The care of Special Collections

Introducing collections care
As stated in the Introduction, the care of collections is the basis of Special Collections work. Librarians need to decide what to preserve and why, and to what extent the information and the artefact can be separated. The choices made in caring for collections have long-term, often irreversible effects.

This chapter will:

1 Outline threats to collections and how to manage them. Threats include the physical composition of the objects themselves, environmental factors, pests and mould, buildings and storage, and handling.
2 Discuss how to bring all these ideas together in a preservation policy.
3 Examine three key issues in more detail: conservation and the role of the conservator, preservation reformatting, and digital preservation.

The care of Special Collections has much in common with care of archives and museum objects, hence this chapter draws on resources concerning all aspects of heritage.

A note on terminology
Conservation and preservation are easily confused, and have different meanings in other professional areas. These definitions are usual in Special Collections practice, quoted here from National Preservation Office (n.d.):

- **Preservation** ‘includes all the managerial and financial considerations including storage and accommodation provisions, staffing levels, policies, techniques and methods involved in preserving library and archive materials and the information contained in them’.
- **Conservation** is one approach to dealing with damaged materials, as part of a preservation programme. It ‘denotes those specific treatments and techniques applied in protecting library and archive materials from deterioration which involves
intervention with the object itself’. Modern conservation ethics demand respect for the historical integrity of an item.

- **Restoration** denotes those techniques used in reconstructing damaged library and archive materials to what is perceived to be their original form’, which may not necessarily take conservation ethics into account. It would therefore seldom be an appropriate treatment for Special Collections materials.

**A note on standards**
The importance of collections care means many standards and guidelines exist, although libraries may have difficulty meeting these because of building constraints and lack of funding. The most relevant were created for archives services, which have in common with Special Collections types of material, concern with the long-term survival of items, and similar access methods. These standards include BS 5454:2000 (British Standards Institution 2000) for storage and exhibition, BS 4971:2002 (British Standards Institution 2002) for conservation work and the National Archives (2004) standard for record repositories. Kitching, Edgar and Milford (2001) offer guidance on implementing BS 5454.

This chapter picks out some of the key points in the standards, while the survey and audit methods covered below will help librarians set priorities for improvement. Any new build or refurbishment for Special Collections should aim to meet the highest standards of collection care.

**Understanding the physical nature of Special Collections**
To preserve materials in Special Collections, it is essential to understand their physical composition. Special Collections contain many physical formats, created over millennia to record and share knowledge. For example the John Rylands Library in Manchester, which, like other large Special Collections departments, holds material from the third century BC to the present, including clay tablets, papyri, bamboo, bark, bone and palm leaf, alongside vellum and other animal products, paper from various eras, photographic material, sound recordings and other audiovisual media, and, increasingly, digital formats. Even smaller libraries holding only printed book collections have different kinds of paper, ink, glue and binding materials to consider.

Chapter 3 explores Special Collections objects in more detail. For collections care, what matters most is the chemical stability of materials:

1. **Chemically stable** materials, with proper care as outlined below, will last indefinitely. Early printed books printed on durable rag paper have lasted 500 years.
2. **Chemically unstable** materials, even with good care, will deteriorate within a short period of time. Newsprint, produced by quick, cheap processes to meet the needs of the moment, has a high lignin content, which promotes quick acidification and eventual destruction. Many plastics, such as polyvinylchloride or acetates, are unstable. Such materials are said to have inherent vice. A few materials are
hazardous to health as they decompose, notably cellulose nitrate base film, which was used until the 1950s. At high temperatures, in closed conditions, such film can spontaneously burst into flames.

Understanding chemical stability is complicated by:

1 **Complex artefacts.** Items in Special Collections are usually made of more than one substance. An early printed book consists of paper (made of linen rags dipped in size, a gelatine mix that made it less permeable), ink, and the various materials used in binding it. There may also be notes in different inks and later inserts made of other substances. Each of these materials will have different characteristics and decay at different rates.

2 **Other instability.** Chemically stable materials still respond to changes in their environment, for example parchment and vellum are chemically stable but hygroscopic: they absorb moisture from the atmosphere. Exposed to fluctuating levels of humidity, they will stretch and shrink repeatedly in irregular patterns, leading to the distinctive crinkled effect known as **cockling**.

3 **Modern media** pose additional problems. Audiovisual formats (from wax cylinders to videocassettes) require equipment to read them. This will have to be preserved alongside the media or the material will have to be reformatted (see ‘Understanding preservation reformatting and digitization’).

The guidance below will help preserve all kinds of materials for as long as possible.

**Understanding the impact of the environment on Special Collections**

The following environmental factors contribute to the decay of Special Collections materials: light, temperature and relative humidity (RH), air pollution, mould and pests. To help readers understand them, they are discussed separately, but they do of course interact, for example high RH encourages mould growth. Fortunately, good practice in minimizing one factor usually reduces others, for example keeping collections in **archival quality boxes** limits exposure to light, and also prevents pollutant and mechanical damage (more on archival quality materials below).

Archival/museum suppliers offer a range of data loggers and meters to monitor these factors. Henderson (2010) offers useful guidance on choosing the right device for a particular library and situation.

