



# A Stewardship Research Strategy for the British Library

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## Foreword

This new Stewardship Research Strategy represents a bold, step change for the British library, combining research in the areas of Conservation, Digital Preservation and Sound to reflect a format-neutral approach to caring for the BL's collections.

Stewardship is crucial to the care of the British Library's collections. The primary goal of stewardship is to ensure the long-term integrity and accessibility of the Library's collections.

This document outlines our strategy for research into the better stewardship of our collections. This encompasses everything to improve the well-being of the collections. On the one hand, it includes research into the causes of deterioration of traditional materials such as paper and parchment, and of newer materials such as microfilm, CDs and electronic publications. On the other, it includes an analysis of the risks and threats to the collections, the development of new treatment methods and their long-term sustainability.

The "Conservation Research Strategy", created in 2004, addressed the issues of the physical preservation of the collections. It established the British Library in the field of applied conservation research in libraries and archives.

The British Library catalysed a "Framework for Applied Conservation Science in UK Libraries and Archives" (published as *Future Life of Collections* in 2005), in which European and North American experts determined three overarching themes for applied conservation research. We subsequently built on these themes which led to the first major applied conservation research grant from the Andrew W Mellon Foundation (and the biggest such award in the UK) for two projects on examining the condition of Identical Books, working with the other five copyright libraries in the UK and Ireland.

We are now taking our next bold step, combining the research in the areas of Conservation, Digital Preservation and Sound to create the "Stewardship Research Strategy".

This new, integrated vision represents a step change since 2004. We are now no longer a "new entrant" into the applied conservation field, having established our credentials as witnesses at the House of Lords Science and Technology Committee's investigation into Science and Heritage. In both written and oral evidence in 2006 and 2007, we espoused the "format neutral" approach to caring for the Library's collections, regardless of media and outlined our vision for integrated stewardship within a national context.

This new Stewardship Research Strategy reflects the same conceptual leap to a format-neutral approach. The magnificent new BL Centre for Conservation opened its doors to Princess Anne and to the public in September 2007, which represents the tangible aspects of caring for the Library's collections. The Centre

for Digital Preservation, due for completion in 2008, represents the intangible aspects of caring for our collections, in which we are already leading a major, multi-million Euro project (PLANETS). The second phase of the LIFE project symbolises the elision of the tangible and the intangible, with the bringing together of life cycle collection management of traditional collections and the evolving life cycle collection management of digital collections.

We anticipate the next step will be to further dissipate boundaries and link with librarianship and information science research. In five years time, we aim to have a core team of researchers working both within the BL and working with a distribution of world-class collaborators, answering serious, difficult and fundamental questions relating to the care of the Library's physical and intangible collections, and to the needs of the sector as a whole.

## **Introduction**

The Collection Care department has responsibility for the care of materials in the collection: conservation, preventive conservation, security and the specification of appropriate storage environments. It is also responsible for the physical and metaphysical aspects of the conservation of digital materials. The BL Sound Archive is responsible for the whole range of recorded sound carriers from wax cylinders to CDs and from magnetic tape to vinyl discs, and for migrating the recordings contained on those carriers to newer media. As well as the challenges posed by the media themselves, there is also the challenge of maintaining and replacing the frequently obsolete equipment that enables them to be played. Thus for sound, moving image and digital collections, stewardship is as much concerned with care of the content as well as care of the carrier.

The working principle is that stewardship research has to contribute directly to the long-term preservation of the physical collections, either by developing less interventive or more effective techniques for conservation, or by improving our ability to prevent damage to the collections. Wherever possible our tactic will be to form collaborative partnerships with other bodies, both nationally and internationally: libraries, archives or academic institutions, in order to maximise the use of resources and spread the workload.

The British Library must be seen to be a leader in this field; to that end, we need to develop our in-house expertise and ensure that sufficient resources are devoted to creating a sustainable research group.

## **The British Library's Mission and Priorities**

The British Library's mission is "Helping people to advance knowledge to enrich lives". The strategy document "Redefining the Library", published in 2005, sets out six strategic priorities to enable this mission to be fulfilled:

- Enrich the user's experience
- Build the digital research environment
- Transform search and navigation
- Grow and manage the national collection
- Develop our people
- Guarantee financial stability

The role of Collection Care is to ensure the long-term availability of the collections to all users by preserving the information held in the physical structure of the objects, as well as intangible information in the form of digital objects. Stewardship research supports this by developing the knowledge base that permits the development of new solutions and their timely delivery.

