

Digitisation as Part of Traditional Conservation. Options of Digitisation, Microfilming and Mass Conservation in Workflow.

Public authorities throughout the world are generating more and more electronic documents as originals. Such electronic records have to be stored, evaluated, indexed and conserved. It is one of the largest tasks with which archives have ever been confronted. It is a global task. However, it is not only originals of electronic documents which present archivists all over the world with a problem. The call for complete accessibility of more and more archive material, which is being voiced increasingly on account of the options available with digitisation and the Internet, also involves many different problems which archives cannot solve so easily.

According to conservative interpretation by numerous archivists, the purpose of digitising archives is solely to make it possible to use them. Since the durability of digitised resources does not appear to have been clarified sufficiently yet, numerous archivists emphatically reject the digitisation of archives as a means of conservation. Furthermore, in some countries the archive laws specify that conservation of the original is top priority. Nevertheless, the digitisation of archives for use is an indirect means of material conservation because use of the original documents is so severely restricted, which without doubt increases the durability of originals and is hence, indirectly, of conservation benefit.

If one follows this dictum of conserving the original and protecting it as much as possible, creating a resource which is as permanent as possible and taking into consideration the call for absolute accessibility of records, the ideal solution is to conserve originals (preservation), microfilm them (creation of a long-term resource) and digitise them as well (maximum accessibility).

In Germany there are institutions which could perform the digitisation of records, microfilming and mass conservation of originals in a single workflow. They are two so-called archive centres in Berlin and Cologne which are run as public-private partnerships by the government – e.g. in Berlin by the Federal Archives of Germany – and a private company.

Step 1: The archive centre's idea

In the beginning, the archive centre wanted to mass conserve and deacidify archive documents that were disintegrating due to the build-up of acid.

It is particularly in the area of archives that there is a professional need for original manuscripts to be conserved – it is partially even a legal requirement. And so the question which must be asked worldwide is how this problem should be tackled, how can a stop be put to this process of disintegration so that the most important unique items in the archives may be conserved in their original form – and this throughout the world.

Most affected by this disintegration are papers used for books and documents in the past 160 years. Since approximately 1840, paper has been produced ever more industrially using modern, wood-based fibre substances and intermass resin size with added alum. About 90% of the items stored in archives and libraries are post 1840 so we can assume that, in the long term, a large proportion of the written records worldwide are under threat of decomposition.

Professional circles have long been aware of the problem of paper disintegrating due to a build-up of acidity. Initial research to develop techniques to combat the dilemma in Germany was launched in the eighties and marketability of suitable technology was attained in the nineties.

One of these techniques is called the “Bückerburg Conservation Procedure”.

The aim of this de-acidification process is a significant improvement of the paper’s stability. This is achieved by neutralising the acids present in the paper and adding an alkaline reserve which will provide long-term protection against a renewed build-up of acid.

In the “Bückerburg Conservation Procedure” the documents pass through a water-based chemical bath where

1. the inks are fixed
2. the paper is de-acidified
3. an alkali puffer is added to the paper
4. re-sizing provides additional stabilisation

The results of paper treatment using the “Bückerburg Procedure” are as follows:

1. The pH level is raised to at least 7.5 and at most 9.2¹
2. Addition of an alkali reserve of up to 2% CaCO₃/kg
3. Reinforcement of 90% of the paper by approx. 30%

These results very nearly meet the requirements for manufacturing alkaline new paper in compliance with DIN ISO 9706 (pH level: 7.5 – 9.0, alkali puffer).

Significant groundwork has to be carried out on the archival material beforehand, for example:

- Washing
- Removing traces of metal
- Decollating the sheets of paper
- Laminating/paginating the sheets of paper
- Repairing significant damage to the paper

Step 2: Additional protective film as a way of developing the archive centre’s idea

Archival materials are unique and have an enormous cultural value, making their preservation vital. As a result, protective media must be applied to the originals to protect them from damage caused by handling.

At the request of the Federal Archives, Neschen AG has been providing a particularly economical work-flow microfilming solution for their archive centres since 2005. To date, microfilm is the most durable preservation medium and the most cost effective in the medium to long term.