**Understanding the impact of light**

Exposure to light speeds up the deterioration of Special Collections materials, as light energy encourages chemical reactions (**photochemical deterioration**). Ultraviolet (UV) light is particularly harmful. Light damage is cumulative and irreversible: cellulose becomes weakened and brittle, paper bleaches or darkens, and dyes fade.
Special Collections therefore should be exposed to as little light as possible, though some kinds of light are required for essential activities:

1. **UV light** should be eliminated where possible.
2. **Visible light** cannot be eliminated completely, as users and staff need to be able to see materials and move around, but it should be controlled as much as possible.
3. **Natural light**, especially sunlight, is more harmful than artificial light, and should be eliminated from storage areas. However, natural light (though not direct sunlight) is desirable in areas such as reading rooms because it creates a more pleasant environment for people.

Some specific recommendations:

1. **Windows**. Ideally, storage areas should be windowless. Skylights or windows in these areas should be covered with UV screening film or painted with titanium dioxide paint.
2. **Artificial lighting** should be in use only when actually needed, and UV filtered if necessary.
3. **Archival quality boxes** or other enclosures for materials in storage cut exposure to light.
4. **Exhibitions of original materials** should be designed to keep lighting as low as possible. If it is desired to exhibit a particular ‘treasure’ indefinitely, damage must be kept to a minimum by maintaining very low light levels and (if the treasure is in book form) turning the pages regularly.

**Understanding the impact of temperature and relative humidity**

Relative humidity (RH) depends on temperature, so they are considered together. These factors damage collections as follows:

1. **Heat**, like light, speeds up the rate of chemical reactions that lead to deterioration of materials (the rate is approximately doubled by each 10°C increase in temperature).
2. **High relative humidity** encourages chemical reactions, mould growth and infestation by insects.
3. **Low relative humidity** dries out paper, vellum and parchment and other materials, leaving them brittle.
4. **Fluctuations** in temperature and relative humidity are particularly harmful, causing materials to expand and contract repeatedly, as they absorb and then release moisture. This will speed up chemical deterioration and cause physical damage: parchment and paper will cockle, as mentioned above, and photographic emulsions may crack.
BS 5454:2000 (British Standards Institution 2000) recommends the following levels of temperature and RH for safe storage of paper and parchment:

1 **Temperature** should be kept at a fixed point between 13°C and 16°C with a tolerance of 1°C on either side.
2 **Relative humidity** should be at a fixed point between 45% and 60% with a tolerance of 5% on either side.

The recommended temperature is too low for human comfort when doing sedentary tasks such as consulting Special Collections; reading rooms should be kept at 20–22°C. To lessen the impact on materials of moving from the cold storage area to the warmer reading room, the Standard recommends that **frequently handled material** should be kept at a fixed point between 16°C and 19°C with a tolerance of 1°C on either side. Photographic and other modern media benefit from even lower temperatures.

Many libraries will find it difficult to achieve these standards without specialist heating/air-conditioning systems. However, some improvements may be possible, for example Henderson (2010) suggests moving the most vulnerable material to the coldest and driest storage areas and that the conservation heating approach used by the National Trust be considered for historic buildings: the heating system is activated by RH levels. The Preservation Index, available from the Image Permanence Institute, provides a measurement of the lifetime impact of particular conditions on collections, enabling management decisions to be made.

**Understanding the impact of air pollution**

Air pollution is probably less well known and less dramatic than other threats to Special Collections, but can still cause significant damage.

1 **Particulates** (e.g. soot, dirt or dust) abrade materials, scratching or rubbing at surfaces, doing particular harm to modern media. They encourage mould growth and harmful chemical reactions. The risk from particulates will increase during building work, as will the risk of damage to collections from vibration.
2 **Gases** (e.g. sulphur dioxide) come from the burning of certain fuels (e.g. in vehicle exhausts), are produced by some photocopiers or are given off by unstable materials, for example certain woods or paints. They catalyse chemical reactions leading to the formation of acid in materials, making paper brittle. Air pollution is thought to play a key role in the phenomenon of **red rot**, in which tannins in leather bindings decay to a fine red powder that can be hazardous to health.

Cut exposure to air pollution by:
1 Filtering external air entering storage areas, or, if this is not possible, using seals on windows and doors to exclude pollutants.

2 Improving air circulation, thereby removing off-gassing (and preventing mould growth).

3 Restricting the kinds of materials used or permitted in the building, for example use metal shelving rather than wooden unless there are particular historic or aesthetic considerations, as wooden shelving gives off gases.

4 Using archival quality boxes or other enclosures for storage to create clean microclimates.

5 Cleaning routines that prevent dust build-up. Bendix and Walker (2011) offer practical advice.

Understanding moulds

Mould basics

Moulds (molds in US spelling) are fungi, which feed on organic material such as Special Collections objects. Items attacked by moulds will be stained, softened, lose images and text, and eventually destroyed. Moulds are also harmful to people, affecting the lungs (especially of people with asthma and other allergies), skin, eyes and other organs. Some kinds are highly toxic.

Mould spores are always present in the air. They remain dormant until temperature and humidity levels are right for them to become active, whereupon spores burst, become filaments (hyphae), which develop by feeding on organic materials; masses of filaments (mycelia) then produce more spores. Temperatures over 22°C and RH over 70% are ideal for mould growth, though it can happen at lower levels.