Underpinning research is fundamental to well-informed conservation, provides assurance of the validity of its methods and enables the development of new techniques. The British Library in general, and the Conservation Research team in this instance, aim to provide the UK's most expert advice on care of library collections, internally, to other libraries in the UK and as a leader on the world stage.

The British Library is positioned at the interface between the arts, humanities and sciences. It is a key player in the information society. The British Library is leading the way in developing its Web 2.0 strategy, exploring how it can tune its offering to meet the emerging needs of new technologically savvy users who want to generate their own content, merge our content with material from other sources, have it constantly on line and perpetually updated. All this must be done without compromising our unique assets or losing their authority.

Conservation research is well placed to contribute to the public understanding of science by demonstrating the significance of the information that can be obtained by applying scientific methods of examination to visually satisfying objects such as illuminated manuscripts, or to culturally significant items such as original music recordings. Experience shows that the public can be effectively engaged by conservation and conservation science stories. This mobilises support for conservation and collections. In the same way, conservation research helps to raise the profile of conservation by adding depth to the stories told by our collections through analysis and examination.

For readers, conservation research can add an extra dimension to knowledge by revealing hidden information about collection items that brings them alive and allows them to tell new and different stories.

For conservators, conservation research enables effective treatment by improving existing techniques or developing new ones, it helps to reduce the rate of decay of collection items by developing methods for removing or neutralising agents of deterioration, and it leads to a greater understanding of the nature of objects by investigation and analysis.

For curators, it enables primary research into the collections by giving an improved understanding of the materials and techniques used in creating an item, and it assists interpretation, for example by revealing hidden information in text that may be faded, obscured or erased.

For researchers and colleagues in other institutions, it facilitates the sharing of information on treatments, techniques and methods of examination.

## **Supporting the British Library's key strategies**

Stewardship research supports the Library's key strategies in these ways:

### **1. Enrich the user's experience**

Conservation research aims to facilitate the physical examination of collection items by readers. This could include the reading of erased or over-written passages, the disentangling of palimpsests, and the examination of watermarks.

The scientific examination of writing materials, inks, pigments etc leads to an enhanced understanding of and insight into the methods of production and use of collection items. We aim to make the results and implications of our research accessible to all users of The British Library.

Similarly, new technologies may enable users to use and interact with the collections in previously unimaginable ways. For example, the collections are a considerable resource for materials science research. Provided they do not harm the collections, conservation research aims to facilitate the use of new technologies. We will offer advice to readers on the best means of achieving their objectives.

We will work in conjunction with the National Preservation Office to ensure that more conservation and technical information, of use to professionals and the public, is made available on our website.

### **2. Build the digital research environment**

Users now expect more of our holdings to be available on line, and this is the logical means of access to born-digital collections. The Library is committed to

making more of our physical collections available in this way, both for the convenience of users and to reduce handling and risk of damage to vulnerable items. We will investigate methods of minimising damage to objects during digitising and scanning.

Although future acquisitions of digital material will be stored by the Library's Digital Object Management system (DOM), older digital material exists in a physical form, as CD-ROMs, floppy disks and a variety of digital audiovisual formats. This material is at risk as older formats become obsolete and the equipment and software to play them become harder to find. We will survey these items to get a better idea of their extent and significance, and the technical challenges involved in preserving and migrating content from them.

The BL Digital Preservation team's LIFE project, funded by JISC, aims to develop a methodology for calculating the long-term costs and future requirements for preserving digital assets, using a life-cycle analysis. We will develop and extend this approach to all kinds of digital assets. The Digital Preservation team also works with the arts and humanities through funding for Digital Lives, funded by the Arts and Humanities Research Council. Individuals are capturing and storing an ever-increasing amount of digital information about or for themselves, including emails, documents, articles, portfolios of work, digital images, and audio and video recordings. These personal collections, created by leading researchers and authors, or by "ordinary" individuals, are often of immense future importance to research in a broad range of subjects including literary criticism, history, and history of science.

