

PRESERVATION MICROFILMING – AN ILLUSION?

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Introduction

In 1997 the Koninklijke Bibliotheek, National Library of the Netherlands, was assigned the task of coordinating the national conservation program *Metamorfoze*. One of the feature aspects of this program is the microfilming of written and printed material from the 1840-1950 period in Dutch libraries. From that time since about 10 million exposures have been made.

Following similar developments in the United States and England, it became apparent that a set of standards regarding the quality of the microfilming had to be drawn up for this program. These standards should cover not only the technical aspects of the filming and the finishing of the films themselves, but should also deal with the contents of the films, specifically the inclusion of information about the filming procedure and details regarding bibliographic and filing data and the quality controls relating to it.

The reliability of microforms

For the preservation of the contents of books and paper there are at the moment in general two possible approaches: digitization and microfilming. It has become clear that digital media will be of utmost importance, because of the great accessibility and easy availability of the stored information.

Microforms on the other hand still have the status of being the most reliable and relatively cheapest medium for long-time storage of information.

However, reliability is relative. Microforms are considered to be reliable for the moment, and only so according to our present (scientific) knowledge. It is the best we have available at the moment.

It is therefore revealing to know that prior to 1980 microforms were also considered to be reliable. And still, no one today will even think of using cellulose acetate films that were once considered as ‘archival quality’.

At the moment we have at our disposal a solid and durable polyester-based film. On top of that we now have years of experience. During that time, and based on research, standards, both national and international, have been developed regarding the qualifications for microforms and the technical aspects of the microfilming procedure: the process of filming, developing and finishing.

A survey carried out in 1991 in the US showed that more than half of the libraries involved in preservation microfilming applied in their filming program the guidelines of the American National Standards Institute (ANSI). A third of the libraries however indicated that no standards were being followed, or that the use of standards was not known.¹

The “brittle book” microfilming project of the National Endowment for the Humanities seeks to accomplish the microfilming of 3 million books. A pilot investigation from 1993 by an independent specialized company showed that although the masterfilms that were checked had no discernable loss of information and no traces of degradation were visible, one third of the films investigated had not obtained the required ANSI-resolution standard, and the background density varied from roll to roll.

Although the variation could have been caused by the condition of the material filmed, the investigators preferred to think that it was the result of imperfections during filming. They concluded that libraries did not always receive the quality of film that they had paid for.²

The starting-point for libraries and archives should always be that preservation microfilming and substitution filming meet the highest standards of quality. All the more so because possible later digitization of these films calls for optimum quality.

¹ Clareson, T. e.a., Fresh Data From over 400 Libraries Provides Initiatives for Future Action. Preservation Microfilming, in: The Commission on Preservation and Access Newsletter, nr. 39 (1991) Oktober, p. 3.

² Task Force Pursue Microfilm Audit, in: The Commission on Preservation and Access Newsletter, nr 59 (1993) August, p. 3.

Apart from this it goes without saying that when the decision to apply microfilming has been taken, usually at high costs, the filming must be carried out only once and in the best possible way. It is essential, but unfortunately often neglected to check the required quality of the films produced.

Microfilming in the Koninklijke Bibliotheek

One of the services of the Koninklijke Bibliotheek is the making, on commission, of photographic reproductions of manuscripts and printed material. Besides this, microfilming has been going on for some 30 years now, especially of vulnerable materials like mediaeval manuscripts, rare and old prints and newspapers.

About 10 years ago the Koninklijke Bibliotheek defined a set of formal guidelines for microfilming based on ISO and ANSI standards and the procedures described in the Preservation Microfilming Handbook, compiled and published by the Research Library Group (US).³ Although a lot of attention has always been given to the quality of filming and finishing, there was also no real structural inspection of the films. This lack of control was tackled at the same time. The films are now systematically inspected, using a checklist and established qualifications. On the basis of our experience in the Koninklijke Bibliotheek, it can be stated that this new approach has proved to be useful and very necessary.

The national conservation program Metamorfoze

With regard to microfilming carried out within the framework of the national conservation program, the guidelines / standards for filming have been tightened. A specification has been made based on three kinds of materials: books and periodical, newspapers and manuscript materials.

One of the most important aspects between these three guidelines is the more defined required film density value. For books and periodicals a maximum density of 1.20 -1.49 is prescribed, for newspapers 1.20-1.49 and for manuscript materials 1.00-1.20. Of course a very precise density value cannot be indicated, as this is dependent on the quality of the text and the contrast in the original.

³ *RLG Preservation Microfilming Handbook*, Elkington, N.E. (ed.), The Research Library Group, Inc. 1992. (Including a Guide to Defects on First Generation Camera Negatives, compiled by Mottice, R.).

Instead of measuring the average reflection of the whole page of the original (integral measuring), we take a spot reading of the plain background of the document (so without taking in account the printed or written characters) and adjust the exposure accordingly.

Six renowned Dutch microfilming companies were asked to make a test film. Of these companies only two could, after some additional testing, eventually meet our standards/guidelines, and could consequently be involved in the conservation program.

For this project the Koninklijke Bibliotheek expanded her own microfilming capacity from 3 to 8 cameras. The intention is that the Koninklijke Bibliotheek will film only the very rare and vulnerable collections. Microfilming costs in the Koninklijke Bibliotheek are about 40% higher than in the private companies.

A microfilm expert from the Koninklijke Bibliotheek pays a weekly visit to the different companies to carry out, by random sampling, a quality check of their production.

The reports that were made show that in the years 1998-1999 at one company 457 films were inspected and 180 of these were rejected. At the other company 229 films were checked and of these 111 were rejected.

The most important shortcomings were:

- Employees which operate the cameras have, in a lot of cases, insufficient technical know-how.
- Illumination in a lot of cases was insufficient.
- Density had not been selected correctly for a specific sort of material.
- A lot of films were cloudy (caused by developing).
- So called 'telephone' (or horizontal) lines appeared on the film.
- The wrong type of film was used in a number of cases (wrong choice between high and low contrast film).
- Illumination and resolution target was placed before instead of after the splices (in cases the targets where mounted after filming).
- Films were not always very clean.
- Films were damaged during developing, duplication or conversion.

The first conclusion is that companies still have difficulties in maintaining a constant level of quality in their filming activities and that the figures show that regular inspections are necessary. Another conclusion is that companies do not monitor the quality of their production. Apart from inspecting films our employees regularly advise during the inspection visits in matters concerning technical

aspects of the microfilming process. Knowledge is often lacking even at renowned filming companies.

In the Koninklijke Bibliotheek the quality of the films is also checked. And of course problems also occur from time to time during microfilming, caused by technical problems for example. But the internal control in the Koninklijke Bibliotheek is such that after a final inspection hardly any film is rejected.

EROMM

An important aspect of a coordinated microfilming of library material is importing the data of the titles of the filmed book, magazine or newspaper in a international accessible database. On the one hand, this is done to prevent the same title being filmed twice and on the other hand to register where a copy of a certain microfilm can be found. The Koninklijke Bibliotheek has been a member of EROMM since 1994.