If a flood or water leak soaks materials, mould is likely to become active within a couple of days. Emergency plans, discussed in Chapter 2, need to take this into account and plan to use the small window of opportunity, for example by freezing materials.

Foxing, the brown spots seen on 19th century paper, may be caused by fungi, often interacting with metal traces in the paper. However, not all spots and stains on paper are fungal in origin. Foxing can be removed by conservation treatments.

Preventing the growth of moulds

As the above account suggests, if temperature and RH are controlled, mould is far less likely to grow. Levels should be monitored using appropriate loggers so that action can be taken if mould-friendly changes happen. Keeping air circulating will also limit mould growth.

It is essential to quarantine new acquisitions. Materials accepted by Special Collections, particularly from private individuals, have often been stored in damp conditions favourable to mould growth, in attics, basements, garages or sheds. They should be stored separately from other collections, and closely monitored until definitely free of active moulds (see below).
Coping with mould outbreaks

The key question: is the mould *active* or *inactive*? Active moulds are growing and feeding and therefore a concern; inactive moulds are dormant. Active moulds are usually colourful, feel damp, and have a strong smell. Inactive moulds are dull in colour and feel powdery. Items bearing inactive moulds should be cleaned as below.

If mould is active:

1. **Seek expert help** as necessary, from mycologists, conservators, and buildings staff.
2. **Isolate the mouldy items**: they should not be allowed to contaminate clean stock.
   
   If only a few items are affected, they can be stored in plastic bags.
3. **Establish the cause and fix it**. Unless the stock has just arrived, a mould outbreak will almost certainly be the result of changes in environmental conditions, for example a sudden rise in RH, a water leak or a problem in the heating and air conditioning systems.
4. **Make the mould inactive** by freezing, air drying or use of a low oxygen environment.
5. **Clean the affected items** with a HEPA filter vacuum (with cloth or a screen over the nozzle) or a soft brush – outdoors!
6. **Clean the storage area** (shelves, walls, etc.) using appropriate cleaning solutions.
   
   Items should only be re-shelved when they and the area are clean.

Note that the use of cleaning materials and respiratory masks should conform to safety standards: see ‘Further reading’ (below) for more details, and seek advice from health and safety colleagues.

Dealing with a mould outbreak in this way is to be preferred to chemical interventions. Chemicals used to treat moulds are highly toxic, and there is little point in treating books that are then returned to the conditions that caused the mould growth in the first place.

Understanding pests

*Pest basics*

Alongside moulds, Special Collections can be damaged by many other creatures, known as *pests*. Insect pests include beetles, silverfish, booklice and cockroaches. Other pests include rodents (rats, mice, squirrels) and birds. Insects do harm by eating materials: they are particularly drawn to sizes (mentioned above) and glues, but will also devour cellulose-based material and animal skins such as parchment. Excreting, tunnelling and nesting also harm collections. Larger creatures are less likely to eat collections, but can do great harm by excreting, chewing electrical wires or blocking drainpipes with nests. Historic buildings containing period furnishings, usually made of organic materials, are particularly at risk, because they offer so many potential foodstuffs.
**Preventing infestation**

The historic practice of spraying buildings and collections regularly with pesticides is now considered unsafe and unnecessary. As with mould, museums, libraries and archives are turning to **integrated pest management (IPM)**: instead of reacting to infestations when they occur, prevent them by:

1. **Knowing** the life cycles and food sources of the pests most likely to occur in the area and be attracted by particular collections (see ‘Further reading’ (below) for advice). Once these are understood, action can be taken to deter the pests, as below.

2. **Monitoring. Sticky traps** (also known as **blunder traps**), cardboard foldout traps containing sticky substances that appeal to insects and trap them, are recommended and cheap. Traps should be placed in locations likely to attract insects and checked regularly. Staff should also watch out for sightings of pests, and for evidence of their presence such as damaged materials or excretions.

3. **Eliminating environmental factors** that encourage pests. Materials in dirty, damp, neglected conditions are more attractive to pests, so good housekeeping is essential. Possible routes of entry to the building such as cracks, vents and badly sealed windows can be closed. The levels of temperature and relative humidity recommended above will also deter pests.

4. **Eliminating/reducing potential food sources**, for example live or dead plants and flowers, organic mulch, food, food waste and rubbish.

5. **Quarantining** new acquisitions, as for moulds.

**Coping with an infestation**

- **identify the pests**
- **establish and tackle environmental factors**, as above.

This may be sufficient to remove the pests. If not, the action then taken depends on the kinds of pests: specialist help will be needed, for example rodent control or use of insecticides.

**Understanding buildings, storage and Special Collections**

As the discussion of environmental factors suggests, the buildings and storage areas used for Special Collections are key to their survival. The basics are simple to state, though harder to achieve: ‘The essential requirements for a building used to house library and archive collections are that it should be soundly constructed, watertight and well-ventilated. It should also have a stable internal climate with temperatures and relative humidity (RH) levels varying only gradually over the seasons’ Hughes (2002).

These needs are elaborated in the standards, notably BS 5454:2000 (British Standards Institution 2000).