The Sound Archive is committed to making its analogue holdings accessible digitally. This enables users to hear recordings originally locked into fragile or degraded media, and digital noise reduction techniques enable the original sound to be restored as far as possible, even to the extent of revealing previously unsuspected details (background noises etc). We will develop more efficient means for large-scale audio digitisation, and signal extraction from vulnerable or technically obsolescent analogue carriers. We will continue to improve processes for access to audio content. We will continue to develop methods for non-contact playback of mechanically-recorded analogue media and for the recreation of the original sound from technically degraded recordings.

Considerable resources have been invested in making digital surrogates of analogue originals: we will carry out research to ensure the long-term survival of these surrogates.

### **3. Transform search and navigation**

The Library's collections are a massive resource for materials science research. We will develop techniques to interrogate the collection through the on-line catalogue in order to extract the inherent data in these items. Results of

research into materials and methods lead to a better understanding of collection items and thus to better catalogue information.

Applied research into methods of labelling and ownership marking will help to make the processing of incoming material more efficient, and will help in speeding retrieval of items from store.

Better security systems will ensure that more items are available for use by readers. We will investigate novel methods of security marking and identifying items from our collections.

Digital Preservation is charged with providing short term access through to long-term preservation of electronic content and the two are linked at a very important base level. By managing the link between both, effective search and navigation is achieved.

We shall investigate ways to improve search and delivery of digitised audio to our users by use of audio mining tools and automated speech and melody analysis and automated transcribing. We shall work with international bodies to refine metadata standards for audio to facilitate the sharing of audio resources.

#### **4. Grow and manage the national collection**

We aim to maximise the availability and fitness for purpose of our collections by ensuring that objects remain accessible for as long as possible. We will continue the ongoing condition survey of the collections, which will give a snapshot of their present condition and will inform future conservation planning.

We will carry out research to enable a full assessment of the risks to the collections: this will point up the principal threats to their long-term survival and in particular the relative importance of hazards which are recognised but not necessarily quantified. This will enable us to prioritise our preventive and interventive conservation efforts, taking account of the probability of a particular hazard occurring and the proportion of the collection likely to be affected.

Although the importance of our digital collections is increasing, our traditional printed collections are still continuing to grow. The collections need to be stored in the most efficient manner in appropriate environments. To this end the Library is building a high-density automated warehouse at Boston Spa; because the store will not be occupied by people we will be able to choose an environment that is more appropriate to the long-term preservation of printed material.

Developments in collection care must be underpinned by research and understanding of the long-term consequences of alternative storage strategies.

The St Pancras building has a complex and energy-hungry air conditioning system which provides appropriate conditions in both public areas and stores.

We will explore methods of improving the sustainability of our systems and improving their resilience in the case of power failure. The British Library has a wider duty to conserve resources. Current and future buildings will be designed to minimise lifetime energy costs.

The British Library's collections consist of far more than books and manuscripts: for example, they also contain furniture, easel paintings and metal objects. We will examine ways of providing the most appropriate storage conditions for all the different materials in our collections: in particular we will place our microfilm masters in cold storage and we are assessing the feasibility of providing a special storage area for metals with reduced relative humidity.

Research into the response of different materials to their environment will lead to better environmental specifications, and continuous monitoring of storage and display areas will provide assurance that these specifications are being met.

## **5. Develop our people**

Within the Conservation Department, we aim to continually assess and improve our methods. Treatment Reviews will continue to be undertaken to examine current treatments and to determine whether newer, more effective or less invasive methods are available. A periodic Skills Audit of conservation staff will identify gaps in knowledge, skills and expertise, and opportunities for development. Conservation Research will draw upon this expertise in evaluating new treatment methods and assisting with the introduction of new techniques. With the facilities of the new British Library Centre for Conservation at our disposal, we will provide training in new techniques to conservation professionals within and outside the British Library, and improved outreach to the public in caring for their own treasures.

As far as resources permit, we aim to provide an environment within which conservators can undertake research projects that are relevant to their day-to-day work. This may involve facilitating access to analytical or other equipment in other institutions, but we will aim to provide a minimum of appropriate equipment in-house.

The retirement of highly-experienced conservation staff usually means that their hard-won skills are lost to the profession. At the same time, students on conservation courses have less time to work on objects, and are not allowed to work on very fragile or valuable items. We will explore the use of haptics and virtual reality to capture the manual skills of experienced conservators and allow students to acquire them in a risk-free virtual environment.