Storing conditions

The problems that can arise with microforms on a cellulose acetate basis have already been mentioned. The Rochester Institute of Technology in the US did groundbreaking research concerning the storage of cellulose acetate film⁴. It has become clear that there is a relation between temperature, relative humidity (RH) and the average number of years it takes before acetic acid becomes a problem. It has been calculated for example that, at a temperature of 21° C and a RH of 50%, it will take only about 40 years before this point is reached. Stored at 10° C and a RH of 40% it will take as much as 200 years before this stage sets in. At even lower temperatures and RH an even longer 'safe' period can be obtained.

Strict conditions also apply to the storing of nitrate films. Recommended temperature for this type of film is around freezing point, with a RH between 20 and a maximum of 50%.

Microforms with a polyester carrier – the present generation of microfilm – are chemically very stable and have much better physical characteristics than those with an acetate or nitrate carrier.

⁴ Reily, J.M. ea., *IPI Storage Guide for Acetate Film*. Image Permanent Institute, Rochester Institute Of Technology, Rochester, NY, 1991. (four part publication: Booklet, Wheel, Graphs and Table).

Aging tests have shown that the life span of films on a polyester basis is as much as ten times longer than that of films on an acetate basis, stored under similar conditions.

Stored at a maximum of 21° C and a RH of 15 to maximum 40% polyester microfilm has a life expectancy of more than 200 years. To exclude all eventualities some publications still recommend storing the master film in a conditioned environment at low temperatures and a RH of maximum 35%.

Apart from the carrier, the gelatin layer on both acetate and polyester films can also cause certain problems. Most common are stains caused by mould - as a consequence of a damp environment - and air pollution.

It is to be recommended that, using a sampling technique, the condition of stored microforms is regularly checked. For this procedure there are also standards available⁵.

Summary

Microfilms will remain important as a medium for large parts of archival holdings and library collections, first and foremost for long time storage.

In view of the rapid developments taking place in the area of digital techniques it is to be expected that microforms will give up a part of their present user function to electronic availability.

The quality of the microform will for a large part be decisive for a successful symbiosis between microform and digital media. There is no doubt that the costs of a conversion of microform to digital media will depend on the quality of the microform and especially on a constant level of quality.

Until very recently microfilming companies in The Netherlands had no expertise in *preservation* microfilming. They still have two work flows: one for the

⁵ *Recommended Practice for Inspection of Stored Silver-Gelatin Microforms for Evidence of Deterioration*. Association for Information and Image Management, Silver Spring, Maryland, 1990. (ref. No. ANSI/AIIM MS45-1990).

Practice for Operational Procedures/Inspections and Quality Control of First-generation, Silver Microfilm of Documents. Association for Information and Image Management, Silver Spring, Maryland, 1991. (ref. No. ANSI/AIIM MS23-1991).

Koninklijke Bibliotheek (preservation microfilming) and a second one for their “regular” production.

Conversion of archival and library holdings to microfilm should be carried out with the utmost care, and observing all the aspects regarding quality and contents. Very important in this regard, for both in-house and external filming, is the drawing up of a set of quality standards. In this context it must be stressed that the establishment of quality criteria will be meaningless without a systematical product inspection. Only by means of this practical quality control we will be able to guard our investment in preservation microfilming. It is only then that *preservation* microfilming is not an illusion.

MANAGEMENT PRACTICES FOR THE PRODUCTION OF PRESERVATION QUALITY MICROFORMS

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I was asked to speak on microfilm quality control but quality issues are unimportant if the films are not stored and handled properly. Because high quality microforms deteriorate just as quickly as substandard microforms, I feel compelled to address storage and handling before moving on.

In visits to laboratories, archives and libraries in Mexico, Puerto Rico, Africa, Cuba, Viet Nam, China, Canada as well as United States, I found that film storage conditions range from excellent to grossly inadequate and that films are chemically deteriorating to various degrees.

Slide 1- Petroglyphs in Cave

Whether your information lasts as long as the petroglyphs of the cave dweller or whether it is as fleeting as inscriptions in the sand, depends primarily on humidity in storage.

Slide 2- Inscription in Sand

Properly processed and stored, acetate-based silver microfilms have a projected life expectancy of 100 years. Modern polyester-based products have a significantly longer life expectancy of 500 years. During those many years, high quality, low reduction microfilm masters remain human readable with simple magnification and a lightsource. These masters may be duplicated onto paper or microfilm and may also be scanned, digitized and reformatted into anyone of a number of electronic formats including the worldwide web.

Slide 3- Microfilm Scanner

Here are several of the seventeen microfilm scanners being operated around-the-clock to digitize the extensive microfilm collection in one of the world's largest storage vaults located at the Bell & Howell Company in Ann Arbor, Michigan.

Slide 4-Microfilm Storage Vault

Proper storage conditions for archival microfilm masters are cool, clean and dry. Cool is considered to be 21 degrees Celsius or less. Dry is considered to be between 20 and 30% relative humidity and clean means free from abrasive dust and harmful fumes such as oxides of nitrogen, oxides of sulfur and hydrogen sulfide.

Slide 5- Wet/Dry Bulb Hygrometer

This basic wet bulb/dry bulb hygrometer indicates the type of instrument which is best for accurately determining relative humidity over a wide range.

In addition to controlling these ambient conditions, all materials used in conjunction with microfilm such as microfilm boxes, microfiche envelopes, rubber bands, inks and adhesives should meet the requirements of the Photographic Activities Test (PAT).

Slides 6 & 7- Microfilm Enclosures

These slides show some common materials which should be tested to determine their effects on silver microfilm.

Slide 8- Film Effected by Vinegar Syndrome

This slide shows the effects of high temperature and humidity on the older style acetate-based microfilms commonly used between the early 1950's and the early 1980's. Modern polyester-based microfilms, which were readily available after the mid 1970's, are not capable of deteriorating in this manner.

Slide 9-Light Piping of Acetate & Polyester

This slide illustrates the major visual difference between the two base types. You can see how light readily passes through the edge of polyester films and how it is stopped by the acetate. A major physical difference is in the strength. Acetate microfilm tears extremely easily while polyester will not tear.

Slides 10, 11 & 12-Film Effected by Microblemishes

These slides show the effect of chemical pollutants on the silver image regardless of the base type. Both acetate-based products and polyester-based products are

vulnerable to this type of deterioration. It is accelerated by high temperatures and humidities. When the problem first appeared in the early 1960's, improper processing was blamed but we now know this is not true. Microblemishes or measles are caused by oxidants in the environment.

With respect to handling, microfilm has two distinctly different sides. The side of the film which appears shiny is referred to as the base side. The other side, which appears dull, is referred to as the emulsion side and contains the metallic silver image. The emulsion side, which is composed primarily of gelatin, is extremely thin and easily damaged. Great care should be taken while processing, inspecting, winding, duplicating and viewing microfilm. Clean cotton gloves should be worn while handling microfilm masters.

Now that we know how to achieve normal life expectancy from our microform masters, it follows that we address technical quality. Major quality parameters such as density, resolution and reduction ratio can only be measured if basic equipment such as film winders, microfilm spools, sub-illuminated viewers, microscopes, test targets, handheld magnifiers, densitometers, readers, thermometers and cotton gloves are made available to quality control technicians. Expecting laboratory technicians to produce quality microfilm without these basic tools is foolishly shortsided.