It is best to store collections away from spaces used by people. Preferred light levels, temperatures and so on for people are different from safe levels for collections storage.
As security is also a concern, it is best practice to store the collections separately in **strong rooms**, bringing out only what is needed by users. Historic foundations such as cathedrals and colleges sometimes use the term **muniment room**, the space used to store records such as charters and deeds.

While many of the recommendations are difficult to achieve in existing spaces, there are many ways to improve collections storage. For example:

1. **Air circulation** is important, as we have seen, for avoiding mould growth. Bookshelves should not be directly against a wall, and items within cabinets should not touch the back wall.
2. **Shelving layout** should avoid mechanical damage to collections, for example items can be crushed on overcrowded shelves or distorted by the proximity of different sized items. Items should not protrude beyond the edges of shelves, especially in mobile shelving, where they could easily be damaged.
3. **Books**: large heavy books should be stored lying flat. Bookends should be used when shelves are not full, but should not be damaging in their design. Boxes are invaluable in protecting fragile or special bindings, limiting mechanical damage from other volumes. Where the appearance of book spines is important, for example in a historic library, using **book shoes** (see North East Document Conservation Centre 2007) protects volumes while keeping beautiful spines on show.
4. **Materials used with Special Collections** should be of **archival quality**, particularly if they will be permanently associated with those items. Archival quality means that the materials are designed to minimize chemical or physical damage. BS 4971:2002 (British Standards Institution 2002) is the relevant standard. For example, boxes should be acid- and lignin-free to avoid chemical damage, paperclips should be brass so that rust damage is eliminated, protective sleeves for photographs should be made of inert polyester film (brand names **Mylar** or **Melinex**).
5. **Storage areas and the collections themselves should be kept clean** as part of a rolling programme of maintenance. This minimizes risk of pests, mould and mechanical damage from dust. This is skilled work requiring training, and specialist equipment needs to be used, for example soft brushes to remove dust, and vacuum cleaners with HEPA filters to catch smaller particulates. Bendix and Walker (2011) offer a practical introduction.
6. **Shelving types**. Wooden or metal? Mobile or static? Wooden may be more combustible and prone to off-gassing, but metal shelving can rust or damage collections with sharp edges. Wooden shelving is usually more aesthetically pleasing, where that is a consideration. Mobile shelving saves space compared to static, but if poorly installed or maintained can cause safety or access problems. Rhys-Lewis (2007) discusses the decisions involved in selecting shelving and other kinds of storage such as chests to store maps, plans and other large documents.
A note on preservation and historic buildings

Many Special Collections are housed in ancient buildings such as cathedrals, university colleges or historic houses. These are wonderful, inspiring settings for staff and collections users; the original settings enhance the collections and vice versa. Witness the Chawton House Library, where early modern women’s writing is held in the manor house of Jane Austen’s brother, or Chethams, the ancient public library in Manchester.

However, there are extra challenges in managing Special Collections in such environments:

1 **Inappropriate spaces.** Buildings may not have been designed for Special Collections and may have suffered poor maintenance. Collections often outgrow their original shelving, and may have to be kept in unsuitable overflow storage.

2 **Constraints.** It may not be possible to take the best actions to preserve collections because of planning constraints associated with a listed building, or its visual appeal to visitors. For example, the original shelving is unlikely to be ideal from a collections care perspective, but historic and aesthetic reasons will outweigh this concern.

3 **As a visitor attraction,** the premises are likely to have a higher footfall than other Special Collections, leading to greater wear and tear, and extra risks such as fire in catering services.

4 **Historic buildings and furnishings may be more difficult to clean and maintain** than modern materials, and, as already mentioned, more vulnerable to pest infestation.

5 **The library may be in demand for hospitality or broadcast filming.** It is easy for the demands of these users to take precedence over the preservation of the materials. Effective policies and procedures based on the experiences of others can make these situations workable for both sides (more on income generation in Chapter 10).

6 **Increased fire risk** because of the materials and design of historic buildings and limitations on preventive measures (more on fire in Chapter 2).

Handling Special Collections safely

Users or librarians with the best intentions can inadvertently harm collections if they have not been properly trained in handling. Fortunately this aspect of collection care can be greatly improved at relatively low cost. Some typical examples of poor handling, and suggested practices to eliminate them:

1 **Problems with opening materials,** for example opening a volume without support strains the spine, eventually causing it to break and exposing the book to more damage. Propping volumes or rolled materials open with unsuitable objects may stain or mechanically damage materials. Equipment to help hold materials open...
correctly, such as book pillows, foam supports, book snakes and weights, should be readily available to readers, helping them follow the rules easily.

2 **Damage from inappropriate substances, for example ink, food or drink.** These should not be permitted in Special Collections areas. Pencils only should be used. Even if food or drink are not actually spilled on collections items, other spillage or smells encourage pests.

3 **Inappropriate repairs**, such as the use of adhesive tape, laminators or unstable plastics. Such materials should never be used on Special Collections objects.

4 **Poor working practices**, such as trying to carry too many volumes or using a trolley that does not support the materials. Working practices need to be designed around collections care.

5 It is vital to **educate users and staff** in sensitive handling of Special Collections. Handling should form part of the induction of all staff and volunteers. Such trained individuals can set a good example to users and enforce handling rules in an informed and sensitive way.