Digital preservation is a new and evolving skill, requiring many existing traditional conservation skills coupled with an understanding of electronic resource or knowledge management. This transition from traditional to digital is an area where existing staff can benefit from the new skills training or expertise gained by becoming involved in cutting edge research. The Sound Archive will

continue to develop staff technical skills as newer digital audiovisual technologies are implemented.

## **6. Guarantee financial sustainability**

Following on from our success in securing nearly \$700,000 from the Andrew W. Mellon Foundation for applied conservation research, we aim to secure further grants from funding bodies in order to extend our research activities. Nevertheless, core funding of conservation research is essential to ensure continuity and to allow capacity building.

The British Library has also obtained funding from the European Commission as a partner in two international research projects which will have direct benefits for our care of the collections. Where appropriate, we will seek to form research partnerships with academic institutions and other heritage bodies, both in the UK and elsewhere.

### **Developing our research capability**

#### **Partnerships**

The conservation challenges that face the British Library face other libraries and archives to a greater or lesser extent. Some, like acidic paper, are so universal that they can only be tackled economically on a national or international basis. Other problems affect so many different areas that it would be impossible for one institution to tackle them on its own. Such subjects are most effectively addressed by teams of people from different institutions working in partnership, with each partner bringing their own skills and knowledge to bear on different aspects. By sharing resources, even limited funding will go further and deliver more. We will therefore develop partnerships with appropriate organisations, wherever possible, in order to carry forward our own research objectives. Nevertheless, there will be circumstances, such as the early phases of projects, where initial developmental funding may have to come exclusively from the Library's own resources.

Although the majority of our work is directed towards immediate outputs, we must also look longer term, ensuring that underpinning data and knowledge are generated for addressing developing problems.

Other libraries and archives in the UK look to the British Library to provide leadership in conservation research, and several have expressed interest in forming a research consortium. By sharing resources and equipment this would avoid duplication of effort in areas such as the testing of materials for quality assurance, developing common specifications and developing appropriate test methods for library materials. We will take this forward by investigating the most cost-effective means of supplying these services. As a first step, we are

working with The National Archives on a programme of testing commonly-used conservation materials such as box-board and adhesives. The results of these tests are being made available on The National Archives' website.

Some problems will be most effectively tackled at the national level, others at the European or global level. At the national level, we will seek to involve end-user partners who, like ourselves, have a practical interest in applying the outcomes of the research. These include bodies such as the National Archives, the National Library of Scotland and the National Archives of Scotland. We may also involve partners who have a specific interest in the materials we use, such as the Leather Conservation Centre, the Textiles and Paper Department at Manchester University or the Engineering Department at Southampton University, working on optical playback methods for sounds.

At the European level, we will seek to work with partners who are already active in areas of interest to ourselves and who have a reputation for producing results, such as the Royal Library of the Netherlands, the Netherlands Institute for Cultural Heritage, the National and University Library of Slovenia, and the European partners of the EASAIER consortium, working on speech and music processing and retrieval. On the global scale, we will seek to form strategic partnerships with comparable national libraries, which have the resources and breadth of interest to work on the most challenging and large-scale problems, such as the Library of Congress and the Bibliothèque nationale de France.

From time to time we are approached by other institutions who would like to work with us on research projects, or projects involving our own collections. Much as we would like to satisfy all these requests, limited staff resources mean that we have to be selective in those projects we choose to be involved with. We will therefore base our choice on the following five criteria:

- The project is a high priority for our own collections
- It builds on pre-existing work, either at the British Library or elsewhere
- It is applicable to other libraries and collections
- It conforms to the priorities in this Strategy
- The prospective partner is one with whom we think it would be mutually beneficial to work

We will identify the most appropriate level for each collaboration, and where possible we will seek to join existing groups. This will enable us to participate meaningfully while building our own expertise. We will endeavour to obtain funding for projects from research councils, grant-giving bodies and the European Union, recognising the need to balance the effort involved in applying and the risk of not succeeding against the rewards of success. The British Library now has Independent Research Organisation (IRO) status with the Arts and Humanities Research Council (AHRC), and now that AHRC has officially taken responsibility for funding heritage science research projects we will apply for funding for projects with appropriate partners. In order to retain IRO status

we will ensure that a stream of good quality papers appears in peer-reviewed journals.

The British Library has passed through the “new entrant” stage in conservation research, but it will take time to build up our own research capability. There is a need to build capacity, both internally and in the sector as a whole. This is important in order to ensure continuity and to facilitate skills transfer. There must be a commitment to sustaining conservation research so that a credible long-term programme can be maintained.