Density is a measure of how light or how dark the image appears to the human eye. When evaluating the density of a particular microfilm image, the goal is to achieve adequate contrast between the text and background. Too much density negatively impacts and even alters the shape of the characters. Too little density can cause positive user copies to appear dark and muddy.

Slide 11-Effect of Under Exposure

This slide shows the effects of under exposure.

Slide 12-Effect of Normal Exposure

This slide shows the effects of normal exposure.

Slide 13-Effect of Over Exposure

And this slide shows the effects of over exposure.

Resolution is a measure of the micrographic system's ability to resolve and record fine detail.

Slide 14-Resolution Test Chart

This slide shows a high quality test chart which is used to determine resolution. The chart contains a broad range of spatial frequencies. Resolution is measured in line-pairs-per-millimeter. These charts are routinely and frequently photographed. Microfilm images of these charts are then evaluated with a microscope to determine whether adequate resolution has been achieved. National and international standards specify the necessary resolution values to produce high quality microfilm images.

Slide 15- Effects of High Resolution

This slide was taken through a microscope and shows a high resolution image.

Slide 16-Effects of Low Resolution

And this slide shows the effects of low resolution.

Reduction ratio is a ratio of the document size to the image size. Low reduction ratios produce large images whereas medium reduction ratios result in smaller images. In keeping with the saying...**Bigger is Better**, reduction ratios for preservation microfilming should be between 1:8 and 1:14. Low reduction images are much more tolerant of the inevitable density and resolution variations. Marginal quality microfilm containing low reduction images is also much easier to duplicate onto paper or film.

Slide 17-Medium and High Reduction Ratio Images

This slide shows the relative difference in image quality between medium and high reduction ratio.

Slide 18-Low Reduction Ratio Image

And notice the improved text quality of this low reduction ratio image. This microimage was produced at a reduction of 1:12.

Obviously, in addition to inspection, testing and handling equipment, basic production equipment such as cameras, processors, splicers and duplicators are needed. Speaking from experience, overly complex, overly automated, overly sensed, computer-controlled equipment with automatic exposure control is more difficult to understand, explain, operate, maintain and repair. Micrographic

equipment should be selected by a person who has had at least some hands-on experience with such equipment. A novice may select equipment which is completely inappropriate to the documents being microfilmed or to the available facilities such as water and electrical power.

Regardless of the microfilm laboratory's level of sophistication, one or more technicians should be trained to detect the subtle differences in microfilm image quality and to understand what variables control these differences. A well trained, experienced microfilm technician should be able to evaluate the entire process without the aid of densitometers and microscopes. The eventual goal of any microfilming project is to produce a microfilm copy that will completely satisfy the needs of the most demanding end-user. If the final microfilm copy satisfies these needs, then the technical parameters and specifications for previous generations were met.

The most effective method of training micrographic technicians is to have them actually perform and understand all of the required production steps. This includes such activities as preparing the documents for filming, photographing the documents, mixing the processor chemicals, setting up the processing machine, processing the exposed film, measuring the density and resolution of the camera master, duplicating the master and finally evaluating the finished product in the same manner to be used by the end user. These steps should be correctly learned at-the-hand of an expert in microphotography. Third, fourth and fifth-hand generation training should be avoided at all costs. Such informal, low-cost training usually results in poor work habits and an incorrect understanding of important photographic concepts. And above all, a technically correct understanding of all process variables is often overlooked.

“Don't ask me why! I don't know why! Just do it!” A laboratory or project manager with this attitude or way of responding to technicians is the formula for eventual project failure. Every aspect of a person's job, including the reasons why, should be thoroughly explained by a respected, knowledgeable trainer. Each and every task within the laboratory should be broken down into its most fundamental and technically-correct elements. All variables which effect the outcome of a task should be fully explained and visually demonstrated where possible.

To assure long lasting effectiveness of a microfilm project, it is imperative that the laboratory be managed, monitored and overseen by a person who has a working knowledge of the technical aspects of the microfilming process. Unlike a flywheel or gyroscope, it will not continue to spin once put in motion. As camera and

darkroom technicians come-and-go, a technically competent person is needed to bind the operation together. It is imperative that the manager knows what constitutes a high quality microfilm product and understands the variables involved in creating such a product. This trained manager should personally inspect a sampling of the microfilm products on a regular basis and provide constructive feedback to the technicians.

With respect to technical guidelines and specifications, it is highly unrealistic to expect even a sophisticated laboratory to consistently meet the technical guidelines for preservation microfilm. Because document quality can be quite poor and because many laboratories have a difficult time controlling crucial photographic variables, preservation microfilming specifications were written to be extremely tight. We also know that part of human nature is to slightly exceed limits. We must not lose sight of the fact that the ultimate goal is to produce a product that completely meets the needs of the user. If this is truly achieved, then strict adherence to technical standards is not nearly as critical as some funding agencies would lead us to believe.

Often a non-technically oriented person is assigned to manage a microfilm project. And for some, the assignment is temporary with all continuity being lost when another person takes charge. It is also common for administrators, laboratory managers and project overseers to shun technical training. They feel their sole responsibility is to manage the project and not the process.

In closing, I would like to make several recommendations to those involved in setting up laboratories or planning and carrying-out preservation microfilming projects:

1. Make provisions for low humidity (20% to 30%) storage of camera masters before producing any microfilm.
2. Seek technical guidance when selecting and purchasing micrographic equipment.
3. See that laboratory managers and project coordinators plan to stay long term and that they are properly trained.
4. Make service copies directly from the first-generation master when the quality of this master is variable and when the number of service copies is low.
5. Use vesicular duplicating films for making service copies in situations where humidity cannot be controlled.

General Discussion

Management Issues:

Topic 4: Establishing Management Practices for Effective Quality Control and Project Evaluation

Paper Presenters:

Roger Tol

Wim J. Th. Smit

Moderator: Barbara Berger Eden

Moderator

We hear of two contrasting situations, one at the Royal Library. Wim told us about the very high quality preservation microfilming program that exists there in the Netherlands. Roger spoke about the need for an inventory of Southeast Asian microform collections to see what kind of damage there is and the plans to develop a rescue operation. So now I will open up the floor to questions.

John F. Dean

If I could just comment on the issue of quality control, particularly for the NEH produced film, some years ago we were serving a committee of NEH project managers. A survey was done about the extent of examination of film. Most of the managers did 100% inspection. Certainly what this means for most institutions is that when materials are sent to a vendor for filming, before the materials are returned, the camera negative is sent for inspection to the institution. The camera negative is inspected [and] tested for density and resolution. We already know that methylene blue testing is done. So it has bibliographic and technical standards. Now that is done certainly at Cornell, and this is certainly true I think of about two-thirds of the institutions that we surveyed. They do 100% inspection. That means every film, every frame of every film is examined, and that is before any further generations are produced, and before the materials are even returned to the institution.

Barbara Berger Eden

I can clarify what John was describing in our contractual relationship with the vendors. When the vendor shoots the book, they put the master negative on a light box and they inspect it frame by frame, in addition of course to checking the resolution and the density of the film. When they are satisfied with that, they will produce the print master and the service copy. When we receive the positive or the service copy at Cornell, our staff sits at a hand-crank microform reader and

checks that service copy frame by frame for bibliographic integrity to make sure that there are no missing pages, that nothing is skewed, and that the item that is filmed is an exact duplicate of the original book. When we are filming archival materials, or manuscript materials, scrapbooks, we actually have the item in hand because there is no pagination, we have no way of knowing if there is something missing. In addition, in our department, the staff do a 10% technical inspection of the print master and the master negative using a digital densitometer and light box to ensure that we come to the same conclusion as the filmer did when they fill in the information on a Q.C. sheet telling us what the resolution and the density is.

