, with the others dispersed throughout libraries, museums and private collections worldwide, from Budapest to Philadelphia. Recognising the potential of digitisation to reunite the entire Collection in the virtual world, FGP has endeavoured to photograph every Genizah fragment, wherever it is found and make them available on their web portal ([www.genizah.org](http://www.genizah.org)). Although they have not reached agreement with every holder of fragments, they will still ultimately have half a million images from the Cairo Genizah.

Many of these fragments derive from single leaves: letters, legal deeds, records of marriages and divorces, shopping lists, business accounts — examples of practically every type of document written by Jews in the Middle Ages. But the greatest part of the Collection is literary: poetry, books of halakhah (Jewish religious law), the Bible (in its original Hebrew as well as in Arabic, Aramaic and Greek translations), philosophy, medical works, the list goes on. While some of these were loose leaves, scrolls, rotuli (scrolls rolled vertically), most were bound into codices. Once they had fallen into

- Enhancement and standardisation of existing metadata records.
- Creation of a supporting suite of learning and teaching materials.
- Delivery of the above via a sustainable Open Source system.
- Engagement with partners outside Cambridge, e.g. Higher Education Academy Subject Centres.
- Assessment of learning outcomes and integration of research and evaluation as part of the development and continuation of the project.

#### *Outcomes*

As the project advanced, it became apparent that the images would become the backbone of the digitisation and that extracts from the diaries would be used within the education and information packages. The digitisation schedule placed time constraints on the technical staff, reducing the period available for the scanning of manuscript material, as originally envisaged. In addition, it was decided by the steering group (project staff and academic advisors) that the time which would have been required to produce transcripts would be better spent on resource development.

Although we had envisaged working with Higher Education Academy Subject Centres, in practice we found that there were many other sources of advice readily available to the team, both from within our academic steering committee and from other groups and individuals engaged in education and dissemination.

The digitisation process has ensured that each image is preserved in its present condition for future generations to view. Each negative

- To bring to public attention, through the provision of digital surrogates, aspects of the SPRI's collections that are unknown or inaccessible.
- To preserve original, rare and fragile materials before reproduction is no longer feasible.
- To make use of appropriate technology to enable on-line close scrutiny of objects, which are normally too fragile to be handled.
- To make image resources and metadata freely available to as wide an audience as possible.
- To create a scalable resource, allowing the addition of digitised images and texts beyond the funding requested.
- To enable the long-term sustainability and preservation of the resources through innovative collaboration with partners within the University of Cambridge and other UK HEIs.

At the outset, the project team developed a number of objectives:

- New digitisation of the photographic negatives and significant related manuscripts and other materials held by the Institute.
- Aggregation of existing digital image collections.
- Creation of new standards-based metadata records.

disrepair and disuse, rather than being thrown out, they were consigned to the Genizah in the Ben Ezra Synagogue in Fustat, Old Cairo, in fulfillment of the rabbinical prohibition against destroying anything that might contain the name of God. And there they remained until various travellers, scholars and adventurers carried them away, culminating in Schechter's audacious removal of two-thirds of the Collection to Cambridge.

Over the centuries the books consigned to the Genizah chamber fell apart, pages separated from one another and paper and parchment tore. This worsened in later years as souvenir hunters and booksellers were allowed to rifle through them. Schechter described the Genizah chamber as 'a battlefield of books'. Today's Genizah has been compared to a huge jigsaw, with the added difficulty that pieces can be scattered across more than sixty different collections, in a dozen different countries. Torn leaves are re-united, as scholars delve among the fragments and, reliant upon a good visual memory, find pieces that belong together. But FGP have invested heavily in finding a way to apply technology to this problem.

Recently Cambridge University Library hosted a visit by Dr Roni Shweka, a member of FGP's Genazim, its digitisation taskforce in Jerusalem. His father, Prof. Yaacov Choueka (each spells his name different in English) is a renowned computer scientist and head of the team. At CUL, Dr Shweka gave a lecture that explained how FGP have taken the decision to virtually reunite the Genizah Collection, applying maths and raw computing power to the process of sorting the fragments. And raw computing power is essential, he explained, given the sheer numbers of calculations involved.