How users are trained in handling depends on the size and nature of the library. Ideally such training should be more than issuing a list of rules: it should be about building understanding of materials as artefacts, though in practice, larger organizations may have to rely on detailed rules backed up by supervision. The marketing and communication methods covered in Chapters 8 and 9 offer ideal ways to train users in good handling. Whichever methods are used, handling guidelines can be presented to users in a positive way, about respect for the materials. Many users value the sense of special access that such rules give them.

**A note on the glove question**

The compulsory wearing of white cotton gloves to handle materials is a classic signifier of Special Collections, an idea users recognize from the media, instant shorthand for precious material. However, gloves are actually more harmful to collections than clean bare hands:

1 They are likely to be dirtier, picking up all kinds of contamination from around the reading room.
2 The extra layer between hand and material makes the hands less sensitive, and therefore users are more likely to damage materials as they handle them.

Gloves separate the reader from the physical reality of the objects handled, and thus mute the experience of using Special Collections.

Baker and Silverman (2005) analyse the problems with gloves and the relatively recent growth of the glove rule. They conclude that ‘implementing a universally observed, hand-cleaning policy is a reasonable and effective alternative to glove-use’, suggesting that where access to water is a problem, disposable wipes might be made available.
However, gloves should be used when handling certain vulnerable formats, for example to protect photographs, scrapbooks, prints and drawings, and realia such as lead seals or globes from fingerprint damage. When gloves are needed, the white cotton glove is the most comfortable. A range of sizes should be stocked, and regular cleaning in gentle detergent is advised. Latex and other plastic-type gloves should be avoided, as they are unpleasant to wear, particularly in hot weather, and allergies to such materials are common.

As readers may expect to be required to wear gloves, libraries may find it helpful to publicize and explain their policies as the British Library and National Archives do.

A note on reprographics and collections care
Reprographics is the reproduction of materials via various mechanical and electronic means, such as photocopying, digitization and microfilming. Contact reprographic methods, where the copy is made by machines touching the original object, such as office photocopiers and scanners, are easy to use in harmful ways, for example forcing the lid of the machine down to make volumes lie flat. If possible, book-friendly machines designed for the safe copying of historic volumes or other specialist material should be used. However these are expensive, probably beyond the budget of smaller libraries.

Even with access to book-friendly machines, contact reprographics should be carried out only by trained staff, and appropriate restrictions imposed. It is usual in Special Collections not to allow copying of oversize or tightly bound volumes or fragile materials. As it is impossible for a list of restrictions to cover every possible problem, such copying is generally at the discretion of staff, who will need either to be trained to make the decisions, or given clear guidelines about when to refer the request to a skilled colleague. National Preservation Office (2000b) is a useful introduction to the practical management of photocopying from a collections care perspective.

The advent of digital photography has relieved some of the pressure on Special Collections, as little or no contact with the item is required to get a legible copy. See Chapter 7 for a service perspective on reprographics and the digital revolution.

A note on packing and moving
Special Collections may be moved for many reasons, for example to new premises or to an external event or exhibition. Outhousing during building work is common to protect collections from increased security and fire risks. However, packing and moving Special Collections exposes them to new risks, for example:

- mechanical damage, for example from careless handling or inappropriate packing
- environmental problems, for example fluctuating temperature
- theft or accidental loss
- re-shelving in wrong order.
Firms specialize in packing, moving and storing heritage collections, but care is needed in choosing and working with such companies. Bendix (2005) offers a practical guide to safe packing and moving. As with so much of collections care, risk assessment and careful planning are essential.

**Managing preservation of Special Collections**
The above threats may seem overwhelming, but taking a preservation approach helps librarians to cope. Good preservation practice is about establishing workable policies, procedures and aspirations, and regularly reviewing them in the light of changing circumstances and technologies.

**Taking audits and surveys**
The starting point for preservation planning is the audit or survey, which gives librarians the information they need about their situation to enable them to plan improvements.

Surveys may assess the physical nature of the collections, their condition and stability, or existing standards of collections care. They are often carried out when major new collections are added, before a refurbishment or to support applications for external funding. Repeating a survey later can show the impact of changes to buildings or new funding on collections care. It may be possible to find external funding to support a survey: see Chapter 10.

Depending on finances, and the nature and size of the collections to be surveyed, surveys can be:

1. Commissioned from external experts, individually or using programmes such as the [Preservation Assessment Survey (PAS)](#) and [Preservation Health Check](#) offered by British Library Preservation Advisory Centre (BLPAC).
2. Created in-house using toolkits such as:
   - **Benchmarks in Collection Care** (Winsor 2002), which enables libraries to assess their collections care against three levels of benchmarks.
   - **CALIPR** (see ‘Useful websites’ below), created by the California Preservation Program, is a free website tool that ‘leads the user through the design and implementation of a preservation needs assessment survey’.
   - **Columbia Audio/Moving Image Survey** (see ‘Useful websites’ below): Columbia University Libraries developed a methodology ‘to inventory and assess the physical condition and intellectual control of audio and moving image materials’, available as an Access database.
   - Patkus (2003), a **self-survey guide** of preservation needs.