Melvin P. Thatcher

I have one suggestion, and then another observation. Wim mentions acetate film in his paper. I have been in many archives in the Asia area, and sometimes when you walk into an archive, you can smell the deterioration of the acetate film, the so-called vinegar syndrome. It's a very strong [smell]. In our storage facility, which is inside a mountain, in a cave, under as close to ideal conditions as we can do, we are also noticing that acetate film is beginning to deteriorate. We have embarked on a program which I would like to suggest to you folks here, and that is to remaster the acetate films. We are taking the acetate negatives and recopying them to polyester. So now what was a first generation master now becomes a second generation, but it is a master which will last for a long time. We feel like this is the best way to deal with that, to take preventative steps. Now don't wait until you can smell the vinegar. Don't wait until your films are unretrievable. You might as well plan on now getting some budgets and remastering acetate films.

Wim J. Th. Smit

How long will you wait? It is more difficult to do remastering because this acetate film becomes completely brittle, and turns to dust.

Melvin P. Thatcher

Right. The second comment I had was [about] your experience, Wim, with commercial companies. Also, Alan raised the question yesterday about our work in Southeast Asia where there are country benefits from it. When we can, we like to use local microfilm servicing bureaus, or work with the record custodian who has a microfilm unit to do filming for us. As part of your microfilming agreement, you must have quality. Part of it includes that they must achieve the quality standards that you have. So I think that even if an institution doesn't have its own microfilm equipment, but you know what the standards are, and you know how to apply the standards, then you must make that part of your filming agreement, and you must follow it up in the same way that Wim has done by inspecting the films and ensuring that they do meet the quality [standards].

Wim J. Th. Smit

I want to stress about this, because in conferences also in Europe I heard a lot of institutions say they have some standards and they deliver the standards by the microfilming project. But nobody has the professional staff to check these films. If you just give standards to private companies, they don't care because they are filming, and they are commercial. Especially if you have a large-scale microfilming program, they cost a lot of money, at least in our countries, so you have to make some extra money to get staff on a part time basis who can check for quality control the work that has been done. I know that for some years a lot of filming has been carried out for state archives and so on. At the moment, the users want to see the original because it is much better. In this respect, I want to say that quality microfilming is not for the long-term storage only. Quality of microfilming is especially for tomorrow's user. Because if a user is using a microfilm, they don't have to have a headache after an hour or one-half hour of watching this film. If you have a very good quality clear, sharp, equal density film, it is a pleasure to work with.

Chu Tuyet Lan

As I already mentioned this morning, preservation is not paid much attention to in Vietnam. The preservation knowledge of librarians in Vietnam in general is very poor. So, I would like to take this opportunity to ask the three experts about the advantage and disadvantage of microfilm compared to digitization, because in Wim Smit's paper, you deal with the two approaches here, digitization and microfilming. Right now in Vietnam, the National Archives and our institute have started doing some digitization, and we are not sure how long does digitization can last. We would like to know more information about the two methods. Thank you.

Wim J. Th. Smit

I told you also that I strongly believe, although maybe I did not say it strongly enough in my paper, that for preservation of contents and books there are two possibilities. I want to stress more that there is only one best possibility, which is to microfilm. Because for microfilming, there are at the moment fairly good international standards and everybody knows where the microfilm is now. But if you go within this field of digitization, it is a wilderness. There are no real standards, while there are some standards for storage capacity, if you use GIF or JPEG, for example, but for how to develop meta-data, nobody knows. Why do you want to digitize? Because you want to enhance the accessibility. How to get more access to this digitized frame? You have to have some kind of database to make them, and you have to scan them and to OCR them, for example. We have to do all kinds of things to make indexing for them [possible]. Listen, if you digitize a newspaper page, it is easily done. It takes perhaps 4 or 5 minutes. But to make it accessible to the public, that takes much more time. It will take 4 or 5 times more time by exposure to get access to this image. If you want to show only

images, then you can show microfilm. But access means you have to make an index and keywords. Then you have a greater accessibility, but not only by putting frames of images on the Internet. At the same time, you can go to a microfilm. Accessibility means, with keywords and OCR, this is more costly than only making digital images. The price of course, nobody realizes what is the price. For example, if you microfilm a newspaper, a frame, you put two pages. If you want to store this image, don't forget that if you scan one newspaper, you have an image of 1.6 megabytes because you can put it in a GIF group 4. But if you have a newspaper with a lot of pictures, perhaps you need to scan them in gray-scale, and then you need 70 megabytes storage capacity for one page. The costs of storage of this kind of image costs you about 7 dollars by image. So you can imagine if you have scanned two pages together, that costs you about 7 dollars, accordingly, at the moment, if you buy one terabyte of storage capacity, including some heavy computers, that costs 88,800 dollars. We just bought it last week. With one terabyte of storage, you can store about 14,000 images. Under 300 dpi resolution, GIF, and compressed, you can store on one terabyte about 14,000 images. Now that costs you 7 dollars per image.

Let me give you another example. If you store large colored maps the same size as a newspaper, every image has a size, a storage capacity of 210 megabytes. If you have a high quality image, it costs you 210 megabytes. On one terabyte, you can store 4,700 images, and this costs you 21 dollars per image. Only storage! You don't have the equipment to digitize, personnel equipment, and so on and so forth. This is the storage [situation] for the moment. In some time—I don't know, I don't have any crystal ball, but maybe 5 or 10 years—you will have to make a conversion to another medium because this computer works on the storage capacity needs of the software or something like this. But if you have a project, with a large part of maps, don't forget these images are only 300 dpi, it is not that much, but if you scan maps or newspapers, the storage capacity you need is very high—absolutely very high.

There is a lot of underestimation of how much storage capacity you need if you want to make archival quality. It is highly recommended because the infrastructure and the logistics to digitize are fairly high. People always ask me [about this] because we have a digitization repertory and one of our colleagues has been trained by Cornell institute fairly perfectly. [There is] very good training there, and I recommend their training. I think this year there is another one...

Barbara Berger Eden

There will be four in the following year.

Wim J. Th. Smit

...but they always ask me what time it costs to scan. Well, scanning time [is around] 3-4 minutes. But logistics, the things around, cost 5 or 6 times more time. Not only scanning... it is a miscalculation if you are only counting scanning. Scanning is the most simple and cheapest. More expensive is to make this material available, to make more access to this material, to describe the material, to store the material, these digitized images; it costs much much more. Don't underestimate it. It is a big trap to think only [about] scanning. Scanning can be done by everybody, but storage, making it available...

Roger Tol

What about storage conditions? Does it require special conditions, as regards humidity or temperature? Is it as strict as for microfilms?

Wim J. Th. Smit

No, not as strict as that. But what I mentioned about storage capacity was just plain storage capacity, but of course you need backup facilities like tapes and so on because if you have some sort of distortion in the electricity and so on. So, every day you have to be careful to make backup copies.