In digitising the Collection at CUL, it has often surprised onlookers that every fragment is photographed upon a vivid blue background (the exact colour, created by FGP, is referred to as 'Choueka blue'). This high contrast background is a departure from the usual

photographic practice of employing a neutral grey or white (though some libraries prefer black). Yet it is essential to allow the computer to determine what in every image is manuscript and what is background; the dull greys and browns of medieval rag paper and parchment can blend with neutral colours. Dr Shweka contends that, today, the principal consumer of the digital images is not a researcher but the computer.

In Genazim's headquarters in Jerusalem, FGP's technology processes each digital image: the computer identifies the fragment against its background (anti-skewing it if necessary), determines if it is a single leaf or a bifolium (by looking for the clear line of a crease down the page), measures its dimensions to a considerable degree of accuracy, counts the number of lines and, as an exercise in codicological and palaeographic analysis, assesses the density of text within a line. Once all these and various other factors are taken into account, each image is given a digital signature, based upon these numbers. Within this broad account of the work, there is already much to be amazed at: that the computer can spot a bifolium, or that it can straighten a crooked image so that the lines of text run horizontally, but it has taken FGP a lot of expertise and expense to get to this point.

Armed with that signature, each image can then be compared with every other image's signature, i.e., image pair matching, and those that come within a certain proximity are suggested as 'join candidates': the fragments may derive either from the same leaf or the same original codex (the first casualty of an international project is usually the terminology, and in this case there is no exception: 'probable match' would have been far preferable a term!). Indeed, FGP has had some eyebrow-raising successes in their tests to date: the computer has picked out leaves that belong not to the same book (for instance one was from a collection of Jewish prayers, the other from Islamic theology) but that were written by the same professional scribe, whose carefully measured margins and line

from the Institute's collections management system to a customised web interface.

Through Freeze Frame, the Institute is able to address the concern that many potential users, particularly from northern communities and from outside Higher Education, are unaware of our existence or unable to travel to consult the collections in person.

#### *Aims and Objectives*

The main objective of the project was to contextualise the Institute's visual holdings to assist in teaching, research and understanding of the polar regions. Freeze Frame aimed to continue the Institute's commitment to making accessible, via remote use, collections not previously available to the public and to ensuring the preservation of that material for present and future use.

The project aimed to provide access to the entire photographic negative collection for twenty-five separate expeditions. Some 20,000 historic polar images would be digitised; and a range of web-based educative components made available to the public, using the rich resources available in the SPRI Library and Archives. The web-based collection of digital images would be used to exemplify and promote understanding of polar history, science and exploration for use in a range of educational contexts.

The main aims set out in the project plan were:

- To develop a series of interpretative web pages, e-learning and online learning resources.
- To encouraging discovery and interpretation of resources by users with a range of educational requirements and skills.

exploration. The photographic collection provides a visual record of the history of exploration and science in the Arctic and Antarctic which was hitherto little known and under utilised. The printed photographic collection had been used by those researchers and authors who were aware of its existence. However, due to the nature of the negative collections, access to this part of the collection was limited, and in some cases prohibited, yet it had the potential to widen the study of polar environments and the history of exploration and science in the polar regions.

The Institute was fortunate in having on its staff a number of people with technical expertise in managing historic photographic collections, as well as historians and scientists who were interested in promoting these collections to the wider research community.

The Freeze Frame project aimed to make a substantial subset of these resources available to all through a dedicated web site. Alongside the fully catalogued images would sit a range of learning and teaching materials aimed at JISC's core audience, the higher and further education community, but packaged in such a way that they could be utilized by a variety of audiences, from schools to individuals interested in the polar regions.

Previous projects have seen the detailed cataloguing of over six hundred items from the Institute's outstanding collection of objects made by the indigenous peoples of northern Canada, Greenland and Alaska, as well as the collection of scrimshaw and associated sailors' art. Alongside the catalogue, each item was photographed providing a visual record of the collections. Work has also been completed on a similar project to produce a fully illustrated listing of the Institute's art collection, including the watercolours of Dr Edward Wilson from both of Captain Scott's Antarctic expeditions. These projects were viewed as a pilot programme, providing proof of concept for Freeze Frame, in the transfer of images and metadata

length produced a recognisably similar result across his different commissions.