**A note on mission and strategy**
Before looking in detail at the preservation policy, a reminder that the mission and strategy of the service should underlie this and all Special Collections policies and procedures:
Special Collections can contain millions of items in thousands of collections, in hundreds of formats on all kinds of subjects. Each collection contains boundless possibilities for preservation, cataloguing, marketing, etc., which is part of the excitement in working with Special Collections. Managing collections effectively is about making good choices from these possibilities: here, what to preserve and how. These choices can be difficult, have long-term effects and are often irreversible. If they are not made with an understanding of the ultimate purpose and long-term goals of the service, they may well not be the best choices to achieve those ends – wasting vital resources and missing opportunities.

**Writing the preservation policy**

The preservation policy (or plan) unites all the above in defining the library’s intentions for collections care, starting from its mission. It is essential to understand why the organization has Special Collections, what it intends to do with them in future and which are critical to its mission.

The policy should also cover:

- **Aspirations** for collections care, based on priorities from survey findings and outlining the relevant standards, for example BS 5454:2000.
- **Activities** with collections care implications:
  - storage and housekeeping
  - handling (above, and Chapter 7)
  - exhibitions (Chapters 8 and 9)
  - loans – to users, inter-library loans and external exhibitions (Chapters 7 and 8)
  - reprographics (above, and Chapter 7).
- **Resources** for collections care:
  - finances – funding available, fund-raising aspirations and how funding will be spent
  - staff and their training, including volunteers, other library staff and users.
- **Methods** of managing damaged or chemically unstable materials, discussed below.
  - conservation
  - preservation reformatting
  - digital preservation.

Security and emergency planning (see Chapter 2) should be mentioned, but the detail is probably better covered in a separate process. More advice on preservation policy content and writing can be found in Foot (2001). There are many examples of Special Collections preservation policies online especially from national libraries and academic libraries, though it is more difficult to find examples from other organizations. To implement the aspirations of the policy, action plans will be needed, for example to tackle weaknesses found during surveys. Such plans are less commonly found online, as they are matters
of internal procedure rather than customer-facing documents, and may reveal security problems and the like that should not be made public.

Understanding conservation and the role of the conservator
As noted above, conservation is one approach to dealing with damaged materials within a Special Collections preservation policy: the treatment of individual items using interventive techniques but with concern for the historic integrity of the structures. How large a part conservation plays in a particular service depends on how much funding is available or can be obtained, the formats in Special Collections, and the kinds of damage they have suffered.

Conservation is a highly skilled activity, which should always be carried out by trained conservators. They ‘combine their knowledge of the most up-to-date science with an understanding of the properties of materials and construction techniques to determine the best means of conservation of these objects’. Conservators need to know the ‘context of the objects they work with’, developing an aesthetic appreciation of ‘art history, architecture, changing fashions and lifestyles’ to find the most suitable treatment for particular objects (extracts from the Institute of Conservation, www.icon.org.uk).

Larger Special Collections often have their own conservator or conservation department, either as part of the management structure of Special Collections, or as a separate team. Smaller establishments might employ external conservators to carry out specified work. Choosing a conservator is an important decision, financially and for the long-term well-being of the collection being treated. Databases of accredited conservators and advice on choosing and working with them can be found via their professional organizations (see ‘Useful websites’); further advice can be found in Paris (2010). Issues to consider include skills, experience, insurance and security.

A good relationship between librarians and conservators is vital for collections care. Special Collections librarians are advised to learn the basic language of conservation and follow developments in the profession, so that they can communicate effectively with conservators and find the best treatments for their collections.

Conservators may use chemical or physical treatments. Here is a selection, based on Ogden (2007):

- **Surface cleaning of book pages**: removing dirt, dust and mould by gentle mechanical means.
- **Removal of old repairs and tape**, using water, moisture, steam or solvents as appropriate.
- **Washing book pages**.
- **Deacidification** of book pages: ‘the purpose of the treatment is to neutralize acids and to deposit in paper a buffer that will protect it from the formation of acid in the future’.
- **Mending, filling and guarding book pages**: tears in pages can be mended using Japanese paper or another suitable paper.
• Sewing book pages.
• Rebacking loose/detached boards or spines of books.
• Rebinding: if the original is missing or too badly damaged, various structures are used depending on the nature of the book.
• Boxing: There are various kinds of boxes that help protect items: including book shoes, phase boxes, drop spine and solander boxes.

Conservation can achieve stunning results, but cannot always solve inherent vice and other issues in complex artefacts, as this story shows.

Case study: mending Mercator’s Atlas

The British Library website contains a detailed account of the work of conservators on ‘Mercator’s Atlas of Europe, a unique item compiled in the early 1570s which contains the only extant remaining parts of Mercator’s influential 1554 wall map of Europe, along with two unique manuscript maps attributed to him’. The Atlas was fragile, torn, fractured and distorted by old repairs. The work carried out by the conservators stabilized the paper and binding, so the volume can be displayed and handled with appropriate care. The account gives a vivid picture of the possibilities and philosophy of conservation. Note for instance:

• that the conservators did not remove evidence of the old repairs, as these form part of the Atlas’s story
• that the item remains fragile; most public access in future will be through digital methods
• the discussion of decision making, for example why water-based methods were not used.