Helen Jarvis

It just seems to me that there are two things coming together here that are not clear to me, because the issues of bibliographic description and indexing are surely the same for a microfilm and for a scanned image.

Barbara Berger Eden

Just to clarify, Helen, when you scan an item, let us say you scan this piece of paper, the image will only be read as zeros and ones on your computer. Of course you want to have a marked record with bibliographic description of the item that would link you to the digital file, but in addition you need to have either meta-data or some sort of document structure that will say this is the title page, this is the author, this is the table of contents, this is page one, etc., because the computer image cannot read any of that. People write computer programs to do this, but that needs to be inserted and there is a lot of work that is being done now on how to interpret that kind of information and present it. The OCLC has this Dublin core meta-data committee that's working on that. I know, it makes your head hurt to think of all the things...

Helen Jarvis

No, I am aware of that. I have actually been involved in working on meta-data standards myself. What I am saying is, that if you are having bibliographic description or indexing, whether you scan or you film, you still need to do that.

So, I don't find the issues of bibliographic control as pointing us in one direction or another. To me, it is a little bit confusing to mix those two issues. That was one point. The second point I would like to say is on the question of scanning that there are other factors that perhaps need to be brought into mind. I am not trying to argue against filming and for scanning, but I am just saying that Roger raised the question of climate control and so forth, and those costs have to of course be born in mind with microfilming. Also, the cost of storage of film, which is also to be taken into account, not just the cost of storing computer images. In my experience with the Cambodian Genocide Program, one of the things we found particularly useful for our scanned images has been that we are able to transmit them around the world instantly. We can ftp them the very day we scan, and we know that the image is safely in the United States and Australia as well as in Cambodia that very day. Also, we can pick up one of the images and do something else with it right away if somebody needs it. So in the flexibility of handling the material, I would suggest, is some advantages of having the digitized image. I am not counterposing it to filming. I recognize the issue of long-term storage, etc., but I think that some of the flexibility of use and access of the image can be advantageous in a digital form.

Alan Feinstein

I want to get back to the issue that Roger raised about the substandard storage, and the suggestion about using hermetically sealed pouches. It is odd that in your paper, you talk about storage conditions, and according to Roger, you say that Holland is one of the countries where this is used. But I wonder if that means only the KITLV or if it also means the Bibliotheek as well. I am talking about hermetic sealing, the pouching of microfilms, as a substitute standard or storage of microfilms, because you stress very high standards and Roger is suggesting using something for which there are no standards. Roger is recommending that research be done to establish standards. If Holland is one of the countries interested in pouching, what is your library doing, or what could your library do to establish those standards?

Wim J. Th. Smit

Yesterday, I suggested to Roger to contact the Rochester Institute of Permanence to get some research done. However, Roger came to this solution because he has problems with his materials in Indonesia. It was not a problem with storage capacity in Holland, but he has problems with his materials in Indonesia.

Roger Tol

That is right. Of course, I am not opposed to standards. On the contrary, I am very much in favor of doing research and testing this vigorously. But as I said in my paper, some conditions in Indonesia are so severe, it is so urgent, that you

actually cannot wait for the outcome or results of the testing. In that case, I should propose to seal them after they have been cleaned, of course, and dried, etc., because I am pretty sure that they will be kept in a good condition for at least 10 or 15 years, and in the meantime, we can come up with other solutions. At least we know the films are safe by then. I know that because at PDII in Indonesia, in Jakarta, as explained yesterday by Mr. Blasius--he is the best advocate of this process--they have very good results. It is quite ok. So, I am quite confident about that. But that is not to say that it should not be tested. On the contrary, I think it is very important that we get hard data about this.

John F. Dean

I think the technology seems very promising, and I hope that the Image Permanence Institute is able to do thorough testing. From the report that I have read, it seems as though a lot of the testing is a little unsystematic. Burying something in a flowerpot and things like that are not very systematic. However, I do realize that it could well be a tremendously valuable alternative to the construction of vaults. However, there is something I would like to take up, and that was something of a little concern yesterday when we were discussing this. One of the reasons why we store materials in a vault is not just necessarily for the climatic conditions. We store it in a separate place. The implication yesterday was that it does not matter about the temperature, it does not matter about the relative humidity, it is hermetically sealed and you can just sort of stick it on the shelf. So I think it is really important that even if you're using hermetically sealed materials to make sure that they are actually stored in a different place than the originals or from other generations of the film.

Roger Tol

We do that. We get both a negative film pouched and we get a positive film and a user copy and we also store it in different places. I think it is also the case in PDII.

Blasius Sudarsono

I think for the success of the technique and the methodology of the preservation, PDII will be very open to be a test bed for this technology. Since we started in 1985, I think it is time for proofing again if the technique or technology is valid or not.

Moderator

Maybe we can add this to our list of action for Thursday.

Blasius Sudarsono

Actually, I would like to ask our colleagues from the Koninklijke Bibliotheek. Maybe it is a coincidence that many institutions in the Netherlands would like to make copies of preservation in digitization in the CD-ROM. For instance, actually there is a project called TANAP, which stands for Towards a New Age of Partnership. Actually, the project will digitize all VOC archives in the world, especially those which are kept in Indonesia, India, Sri Lanka, Netherlands, and South Africa. At that time, we had been told that CD-ROMs would last 100 to maybe 500 years. What do you recommend about that. Thank you very much.

Wim J. Th. Smit

My crystal ball; I miss it so much. I don't know. You can prepare a CD-ROM, which--the CD-ROM itself--is one medium. The other point is the software with which you put your media on this CD-ROM. Nobody knows what will happen to CD-ROMs. There are researches done some years ago when they said it would be 15 or 20 years, but here we are 10 years later. But this research was focus on the physical properties, not on the software on the CD-ROM. Maybe it is better, I don't know. I absolutely don't know what will happen on CD-ROM. Absolutely nobody can tell. Of course there was some article, I thought it was in Scientific America some years ago about the long term storage and archival quality of CD-ROMs, but since then, also we are years past.

Barbara Berger Eden

Just to add, I think the thing about the CD-ROM is that maybe the physical medium might be stable, but does anyone in this room have a computer that has a 5 ¼ inch disk drive? One! So keep that in mind.

Judith Henchy

We had some discussions this morning and maybe this afternoon also about maintaining filming standards in order that we could in fact digitize from film. In response to Lan's question or comment about the popularity of scanning as some sort of a distribution medium within certain countries, I wonder if somebody could address the question of standards of digitization in order to output to archival quality film. I say this because, actually, thinking of the Vietnamese case, I too can think of a good reason for digitization, and that is the poor paper quality, which results in a lot of bleed-through. With digital technologies, you could actually eliminate that bleed-through, and to then output to microfilm would seem to be an advantage.

Barbara Berger Eden

I can answer that actually. We did research in our department on producing what is called computer output microfilm, or COM. It looks just like microfilm, but it

is actually produced from a digital image. We have a report on our department website, which is www.library.cornell.edu/preservation, and if you follow the links to publications, this was a research and development grant funded by NEH. We issued a report on the standards that we expected from scanned images to produce computer output microfilm that met preservation standards, and we were successful. I am not going to go into the details of the report right now, but the recommendations are in there, and the report is available for free on the web.