We are not yet ready to reunite the Genizah fragments at the click of a button, however. The maths speaks for itself: if there are half a million images that will need to be compared each with every other image, then, after all the pre-processing and assignment of signatures, approximately 250 billion calculations will be required, a lot of computer time. This alone gives pause, but as Dr Shweka explains, there are some problems to overcome too. This is a nascent field and though there have been stunning successes on the test corpora, it is too early to run the whole Genizah through the computer. Currently the techniques described have a comparatively high false positive rate, in that for every accurate match they return a certain proportion of false matches, perhaps in the hundreds, each of which must be examined by a scholar who can determine whether they match or not. Given 250,000,000,000 calculations, the false positive rate must be reduced to a miniscule proportion, if we are not to spend years assessing the results: scholars, already pushed into second place as consumers of the images, would serve as servants to the pair-matching computers.

Recent years have seen incredible advances in Genizah research worldwide, and CUL is fortunate to have a partner like FGP, willing to invest time and money in not just the digitisation of this unique archive from medieval Cairo, but in the application of cutting-edge computer science towards its analysis. Ultimately, however, matching the 'joins' in this collection is just one aspect of the work that propels Genizah research, and many more years of effort remain to both human and machine.

*Dr Ben Outhwaite  
Taylor-Schechter Genizah Research Unit  
Cambridge University Library*

## CONSERVE, DIGITISE, EXPLORE : THE FREEZE FRAME PROJECT AT THE SCOTT POLAR RESEARCH INSTITUTE

### Introduction

The Freeze Frame project was designed to conserve and digitise many of the historic photographic negative collections held in the Scott Polar Research Institute (SPRI), University of Cambridge, with financial support from JISC (<http://www.jisc.ac.uk/>). The project took two years to complete, cost just over £400,000, and has been of lasting benefit to the Institute.

Due to the fragile nature of much of the SPRI photographic collections, access to original materials was severely limited. The Institute's oldest photographs are daguerreotypes, a significant number are on glass plates, while other more modern negatives are, by their very nature, difficult to view. Research access to these collections has hitherto been negligible due to their format. We were concerned to make this material readily available to researchers and others without the need to travel to Cambridge in person.

20,000 images from expeditions to the Arctic and Antarctic were chosen for the project. These include some of the earliest photography in the daguerreotypes taken of Sir John Franklin and his men prior to their voyage to the Canadian Arctic in search of the Northwest Passage in 1845. These are the last images ever captured of the men who all perished during the expedition. Famous images by professional photographer Herbert Ponting of Captain Scott's ill-fated South Pole expedition of 1910-12 form the most famous images to be included in the project, while the deposit of Sir Ranulph Fiennes' Transglobe expedition archive in the summer of 2007 - a late addition to the list of collections to be digitised - meant that the period covered could be extended to 1982. Sir Ranulph's collection also forms the link between the two Polar Regions as

Transglobe, alone of all the collections, covers both the north and south poles.

A dedicated team was recruited to carry out the digitisation and metadata creation and to produce the educational resources to stand alongside the images. While the Franklin, Fiennes and Ponting images may be some of the most evocative, particular highlights have been the expeditions of the 1930s which mapped both the Arctic and Antarctic and whose photographs document both life in the polar regions and the development of science and technology in these hostile environments.

In July 2008 the Institute's museum hosted an exhibition entitled *Face to Face: historic polar portraits*. This showcased 50 polar portraits, half from the modern photographic output of professional photographer Martin Hartley and half sourced from the Scott Polar Research Institute's historical collections. Many of the historic images appear in the Freeze Frame collections and the remainder were discovered during the research for the project. This exhibition then went on tour to venues including Athy in Ireland, the Explorers Club in New York and Discovery Point in Dundee, home of Captain Scott's first expedition ship. A book to accompany the *Face to Face* exhibition was published by the Institute in 2008, bringing together over one hundred images from the collections.

*Face to Face* provided a high profile addition to the general outreach work carried out by the Freeze Frame team throughout the project. Education Resources Officer, Mel Rouse, carried out several engagements with students of all age groups, bringing the Freeze Frame project and the JISC digitisation programme as a whole to the attention of our core audiences.

### *The project*

The Scott Polar Research Institute houses an internationally important collection of materials relating to British polar