As with the Mercator Atlas, many conservators are using websites and blogs to show the treatment of individual items in photographic detail. Librarians new to conservation can learn more about its language, ethics and possibilities from such sites.

Conservators can offer much more than conservation work on individual items: they are an important source of advice on all aspects of preservation including storage, handling, disaster control planning and response.

New technologies are helping conservators and librarians to find out more about Special Collections artefacts. For example, multi-spectral imaging techniques make it possible to decipher the original writings on palimpsests (parchments that were recycled: original text was scraped off and a new one overwritten). In the Archimedes Palimpsest project, a 13th-century Byzantine prayer book revealed otherwise unknown works by Archimedes originally written on the parchments.
Understanding preservation reformatting and digitization

Not all damaged materials in Special Collections can be preserved in their original format, even using conservation techniques.

Another approach to damage to consider in a preservation plan is reformatting, also known as migration, format shifting or surrogacy. This has historically been the solution offered for materials with ‘inherent vice’. Such materials would be difficult, expensive, even impossible to preserve in their original format: shifting the information they contain to another format made it possible to keep that information for longer and make it available. Witness the widespread microfilming of newspapers in the 20th century.

Reformatting can be done on any scale, ranging from in-house on an item-by-item basis (fragile items in high demand) to huge projects covering many libraries. Photocopying might be useful for individual objects, but until recently, creating microforms (microfilm or fiche) was the usual choice for larger projects. Microforms are easy to store and reproduce, and the best quality microform (silver halide) is a stable format. However, bulky equipment is needed to read them, they can be tiring to use and the experience is far from that of using the originals.

Not surprisingly, digitization is now the norm for reformatting. This requires only common devices and software and recreates the original experience much more effectively. Above all, it can improve access rather than just replacing the original. Even microforms could be made available to many libraries, but digitized surrogates can not only be made available worldwide, but are searchable in ways that simply were not possible with the original medium or previous methods of surrogacy. For example, the British Library Newspapers Project offers keyword searching on 2 million pages of 19th century newspapers, offering unimaginable possibilities compared to the fragile, bulky, even unusable originals previously available only in physical form at the British Library. Or consider Turning the Pages™ (see ‘Examples and case studies’ below), adopted by major libraries and museums to highlight their treasures online.

However, reformatting raises further issues, which need to be covered in the preservation and other relevant policies.

*Fate of the original*

It is attractive to managers faced with large volumes of unusable material to throw it away to make better use of scarce space. However, Special Collections are materials where the original artefact is seen to have value beyond its informational content and would not be discarded even if it had been reformatted. Exceptions might include obsolete audiovisual formats, film which has deteriorated to the point of harm to other materials, or ephemeral press cuttings in collections of historic books. If originals are discarded, then quality control of the surrogacy process becomes even more critical, as does the durability of the copy.
Copyright
Decisions about reformatting are complicated by copyright law. If material is in copyright, it is not necessarily legal for a library to migrate it to a new format even for preservation reasons (see Chapter 6).

Commercial partnerships and the future
A service may not have the resources for mass digitization: often the work is done by commercial firms in partnership with the libraries holding the materials. Such firms need to recoup their investment, so there may be restrictions on access to material (subscription only for example), though it may return to the public domain later. Librarians interested in working with commercial partners should choose firms with relevant experience and evidence of care for collections, and are advised to discuss the implications with librarians who have worked with such firms recently.

The growth of mass digitization of Special Collections has wider implications for Special Collections librarianship. Here are two of the most significant developments:

1. The Google Books project takes digitization to a new scale, working with many national and research libraries to digitize millions of books. In a long and complex legal saga, Google have sought to put full text of out of print but in copyright works online: an agreement to this effect whereby Google would pay royalties was thrown out of court in March 2011. The implications of Google Books for access, copyright law and the nature of publishing and creation are huge: librarians need to be aware of developments.

2. Early English Books Online (EEBO) and Eighteenth Century Collections Online (ECCO), explained more fully in Appendix A. Unlike the rather haphazard interface of Google Books, these resources offer digitized early books supported by rigorous bibliography and other scholarship, making them a serious academic resource.

In light of the above, it seems that Special Collections in future, particularly those whose holdings consist mainly of early books, will have fewer visitors in person needing to examine particular texts, as users will be able to access material remotely. But librarians need to be aware that this may threaten the other services they offer, particularly if senior managers think that because texts of books are online, librarians are not needed. Throughout this book, we discuss the other activities that Special Collections librarians carry out, the value they bring and how to communicate that value.

Understanding digital preservation
The discussion of reformatting leads into considering digital preservation. Special Collections are facing the challenges of preserving collections in digital form. These may be digitized versions of physical collections, created as surrogates or for marketing and
access purposes. Increasingly, however, collections are creating or acquiring born-digital material: ‘items created and managed in digital form’ (Erway 2010).

Born-digital material is created in various ways and for various purposes: Erway lists digital cameras, digital documents, web content, digital manuscripts, static data sets, electronic records, dynamic data, digital art and digital media publications. Not all Special Collections are concerned with collecting or preserving all these kinds of material. When discussing the preservation of born-digital material, it is helpful to define which of these types of data are being considered.