The micro-filming of documents is a valuable addition to mass conservation; documents are filmed prior to the conservation treatment and can subsequently be withheld to a great extent from public use. The consequence is that the conservation treatment is more effective and long-lasting.

The archival documents are first prepared for mass conservation, i.e. the sheets are separated, numbered and *coated with a thin foil*; they are then not directly put through the conservation process, but micro-filmed instead. Subsequently they are conservation treated and re-packed. In this way the micro-filming stage is integrated smoothly into the work-flow of the mass conservation process.

There is no additional transport necessary, the preparatory and finishing tasks necessary for micro-filming (unpacking and re-packing) are likewise unnecessary, and the pages are already separated into single sheets as preparation for conservation: this results in substantial cost-savings and the documents are exposed to less wear.

Microfilms in archives offer the following advantages:

- Few technical requirements for storage.
- Excellent durability of both the carrier medium and the data stored on it. Therefore suitable for permanent archiving.
- Little maintenance required to manage the media and data, as well as low migration frequency (copying frequency.)
- Little hardware required (just a light and magnifying glass) – will also be legible way into the future.
- No modification to changing technical formats and software versions (data conversion.)

Step 3: Digitisation to enhance and support measures to preserve archives

In this case, digitisation does not refer to saving and conserving genuine digital data (born digital materials,) such as electronically-generated admin documents for digital publications or digital metadatas.

- Digital availability of archive material is a challenge in the information age

The ability to provide archive material in digital form raises the image of the archives as service providers in an information age, attracts new user groups to the archives and improves the level of acceptance of protective media. Digital presentation in archives of photos, posters etc is of huge value as a medium.

Advantages of digitising archival materials:

- Archival materials can be put on the Internet, on intranets and in the archives' reading rooms in digital form;
- Valuable originals are protected from damage as a result of handling (by using protective media;)
- The archival materials can be used at any time, in any place, regardless of where the materials are stored or when the reading rooms are open etc;
- The creation of an original print in colour produces an excellent reproduction which, by using specific technical tools, is also easier to read than the original;
- Numerous copies in equally good quality can be produced cost effectively;
- Access and forwarding of information is faster;
- Allows materials to be processed easily and cost effectively in conventional and electronic media, therefore enhancing research capabilities (search functions.)

In other words, it is not only advisable to conserve and film the documents that are part of the workflow process in the archive centres, but also to digitise them, so that benefits are gained from the advantages mentioned above, at as low a cost as possible.

The workflow can be implemented in various ways. For the purpose of mass conservation the documents have to be prepared in a manner described above. During this preparation it is possible to film the documents in an integrated step. Then the documents can be conserved and the films digitised. It is also possible to digitise the documents in an integrated step during preparation. After that, the documents can be conserved and the digitised resources placed on microfilm. Finally, it is also possible to integrate a hybrid process into preparation for conservation, and thus film and digitise the documents simultaneously.

There are pros and cons for each of the three methods mentioned:

Type of workflow	Pros	Cons
Workflow microfilming followed by digitisation from microfilm	-only a manual step with minimal labour required -fast and inexpensive	-only black-and-white digitised resources possible -quality options of digitisation are not exploited to the full
Workflow digitisation followed by placement of digitised resources on microfilm	-only a manual procedure with minimal labour required -coloured digitised resources possible	-resolution of digitised resources inadequate for standard-compliant quality of microfilms -quality options of microfilms are not exploited to the full -not as fast as the first workflow, hence more expensive
Workflow with hybrid solution; microfilming and digitisation on a hybrid unit	-high microfilm resolution in conjunction with coloured digitised resources -the benefits of both systems can be exploited	-since the duplicated step takes longer, it is less attractive economically (more expensive)

Summary

Only an integrated concept of prevention, conservation and restoration will be successful. Making reproductions to protect the originals is also part of the concept. However, digitisation can never replace conservation, the purpose of which is to preserve the actual material of the original.

Dr. Helge Kleifeld