### **Setting the stage for future research**

In 2004, with the generous support of the Andrew W. Mellon Foundation, we held a meeting of national library and research institute representatives from the UK, Europe and North America, to try to set a wider agenda for conservation research in the library and archive sector. This reached a pleasing degree of unanimity about the most pressing challenges facing the sector; namely:

- Life-cycle prediction; natural ageing of materials; evaluation of preservation strategies
- Effects of the storage environment and selection of optimum environments for different materials
- Non-destructive methods for assessing damage to materials

A report on the meeting was published as *Future Life of Collections* (London: The British Library 2005). We are now actively developing collaborative applied research programmes which are specifically focussed on these three priorities.

### **A national strategy for heritage science research**

Following on from the recommendations in the House of Lords Science and Technology Committee's *Report on Science and Heritage* (HL Paper HL 256, London: The Stationery Office 2006), the British Library held a meeting to discuss the formulation of a UK-wide strategy for heritage science research. The approach set out in *Future Life of Collections* was praised as a model for this national strategy for the application of science in the whole heritage sector, and we will participate fully in developing it.

### **Conclusion**

In all we do we will seek to obtain value for money and maximise successful outcomes. Where possible we will build on existing research undertaken by the Library, and we will prioritise our efforts by mapping research proposals against the needs identified here.

## **Appendix 1.**

### **Specific research proposals**

The following areas of research are considered to fit well with this strategy, and are either in progress or are likely to be the subject of future grant applications.

#### **2. Enriching the user's experience**

1.1 Analysis of materials and techniques can assist in understanding the nature of objects and can help in revealing their date and provenance. Scientific examination, for example under infra-red or ultra-violet light, can assist interpretation by visualising faded, obscured or erased text. Techniques used in the examination of easel paintings or miniatures are equally applicable to manuscript illuminations. Awareness of trends in humanities research will enable us to engage with curators by suggesting techniques that could be useful for their studies. We will facilitate such studies, for example by borrowing the methods of molecular biology to identify the species of animal skin used to make parchment, or by adopting techniques used in archaeology for dating paper, leather or boards.

#### **2. Building the digital research environment**

2.1 We will investigate how damage during digitisation, microfilming and scanning can be minimised.

2.2 We will undertake a survey of older hand-held digital items, in order to understand the nature and size of the collection, its significance and the technical challenges involved in preserving it.

2.3 We will develop and extend the LIFE project to cover all kinds of digital assets.

2.4 In partnership with Southampton University, we will continue to develop non-contact methods of audio playback of grooved analogue media.

2.5 We will research methods for optimal signal extraction from analogue sound carriers and test and calibrate equipment to ensure compliance with international audiovisual archiving standards.

2.6 We will ensure that more conservation and technical information is made available on our website.

2.7 We will research efficient workflows for digitisation and ingest into our Digital Library.

2.8 We will research means of efficient signal extraction from Digital Audio Tapes, Dictabelts, cylinders and other obsolete audio carriers.

#### **3. Transforming search and navigation**

3.1 We will investigate technical solutions that will contribute to the security and ease of retrieval of collection items, such as security marking or radio-frequency identification tags.

3.2 In order to enhance the physical security of the collections, we will undertake an analysis of trends in the loss of or damage to collection items, to see whether specific lessons can be learned from these.

3.3 We will monitor university research being carried out nationally and overseas into automated speech and music tagging and description and investigate methods to improve search and retrieval of large sets of digitised audio files.

## **4. Managing the national collection**

4.1 We will undertake a full assessment of the risks to all our collections, in order to prioritise our preventive conservation efforts.

4.2 The longevity of collections depends on the environments in which they are stored, displayed and used. While conditions at St Pancras generally reach accepted standards, those in other locations often do not. We will seek to define the optimum storage and display conditions for different classes of material, and to define more precisely the way in which objects respond to changes in their environment.

4.3 We will explore methods of improving the sustainability of our HVAC systems and improving their resilience in the case of power failure.

4.4 Most paper made between about 1850 and 1950 is acidic, due to changes in papermaking technology. Acid paper gradually becomes yellow and brittle, and eventually becomes too fragile to handle. The British Library is a partner in the EU-funded PaperTreat project, which is evaluating the long-term efficacy of the existing commercially-available mass deacidification processes. It will establish the long-term effects of these processes on the chemical and mechanical properties of paper, and the extent to which they reduce the rate of deterioration.