Digital preservation is far more than a matter of copying files onto high-quality optical media and managing them like other physical formats (on which, see Finch and Webster 2008). Digital media have distinct qualities from physical media, which require a different attitude to their preservation:

1. Storage media such as CDs or DVDs are particularly vulnerable to physical degradation, easily harmed by high humidity or poor handling. Copying readily introduces errors.
2. Commercial imperatives mean that a huge range of shapes and sizes of digital storage media have been available, requiring a similar range of equipment to read them. The pace of change has been rapid: 3.5 inch floppy disks were ubiquitous ten years ago but no modern PC or laptop has a drive to read them now.
3. Software is required to read digital data, but this has also seen rapid development: new versions of software may not accurately render older versions.

Even more so than the preservation of paper-based materials, digital preservation is about effective planning and management from the outset. In any digital project or managing any digital material, the choices of file formats, file naming, metadata, storage and standards will affect whether the material is to survive and be useful into the future.

Preservation of digital media cannot be about keeping one individual physical object. Instead, ‘Lots of copies keeps stuff safe!’. Important files should be stored in different physical places and on different media. The rule of three is often suggested: three copies, three media, three places. Where media such as DVDs are used, they should be regularly checked and copied if problems are found.

However, when copying files, it is important to distinguish between:

- preservation master generation: files which remain authentic and high quality and which are duplicated for safe-keeping, and
- delivery generations, which can be shared, compressed and made available in whatever formats are helpful to users.

Key techniques for digital preservation include (in order of difficulty):

1. Refreshment: copying data onto a newer example of the same format.
2 **Migration**: copying content from one format onto a newer format. It can also include moving files to a more recent version of its software or a different data format.

3 **Emulation**: creating systems that emulate the original system used to access data, because this is no longer available. This is more complex, involving writing new software or rebuilding hardware to enable a modern computer to recreate the appearance and functions of obsolete systems.

**Conclusion**

Materials in Special Collections face many threats: their physical and chemical instabilities, environmental problems that speed up chemical reactions or cause other harm, attacks by moulds and pests, and damage caused by poor storage and handling. The scale of these threats is daunting, but a preservation approach helps librarians to manage them: improving storage, housekeeping and handling procedures, conservation techniques and preservation reformatting. Digital formats have distinct preservation issues, but also offer new ways to care for physical originals.

In Chapter 2, we consider a further group of threats that pose serious risks to Special Collections: fire, flood, theft and other emergencies. Issues relating to collections care will appear throughout the book, and should be considered in all Special Collections activities.

**Further reading**


The sets of guidance notes produced by BLPAC, North East Document Conservation Centre (NEDCC) and the Canadian Conservation Institute (CCI) (some of which are cited in the bibliography) are freely available online and offer practical help with preservation. NEDCC leaflets are available as a print volume (Ogden 1999). The Conservation Online database links to full text of many invaluable resources.

Like preservation of physical materials, the importance of digital preservation means it is an area in which plenty of online advice is available to Special Collections librarians. For instance: Joint Information Systems Committee (JISC) resources (notably the JISC Beginners’ Guide to Digital Preservation and JISC Digital Media) and the National Digital Information Infrastructure and Preservation Program. Useful textbooks include Deegan and Tanner (2006). Association of Research Libraries (2010a) and Rieger (2010) offer advice on working with digitization companies.
Examples and case studies
Archimedes Palimpsest, www.archimedespalimpsest.org/digitalproduct1.html
British Library Newspapers Project, http://newspapers.bl.uk
Chawton House Library, www.chawton.org
Chetham's Library, www.chethams.org.uk
John Rylands Library, www.library.manchester.ac.uk/specialcollections
Turning the Pages™, www.armadillosystems.com/tp_commercial/

Useful websites
American Institute for Conservation (AIC), www.conservation-us.org
Australian Institute for the Conservation of Cultural Material, www.aiccm.org.au
British Library Preservation Advisory Centre (BLPAC, formerly the National Preservation Office), www.bl.uk/blpac
CALIPR (needs assessment tool), http://sunsite.berkeley.edu/CALIPR/index.html
Canadian Association of Professional Conservators, www.capc-acrp.ca/what_is_capc.asp
Collections Link, www.collectionslink.org.uk
Columbia Audio-Visual Survey,
https://www1.columbia.edu/sec/cu/libraries/bts/preservation/projects.html
Conservation Online (CoOL), http://cool.conservation-us.org
Conservation Register (UK), www.conservationregister.com
Digital Preservation Coalition, www.dpconline.org
Digital Preservation listserv,
https://www.jiscmail.ac.uk/cgi-bin/webadmin?A0=digital-preservation
Heritage Preservation (USA), www.heritagepreservation.org
Image Permanence Institute, https://www.imagepermanenceinstitute.org
Institute of Conservation (ICON) (UK), www.icon.org.uk
JISC Digital Media, www.jiscdigitalmedia.ac.uk
National Digital Information Infrastructure and Preservation Program,
www.digitalpreservation.gov
National Trust Conservation, www.nationaltrust.org.uk/main/w-chl/w-places_collections.htm
New Zealand Conservators of Cultural Materials (NZCCM), www.conservators.org.nz
Northeast Document Conservation Center (NEDCC), www.nedcc.org