Alan Feinstein

Sorry to be asking another question, but I remember that my colleague in Japan, Mr. Yasue from the National Diet Library posed a question which I thought I would be put forward in this session. Knowing that microfilm is not really user friendly, as you say, after an hour, you get a headache—readers don't like to read microfilm, knowing that fact and knowing also that there is paper that is relatively more permanent than other paper which could be used to photocopy on, and since there are now photocopy machines that allow you to photocopy without distorting the material, without pushing the book down and breaking the binding, for instance, wouldn't it be a low-tech solution for some kinds of materials in countries in Southeast Asia to invest in this permanent paper photocopying, which would allow readers access which is much easier to use?

Wim J. Th. Smit

Of course that is an option. In Europe, in Germany there is a company, and also in Switzerland there is a company who makes these reproductions, but at the moment they are relatively fairly expensive to make reproductions from these books. It is cheaper to microfilm and then to make a paper copy.

Roger Tol

Apart from that we also have practical storage problems. For instance, our repository is almost full.

Barbara Berger Eden

I disagree. I think it is actually a good short-term solution...acid-free paper, rebound and shelved in the stacks, and the brittle books we actually withdraw them because they are not rare books they are just circulating materials. It is a very common practice in research libraries in the US to do this. Susan, you are nodding your head. I know Michigan has a big brittle book program. In the case of unique materials, microfilming is the best option since you do not want to inflict any damage on the original materials that are brittle. Replacing them in a format that is faithful to the original is very appropriate.

Kieu Van Hot

My questions concerns about how to classify documents before microfilming. We live in the time of explosion of information. So my question is, what documents Do you need to microfilm? How can you check a document before microfilming? Do you need to microfilm all documents, or do we need to choose what document to microfilm or scan? Thank you.

Roger Tol

Of course you have to make a selection, and in the project Wim Smit talked about, they have on the national level (it is a national program) made the following decisions. So, for book production, the very sensitive period is 1840 to 1915. That is the period when very bad quality paper was used, so that is the first priority to film. There are such enormous amounts of books to be filmed that they have cut back the selection again, and within that period there is an even more sensitive period, I think it is between 1870 and 1900, that has got top priority. So now they have set up a program in which [for] every book, every publication which was published in the Netherlands, and that' including the Dutch East Indies at that time, at least one copy is filmed. Apart from that there are several sub-sets of collections, so for instance, they have started in the first period of this project with literary collections. It remains only a small part of it, but you have to decide it on a national level in this case, to get down to the most seriously affected publications.

Wim J. Th. Smit

We worked together with five large research libraries, and we found out by the national catalogue that if we used in these five libraries that about 80% of our national book production between 1840 – 1950 can be reached for this program. Only one copy of a certain publication is being preserved. After the publication is microfilmed, it is stored in Tyvek® folders. [Tyvek® is made of 100% high-density polyethylene.] If one publication has more editions, other editions are, or will, be filmed also. The goal is that in other libraries, or institutes, the same publication/edition is not filmed.

Roger Tol

I must add that it is a large-scale project, and it is not very popular among users. Why not? Because once a publication has been filmed, it is actually not allowed any more for the users to use the original; they must use the microfilm. For obvious reasons the users don't like this very much. We have a small collection of Indonesian literature, Dutch East Indies Literature, which will also be filmed. That means we got to the solution we will buy some high quality and very modern equipment to please our users, so we will buy some reader printers or some digital

reader printers, and we are buying an extra comfortable chair for them to sit and an easy table to write on, in order to please them.

Barbara Berger Eden

At least from what I am aware of, those kinds of collection decisions are truly up to the person who is the custodian of the collection who has created the collection, who we would call the curator of the collection. So, if you were the person who is responsible for the manuscripts from 19th century Indonesia, you would make that kind of decision on how you would want to have that item converted.

Melvin P. Thatcher

I have a question for Roger. He just mentioned digital reader printers. Could you comment on that? I guess your library is satisfied with the quality and the future of digital reader printers, or what?

Roger Tol

Well, actually, we are still in the process of buying them. Maybe you know better, but we have the decision to make between the old fashioned analogue ones or a digital one. Our vendor, who has a second hand analogue reader printer for sale, says it is the best, fantastic, and very user friendly. On the other hand, we have received information from both users and people [like] librarians who are in charge of those new digital reader printers, and they are very positive about that. So, I am now inclined to buy the new technology, also because of the possibility of scanning and storing them on floppy or CD-ROM.

Melvin P. Thatcher

I was asking you the question because this has come up in our organization. We have a lot of what we call family history centers, or branch libraries, which have reader printers, and the opinion of people in our society is that the future of the digital image is sort of like scanning itself. They feel like analogue reader printers are still a known quantity, and it might be something easier for us to maintain in the short term; in the future, I suppose we will all go to digital.

Barbara Berger Eden

I think we use one at Cornell at an off-site storage facility, and the true value of a digital reader printer is that you can send it to someone on email as an attachment, so that if you wanted something that Cornell had, it could be printed, well, sent digitally from that page right into your email, and then you could open it up and see it. So I see it as truly an access tool, not for preservation. It certainly speeds it up and then people love it because they can insert it into a document or whatever, even though it is an image and it would have to be OCR'd and used that way.

**SUMMARY OF THE DISCUSSIONS ON TECHNICAL OPERATIONS
AND MANAGEMENT ISSUES AND THEIR RELATION
TO POLICY QUESTIONS**

Judith Henchy, USA

Good morning ladies and gentlemen, fellow participants. Regrettably, John Badgley was unable to get out of the United States because of the snow, so I am having to fill in for him here as the person responsible for summing up our broad ranging discussions over the last couple of days. I want to emphasize that these are just the ideas that I jotted down, and I do want to encourage other people to come forward with ideas if I have left anything out. The objective in doing this summary is to try and synthesize some of our ideas and to work towards some key points that we would like to include in whatever resolution comes out of this meeting. We will call it the declaration for now. I think that is actually quite a good word, because we do want it to have some kind of forceful impact.

I have divided this summary into the same categories that are reflected on the program, so it might be easier for people to follow, although obviously some of these ideas actually cross categories, so it is a little difficult to decide where to put them in some cases. In Technical Operations, we have seen in the first couple of papers the quest for best practices, and that is to say to work towards good practices but within very limited circumstances in many cases. We have seen coming out of Peter Arfanis's paper the idea of perhaps centralized or cooperative facilities. We have had within that category ideas which reflect possible filming on-site but processing off-site. We have heard from Mel Thatcher how you can film on-site in some remote location and also process on-site at that remote location. Then there is the issue of what is the most appropriate equipment to use in those remote locations. I think the question here is also if we start looking towards centralized or cooperative facilities, obviously the real reason for that is that it rationalizes our resources. But the question is how much preservation activity do we need to have to do in order to justify having our own preservation equipment. That seems to be a question that comes to my mind. Peter gave us the model of using one set of equipment to organize cooperative programs with several libraries that were nearby, close to the National Archives of Cambodia.