4.5 The British Library is also a partner in the EU-funded SurveNIR project, which is developing a near-infra red spectrometer that will enable the non-destructive estimation of the chemical and mechanical properties of paper. This will increase the objectivity of condition surveys and speed them considerably.

4.6 It is well known that iron gall ink, which was widely used from the Middle Ages until the 20<sup>th</sup> century, is liable to fade or to damage paper, even to the extent of perforating it. These problems afflict an unknown number of manuscripts in the British Library's collections. We will undertake a survey to discover the extent of this problem.

4.7 The deterioration of cellulose acetate microfilm affects many libraries in the UK and elsewhere. We will continue to collaborate with international partners to determine the best methods of preserving the content of these films, whether by cold storage, duplication or digitisation.

4.8 Simple preventive measures, such as phase boxing, can protect vulnerable bindings from damage, and timely intervention can prevent minor damage from becoming major. Since prevention is economically and ethically preferable to remediation, we will examine ways in which wear and tear can be minimised by improved handling and boxing, and by the use of more durable materials for binding.

4.9 With the aid of a grant from the Andrew W. Mellon Foundation, the Identical Books Project is comparing the physical condition of the same 400 books in each of the Legal Deposit libraries. This information will be correlated with data on the environments in which the books have been stored, in order to enable predictions to be made about the future condition of the books, based on their current environments. We will also trap and identify the volatile organic compounds emitted by paper as it degrades, with a view to correlating this with the composition and state of preservation of the paper.

4.10 Conservators face the challenges of new materials and new processes introduced into traditional areas, which may have effects on their stability or may pose unexpected problems for

their conservation. In papermaking, the increased use of acid-free pulping procedures should lead to a more stable product, but the introduction of optical brightening agents and the increased use of recycled paper may have the opposite effect. A pilot survey in 2003 showed that approximately 80% of new legal deposit monographs were printed on acid-free paper. However, it is not known for how long these papers will remain acid-free. We will investigate this, and we will extend the survey of the pH of paper to incoming newspapers, periodicals and serials.

4.11 In book production, new adhesives and new materials for covers are continually being introduced. Children's books may incorporate a variety of mechanical parts, or be made of intrinsically unstable materials such as PVC and polyurethane. The convergence of the technologies of photography and colour printing with digital imaging mean that a variety of inks and papers of limited stability may appear in books and documents. Finally, an increasing proportion of the British Library's holdings is in the form of information carriers such as microfilm, magnetic tape, floppy disks and CDs – both as surrogates and as originals, and in books, archives and sound archive material. We have recently appointed a conservator with special responsibility for "Modern Materials", and we will carry out research on the behaviour of these materials, in order to develop conservation techniques and appropriate preventive strategies before they become serious conservation problems.

## **5. Developing our people**

5.1 We will encourage and facilitate the adoption of alternative techniques and materials through a programme of technical seminars and practical workshops.

5.2 The opening of the British Library Conservation Centre is a unique opportunity to take stock of and update our existing treatment methods. We are adopting the treatments for iron gall ink corrosion recommended by the EU-funded InkCor project, and are reviewing many other treatments.

5.3 Wherever possible, conservators will be encouraged to undertake their own research relevant to projects in hand, subject to operational constraints and without detracting from the conservation of the collections. We will assist conservators to develop new treatments and techniques and facilitate the introduction of new materials by carrying out tests on their physical and chemical properties and on their stability, and we will compile databases of materials that are both suitable and unsuitable for use in conservation.

5.4 We will support the work of conservators by making available appropriate methods of technical examination and analysis, and by investigating how novel techniques could be beneficial to conservation.

5.5 We will investigate the use of haptics and virtual reality to capture the manual skills of experienced conservators and transfer them to students.

## **6. Guaranteeing financial stability**

6.1 We will take advantage of the AHRC's initiative to support the field of heritage science by submitting grant applications, either as project leader or as a partner with other institutions.

## Appendix 2.

### Existing research projects

#### *The Identical Books Project*

Funded by a \$700,000 grant from the Andrew W Mellon Foundation, this project seeks to compare the condition of a set of approximately 400 books held in The British Library and the other five Legal Deposit libraries, and if possible to correlate this information with what is known about the environmental conditions that these books have experienced.

