

History of Microfilms in Helsinki University Library / National Library of Finland

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MICROFILMING

The Helsinki University Library started the microfilming of Finnish newspapers in 1951 on 35 mm safety film which was cellulose acetate based until the last half of the 1980's. After some preliminary projects a private service bureau called Rekolid both filmed and copied the films. Because of many kinds of problems the filming was given to Helsinki University Photographic Institute, later known as Helsinki University Audio-Visual Centre, where they also had more interest in the theoretical aspects of photography. The Institute had some scientific research activities too. The technical quality of the microfilms rose when the existing standards were introduced and taken seriously, test targets were utilized, the densities were checked with a properly calibrated densitometer, and so on.

The next change took place in 1990 when Helsinki University established the Centre for Microfilming and Conservation in Mikkeli some 230 kilometres northeast of Helsinki. Finally in 1999 The Audio-Visual Centre was closed down and the Microfilming Unit was integrated into the library. When everybody else was outsourcing activities newspaper microfilming was taken up in-house and this was a good decision. We can concentrate more on quality matters than before, and take into account the needs of digitisation and OCR. Economy is not the fundamental basis for actions even though it is still an important aspect.

STORAGE

We cannot trace the history of the first storage years of the microfilms but they might have been in the hands of the commercial vendor. The underground vaults under the Helsinki University Porthania building in the centre of the city were taken into use in 1958 and microfilms were stored in the same accommodation as books. At the beginning of the 1970's master negatives were transported to the Viikki bombproof shelter in the bedrock a few kilometres east of the centre of Helsinki. At that time the relative humidity and temperature were monitored but the records are not available any more. Since 1990 in the air-conditioned vaults at Mikkeli the environment has been well controlled: temperature 17°C - 18°C, RH ~35%. In the summer before our last renovation fluctuations of temperature and RH may occasionally have been outside these parameters.



Microfilm storage in Mikkeli

BOXING

The master negatives of the first two decades have been in brown cardboard boxes with many kinds of metal reels.



Boxes 1951-1970

The negatives that originate from the 1970's are in air-tight metal containers on metal or plastic reels.



Boxes 1970 – late 1980's

The master negatives produced during the last twenty years are in the same plastic boxes they came in. We demand certificates of photographic inertness and we have let the boxes be tested with the Photographic Activity Test. The quality has varied and current practice is to use acid-free and lignin-free cardboard boxes for the preservation of microfilms.



Boxes 1990-2005

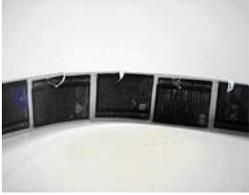
USE

We used our master negatives as printing masters until the new millennium. They were used because the library wanted to sell the best possible copies of old films of low technical quality. The second generation is always better than the following ones. This continuous use meant we were familiar with the condition of our microfilms. Besides the original technical mistakes the copying had worn the films but on the other hand in the process they were also ventilated.

CONDITION SURVEY

Why? – Expectations

Besides unsatisfactory filming, e.g. extreme density variations, some of the films were torn.



Torn edge on microfilm

Some of the films have a wavy edge, which might be due to the ancient copy machine or shrinkage of the acetate base.



Wavy edge

Almost all the old microfilms were blue or red due to the antihalation layers indicating the acidity of the film base. We wanted to collect information about the faults and defects accurately, in order to make the right decisions for future actions, and ensure the preservation of and access to the Finnish newspapers.

How did we do it?

We had carried out some surveys already in the beginning of the 1990's when we had not yet the support of IT. With the help of the ANSI/AIIM MS45-1990 standard "Recommended Practice for Inspection of Stored Silver Gelatin Microforms for Evidence of Deteriorations" ([ANSI/AIIM, 1990](#)) and the experience of the first survey we set up our inspection report forms. The information was collected in an Excel based database along with the ID information of the reels. The following tables show the report forms we used.