Under the section on Bibliographic Control, we have had Tim Behrend mention the problem of access to large microform sets, and I have to say this is very familiar to us, of course, and even libraries in the United States have this same problem. We buy large microfilm sets and we often have no bibliographic access to the individual titles within those collections. This is a problem for the large microform collections that we have been filming in Indonesia. Also, coming out of that session is the clear need for some sort of union list that would enable us to

locate microform master negatives that have been created in the region and indeed outside of the region but pertaining to materials on Southeast Asia. It seems that one of the difficulties, perhaps, if we were to do this in some automated fashion would be the lack of compatible MARC standards across the region if we were going to try and do some automated union list from existing catalogues. Also, a question that was raised was the question of language. If we were to have a pan-regional union list, is there then a need for multi lingual thesauri that would describe those materials in the different languages of the region. Of course, I add here also script, which is an enormous problem, I think, still incompatibility of various...well the lack of standard coding for the non-roman scripts of the area. We hope in fact that UNICO will offer us some hope on this question.

On the question of film storage, we have the issue of whether a centralized facility the answer to our problems in order to provide the facilities that are required under the RLG and other standards for storage?. This is obviously a very expensive proposition as we have heard, but are there other answers to this problem? One such answer may be creating micro-climates by using the vacuum-sealing technology that we have seen demonstrated by our colleague at PDII and Roger Tol. I think that we are all agreed that this may indeed be a very simple and cheap solution, but that we would like to see more research carried out. I think [that in] whatever declaration that comes out of here, we should certainly emphasize the need for further research, not only on that technology, but I think there are a number of technologies which have developed in ways that do not reflect the needs of the countries in this region. Perhaps we should look towards a redirection of some of the preservation research that is going on worldwide, and seek some funding for those kinds of issues.

Under Technical Training we have had O.P. Agrawal explain that there are different levels of training and that certain technical functions can be easily learnt within fairly short periods of time, whereas other technical expertise is much more difficult to acquire. So, we should look towards, perhaps, rational differentiations between those different types of training and look towards programs that address that. There is the model of training trainers, which seems to be a cheaper model, to train people very well and have them go out to their regional sites and do the training on-site. Again, we have the model of national level regional training, as Mrs. Bac described in Vietnam, where her library within the southern region is responsible for training in a fairly large area. Regional training facilities--again, is there a need for one centralized regional training facility within Southeast Asia, or is this something that could be distributed across a number of facilities within the region?

On the question of Management Issues, we have management training, and one issue that was raised was the need for study tours for higher levels of staff and administrators. This seems to be more practical given that those administrators cannot really leave their posts for long periods of time. But, we have heard emphasized the importance of good management for many projects which have failed because of the lack of interest or the lack of understanding on the part of management, even when we've got very highly skilled technical staff doing the work. We have Acharn Rujaya saying that he would like to see these programs linked to degree awarding institutions so that those participants can really become part of a corpus of trained professionals. Lastly, [is] the question of how to retain good staff once they are trained. We have seen this repeatedly in the region that good staff are then trained and they are lured away to higher paying jobs or jobs that pay something, in some cases, as opposed to some of the institutions in the region which really are unable to pay salaries to their civil servants.

On National Level Planning, we have heard that there are many important cultural materials that are not under any centralized curatorial control. We have heard Khunying Meanmas suggest that we should have public campaigns to encourage people to value those cultural materials more highly and to regard them as being part of their national patrimony, and to perhaps give them to local regional repositories, or as an alternative model, should those materials be somehow preserved better in-situ? We have heard this example of the monasteries which have large collections. Perhaps that any preservation structure that is put in place for the region should work closely with those private or religious repositories and assist them in creating higher standards of preservation. We have heard questions asked about whose responsibility is it-- the cultural heritage of the country, is this really the property of all humanity? Is this global property or is this national property? If we have global access, we also have global responsibility. We have seen from Mrs. Concepcion the need for perhaps model international preservation project agreements; as various countries try to work out arrangements with outside funders and collaborative projects, it would be very useful to have model agreements that they could refer to. We also need to reach out to an expanded preservation community. We have heard that we are not doing a good job in including the products of the mass media, for instance, in our preservation efforts. This would be a very important constituency, to have those people supporting us in our efforts.

We have seen that national bureaucracies can be burdensome, and that often their attempts to protect the national interests can even work against them. They are unable to prevent plunder, and I have even seen that sometimes when library security is so high that scholars are prevented access, that in situations where the staff are so poorly paid they can easily be bribed, and those materials? are simply

lost from the library through theft. We have seen the difficulties of working across ministries. I think this is very important. Many institutions are under different administrative structures. So, should we be looking towards a national commission that can work across these ministerial boundaries. The role of a national commission would be, for instance, lobbying to form a powerful group with influential ministers, scholars, archivists, librarians, who can bring these issues to bear, bring these issues to the fore in the national arena. We have seen how we need to encourage national collections' needs assessments and surveys, and this could also be a role of a national commission. We then have the question of whether we should also encourage a regional commission on preservation and access, again, with leadership from scholars, and the need to be independent but also having authority to influence the national agenda.

Moving onto regional cooperation, we've looked at some of the regional models that already exist. We have looked at IFLA's existing PAC structure, and we wonder whether that could be strengthened in some way to serve the region's needs better. We have looked at SARBICA as a model, the Southeast Asian branch of the International Commission on Archives. Also, CONSAL is another regional librarians group, which could perhaps be useful in this quest for better preservation standards. We have seen the need to create a regional union list of microforms, and we have heard from Kim See that it is possible to digitize the old master list of microform masters that SARBICA and CONSAL published in the 1970's. We have also heard that perhaps an e-clearing house of information that would replace the old microforms newsletter that the ISEAS library was responsible for publishing up until the early 1990's. This would distribute news of projects in the region, would provide perhaps access to useful tools, such as the model project agreement, evaluation tools, and information on where to buy products and supplies. We have also talked about how such a website could be funded, and the ASEAN's Committee on Culture and Information, I believe that is the COCI sub-committee of ASEAN, and what role that might play in supporting our efforts here in both networking and establishing training. We have heard how not only state bureaucracies can be a hindrance, but also some of these regional can sometimes not be flexible enough to meet our needs, and we see this in all bureaucracies. So, if we were to set up a regional structure, how would we organize that structure in such a way that it would be free of that bureaucratic inertia, but at the same time would have enough authority to be meaningful. Under regional cooperation, we have heard Acharn Rujaya suggest that we might look towards a networked regional center with distributed responsibilities. This seems, perhaps, to be a more practical model to start with than having everything centralized in one place.

We have looked at funding models, and we have seen of course that there is a need for self-sufficiency of some type, even within consortium models, as we see with the SCOM example from Malaysia, that of course microfilming does not come free to anybody. However, in situations where we see surcharges put in place by governments, can we in some way circumvent these surcharges by using an exchange program, exchanging microfilm instead of paying those prices? We have heard from the Ateneo de Manila University that in fact it is quite easy to obtain self-sufficiency. By the time you have sold four reels, on your fourth copy, you have actually attained self-sufficiency, at least within the funding model that they are able to sustain at the University Ateneo de Manila. We have looked briefly at questions of evaluations, and we have heard from Roger Tol that this is very important, and in fact evaluations of some of the filming projects in Indonesia have shown that the films were improperly washed at the time of production, and that those films are stored in substandard conditions and are indeed in grave danger of being a total loss. So we need to evaluate films at the time of production, and also to continue to evaluate our preservation structures.