#### *PaperTreat*

The British Library is a partner in this EU-funded project, which aims to compare the immediate and long-term effectiveness of the various commercially-available mass deacidification processes for books.

#### *SurveNIR*

The British Library is also a partner in this EU-funded project, which is developing a near-infra red spectrometer to permit the rapid and non-destructive assessment of the condition of books and papers in library and archive collections.

#### *LIFE / LIFE2*

The LIFE project, funded by JISC, developed a methodology for calculating the long-term costs and future requirements for preserving digital assets, using a life-cycle analysis. LIFE2 is addressing some additional issues, such as considering the hidden costs of digital asset management and comparisons between traditional and digital preservation.

#### *PLANETS*

PLANETS is an EU-funded project which aims to build practical services and tools to help ensure long-term access to our digital cultural and scientific assets. The project will enable organisations to improve decision-making about long term preservation, ensure long-term access to their valued digital content and control the costs of preservation actions through increased automation and scalable infrastructure.

#### *InSPECT*

InSPECT, Investigating the Significant Properties of Electronic Content Over Time, funded by JISC and led by the Arts and Humanities Data Centre in association with The National Archives, is exploring the concept of 'significant properties' and will analyse a range of digital objects to develop a generalised methodology for determining the significant properties of digital object types.

#### *Preserv2*

This project builds on the previous project Preserv1, which identified the types of digital file formats present in more than 200 repositories. Preserv2 will investigate structured processes for active preservation aimed at repository

content, including characterisation, preservation planning and preservation action.

#### *ECMA TC45*

This technical committee of the European Association for Standardising Information and Communications Systems, working closely with Microsoft, is developing standards for office open XML file formats, to ensure that computer files continue to be accessible into the future.

#### *Digital Lives*

This project, funded by AHRC, is researching the nature of digital archives held by individuals. Whereas in the past a personal archive might have consisted of letters, diaries and photographs, today it may contain e-mails, blogs, word processed documents and digital images. Working with specialists in digital preservation, oral history curators and manuscript curators, we are exploring how current curatorial practice and approaches to these collections need to be adapted to the digital age.

## Appendix 3.

### Conservation research projects undertaken by The British Library since 1990

| Project title                                 | Person / place  | Date completed | Outcomes   | Comments  |
|---|---|----------------|--|---|
| Paper strengthening by graft copolymerisation | Alan Millington / Christine Butler, University of Surrey, + BL          | 1991           | A successful process was developed, but it was not commercialised  | This was the only viable process that strengthened paper. One problem was residual odour of monomer. It would be worth investigating whether this could be overcome.<br>Requires publication in professional literature |
| Ancient colorants and dyes                    | Prof Ken Seddon, Dr Peter Gibbs, Queen's University, Belfast            | 1998           | Identification of the yellow colour in ancient Chinese paper   | Published in <i>Studies in Conservation Science</i> , 2   |
| The pH microprobe                             | Alan Kennedy, QUB (PhD supervisor Prof Ken Seddon)                      | 1999           | Successful proof of principle  | Would require extensive development to become a sufficiently rugged, commercially viable instrument   |
| Thermal effects of scanners on photographs    | Mark Browne, BL (part of the EU-funded SEPIA project)                   | 2001           | No adverse effects demonstrated  | See: <a href="http://www.knaw.nl/ecpa/sepia/workinggroups/wp4/scanningequipment.pdf">www.knaw.nl/ecpa/sepia/workinggroups/wp4/scanningequipment.pdf</a>   |
| Development of archival quality leather       | Shad Mehmet, BL (part of the EU-funded BRITE-EURAM III CRAFT programme) | 2001           | Commercially available product produced  | See: <a href="http://www.hewit.com/sd12-leat.htm">www.hewit.com/sd12-leat.htm</a>   |
| Anoxic storage and pest control               | David Jacobs, BL  | Ongoing        | Storage in a low-oxygen environment has been shown to decrease the rate of yellowing of poor quality paper | In collaboration with Natural History Museum, British Museum, Tate  |
| Raman microscopy                              | Prof Robin Clark, UCL + David Jacobs, BL                                | Ongoing        | Many inorganic pigments identified on manuscripts  | A review of this work, to be edited by Prof Clark, will be published in <i>Studies in Conservation Science</i>  |