Table 1. Measurable values

Measurable				
Density	Density of the base	Reduction ratio	ISO no 2 test chart	Resolution power

Table 2. Inspection report form

EMULSION				BASE				OTHER		
Scratch	Separation of the emulsion from the film base	Stains and residual processing chemicals	Redox blemishes	Material	Splices	Tears etc.	Brittleness, odor of acetate etc.	Density faults	Incorrect filming	All other faults

The basis for assessment was the prevailing standard of new microfilms and the expectable quality of the copies made from these masters. We were starting our [Historical Newspaper Library](#) which was implemented by using microfilms as a digitisation platform. This project AURORA was part of [TIDEN](#) - the Nordic Digital Newspaper Project ([Bremer-Laamanen, 2005](#)) The digitised pages are treated by OCR software which necessitates even higher quality.

After the whole reel was inspected the film was given a general assessment and a remark added about future action.

Table 3. General estimation.

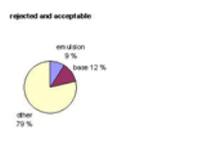
GENERAL ESTIMATION	FUTURE ACTION	
0 = good	re-filming advisable	follow-up studies
1 = acceptable		
2 = rejected		

RESULTS



General assessment

The results of approximately 6,000 reels out of 35,000 triacetate based microfilms show that only 17% of the reels were as usable as new ones. It was possible to make proper and readable copies or digitise from 30%. 53% had defects so serious that they ought to be refilmed.



Types of faults and defects

The largest group that caused rejection was filming defects such as density variation, graininess of the film, out of focus frames etc. The defects of the base were mostly tears and scratches, too many splices (up to 20 in one reel). Only in a very small minority, less than 0,5%, was there any odour of vinegar to be detected. We carried out an AD-strip survey of these films later. It confirmed the results of the sensory test. There was only a very slight change of the basic blue colour of the strips. Only in some 1970's microfilms that were kept in metal cans could the level be marked as 0,25 and in none as 0,5. These few were also detectable by odour. Our collection is only just over 50 years old, so it is possible that the degradation reaction of the acetate base has not yet reached the autocatalytic point.

DECISIONS

We have a three-stage plan for managing the newspaper microfilms:

The Rescue Project for the oldest newspapers. We have refilmed Finnish newspapers from 1771 and we are now going working through the first decades of the twentieth century. This project at present covers the newspapers up to 1945. We are considering extending it to include films created up to the 1970's, at which point the technical standards improved.

Copying project of the acceptable cellulose acetate films onto polyester microfilm. The acetate based films which are good enough for digitisation and OCR are going to be copied onto more stable film. If there are any faults they will be found during the process and any inadequate microfilms can be refilmed.

Carry out regular inspections of the microfilms. We are going to keep all the films whatever the base is. We have already during the rescue project found out that sometimes even the bound newspaper volumes lack a page or number, which is on the old microfilm. It has been possible to produce paper copies of missing pages and include them in the refilming. A certain amount of the stored microfilms will be checked every fifth year.

Even though we did not find much sign of chemical degradation of the films it is reasonable to film the oldest newspapers now while they still survive. The newspapers from the 19th century are fast becoming too fragile to handle. By refilming we gain, besides the better technical quality and the more stable base, also better bibliographic quality. We now film more complete volumes including supplements, and missing issues are borrowed from other libraries if traced. We now have an Oracle-based database to record metadata and bibliographic information, also needed for the Historical Newspaper Library on the internet.

REFERENCES

ANSI/AIIM MS45-1990. *Recommended Practice for Inspection of Stored Silver Gelatin Microforms for Evidence of Deterioration*. Association for Information and Image Management Staff AIIM International - The Enterprise Content Management Association, January 1990, ISBN: 0892582030, 27 p.

Bremer-Laamanen, Majken. "Connecting to the past – newspaper digitisation in the Nordic Countries". 71st IFLA General Conference and Council "Libraries - A voyage of discovery", August 14th - 18th 2005, Oslo, Norway.
<http://www.ifla.org/IV/ifla71/papers/019e-Bremer-Laamanen.pdf>

WEB SITES REFERRED TO IN THE TEXT

Historical Newspaper Library. <http://digi.lib.helsinki.fi>

TIDEN- the Nordic Digital Newspaper Project. <http://tiden.kb.se/>