That is what I have up to this point, and I think we are just about right on time. As I said at the beginning, I really encourage people to come forward with ideas, and perhaps we should have a flip chart where people can just put up their ideas that they would like to see included in the declaration. There is a flip chart in the back of the room apparently, so put your suggestions up on the flip chart. We hope that all those ideas will be included in our closing discussions tomorrow, and we really do want to come up with a final declaration of some sort. I urge people to think about these issues very seriously in the next few hours, and see what it is that we should suggest. Thank you.

FORMING POLITICAL SUPPORT AND CONSENSUS NATIONALLY AND INSTITUTIONALLY

Daw Khin Khin Tun
National Archives of Myanmar
Myanmar

Myanmar

1. Southeast Asia is rich in historical, cultural and spiritual values of a distinct nature and the region is blessed with irreplaceable treasure in the form of traditional palm leaf and folded paper manuscripts depicting the legacy of a particular period in the region's history. These manuscripts are unique and they not only assume an important position as treasured legacy from the past but are indeed the precious cultural heritage of the world. This being the case lively discussion and exchange of ideas thoughts and views on various possible practices of preservation and conservation of these cherished treasures are an ongoing process as more compact and efficient technology makes its appearance.

2. At present Myanmar is implementing an effective preservation management programme on a national level under the guidance of a National Commission for Preservation of Traditional Manuscripts. It is made possible only after a consensus is reached and a total political support established to rediscover the national identity and its incomparable heritage.

3. In Southeast Asia, because of the tropical climate and high humidity, deterioration of traditional manuscripts either in original form or in microform are quite often commonplace and we have spared no effort to preserve them carefully.

Moreover it is needed to safeguard them from adverse effects of natural disaster as well as unwanted disturbances of insects and human beings and the practice of microform preservation and conservation is introduced to meet the need. The advantage of microform preservation and conservation practice is

- (1) getting physical care of the records as well as safeguarding of the content.
- (2) the ease of keeping the microform records in one place.
- (3) the lower cost of making copies periodically.

4. The operation of conversion into microform and conservation work in a number of places has met with many problems and difficulties. To make preparation for preservation work, we have to evaluate and assess the materials held in many places. The work of cleaning, selecting and listing can be done as field work. When operating the field work we have to organise a team consisting of staffs from different departments dealing with the same subject and the team has to reside at least 3 (or) 4 weeks in the same area. We have to request authorization the authorities like Religious Affairs Department, because in Myanmar there are many monasteries which keep the traditional manuscripts in safe custody and much work can be done with the co-operation the local monasteries.

5. Thus it is obvious that the problems could be solved only after we have secured political support and consensus nationally and institutionally. Bearing this in mind the members of the National Commission for Preservation of Traditional Manuscripts in Myanmar have tried repeatedly to secure this cooperation.

6. The Commission has successfully laid the groundwork to achieve the following:

- (1) to let the people know the value of the documents which are part and parcel of the national heritage.
- (2) to educate the people to practice the preservation and conservation of documents either by traditional or modern methods.
- (3) to get the help of the people in converting the information into microform and subsequent conservation.
- (4) to persuade the people to show the place where the valuable documents are kept.
- (5) to get co-operation of the sister departments dealing with the same objective.

7. To accomplish the above, permission and guidance of the Government is essential and one must try to get the co-operation of the authorities concerned. Support from the Government can be secured by the following means. Convincing the authorities of :

- (a) the importance of the documents which are part of the national heritage and which will help in national reconstruction.
- (b) the importance of the work of preservation and conservation of the national heritage as a national obligation.
- (c) the possibility of the documents which are of old age going into total disrepair.

- (d) the importance of getting guidance and help from the government and authorities concerned.
- (e) the necessity of public help under the guidance of the authorities concerned.

8. In Myanmar, implementation of effective preservation and conservation is done under the supervision of a National Commission comprising of members of different government ministries and nationally recognized individual experts. Evaluating and listing of the palm leaf manuscripts of which we have covered a good mileage are done by cooperation of staffs of the different government departments and the process of micrographic and conservation works are also done by respective departments.

9. At the local level, field teams sent out by the National Commission have to obtain support and cooperation from the local authorities including:

- (1) Librarians and historians of the universities and colleges of the 14 States and Divisions of the Union of Myanmar.
- (2) Township Religious Affairs Officers.
- (3) State, Division and Township Peace and Development Committees.
- (4) Township branches of Myanmar Writers and Journalists Association EC members, i.e. the writers and authors of a particular region who know where the manuscripts are located.
- (5) Local Information and Public Relations Officers.
- (6) Sometimes logistical support from the local military authorities.
- (6) Local monks, especially the Sayadaw or Presiding Monks of the monasteries where manuscripts are still kept.
- (8) Sometimes Trustees of Pagodas and monastic establishments.

10. Preservation and Conservation works are discussed in meetings among the local members as well as in the seminars convened in countries of Southeast Asia where documents in similar climatic situation are kept. On 15th and 16th December 1997, a Seminar on the Preservation and Conservation of Traditional Manuscripts for the 21st Century was held in Yangon, Myanmar, organized by SARBICA (Southeast Asian Regional Branch of the International Council on Archives).

The Government of Myanmar offered a great deal of support for this seminar by giving fiscal help as well as experts from various government ministries and organizations of different fields of specialization.

11. At the Seminar, different countries of the Regional Branch of Southeast Asian Archives discussed the experiences and practices performed by their respective countries. The results of the discussions during the various sessions and Resolutions adopted at the Seminars are beneficial not only to archivists and members of SARBICA, but also to the persons who are responsible to perform the preservation and conservation works of different fields. Resolutions regarding the traditional manuscripts are as follows:

- (1) To identify collections of traditional manuscripts in SARBICA Countries; these collection should be listed and included in the Memory of the World Programme of UNESCO.
- (2) To organize professional training programmes on the conservation of traditional manuscripts.
- (3) To bring in experts and consultants knowledgeable in traditional and modern methods of preservation and conservation of traditional manuscripts within and outside SARBICA.
- (4) To compile and publish guides and inventories on traditional manuscripts and facilitate access among SARBICA countries.
- (5) To publish selected rare traditional manuscripts in the media of print, electronic, microfilm etc.
- (6) To organize programmes promoting public awareness of the valuable traditional manuscripts which are our national heritage.
- (7) To preserve intact the original media and physical form of traditional manuscripts.
- (8) To develop special studies on technique, method and material used in the conservation of traditional manuscripts, which are relevant to SARBICA members.

12. The Seminar was of great help for preservation and conservation practices in Southeast Asia, and at present, the member countries are in an implementing stage of the resolutions of the Seminar. After completion of the respective works of the resolution, a definite advancement in practicing preservation and conservation work will have been achieved, and special studies on technique, method and material used in the conservation of traditional manuscripts, as well as paper manuscripts and others, will have borne fruitful results. It also will have contributed a great deal of help to the improvement of work of the National Commission for the Preservation of Traditional Manuscripts of Myanmar.

13. Thus, we may conclude that to have an efficient and successful technical operation of preservation and conservation work in any form requires as a basic pre-requisite a programme of forming political support and consensus nationally and institutionally.

