Winter January, 2017

CONSERVATION WORKSHOPS IN DJENNÉ, MALI, 2015 and 2017

Michaelle L. Biddle

CONSERVATION WORKSHOPS IN DJENNÉ, MALI, 2015 and 2017

Djenné is an ancient city located on an island in the Bani River in central Mali. Djenné and the better known Timbuktu were both historical centres of trans-Saharan trade and Islamic learning from the 12th century. The Djenné Manuscript Library is housed in a traditional Djenné style mud building just to the south of the Great Mosque. It was built in 2006 with the support of the European Community Fund and the United States Embassy.

Djenné Library

The management committee is made up of notable Djenné residents. They ensure that the library remains the property of the entire population of Djenné and continues as a safe repository for the more than 9000 manuscripts from private family collections that are housed there. The Djenné Library manuscripts remain the property of their owners. These manuscripts are in Arabic script and follow the West African tradition of being unbound, which enables a single manuscript book to be shared by several individuals. Unfortunately, many Djenné manuscripts were acquired by the Ahmed Baba and Mamma Haidera libraries some years ago and they have not recorded the Djenné provenance.

29 October - 2 November 2015 – I conducted a training workshop in Djenné supported by Gerda Henkel Foundation. This is the report from that workshop posted on the Centre for the Study of Manuscript Cultures, University of Hamburg, Timbuktu Project website www.manuscript-cultures.uni-hamburg.de/timbuktu/index_e.html

"Ms Michaelle Biddle, Head Conservator at Wesleyan University Library, conducted training in basic conservation and box making at the Djenné Manuscript Library. The training took full four days from 29 October to 1 November and a morning session on 2 November. Ms Biddle introduced a non-adhesive type of boxes made of heavy weight corrugated cardboard. More details are in Michaelle Biddle's report. The successful outcome of the workshop is illustrated in these pictures showing the progress in box making eight weeks after the workshop."

Flooding, high ambient humidity and the use of traditional inks using saturated solutions of gum Arabic and gum tragacanth has led to many of these Djenné Library manuscript pages sticking together. I was

asked to conduct another workshop training Ibrahim Nobo and Ibrahim Nalion of the Djenné Library conservation section on how to separate these pages. Maria Louisa Russo, co-manager of the CSMC Timbuktu Project graciously provided logistical and translation support. This workshop was also funded by the Gerda Henkel Foundation.

Ibrahim Nalion, Michaelle Biddle, Maria Luisa Russo, Ibrahim Nobo
in the Djenné Conservation and Cataloguing Section

HUMIDIFICATION WORKSHOP SYLLABUS – focus on specific techniques appropriate for separating stuck manuscript pages in the Djenné environment

Djenné – 15 – 19 January 2017 Michaelle Biddle

TABLE OF CONTENTS:

DEFINITIONS:

HUMIDIFICATION is the introduction of moisture directly or indirectly into the design, writing and/or paper support .

Other important terms - Glossary of Paper Degradation:

Abrasion - worn away by friction, scraped or scuffed
Accretion - substances accumulated on the surface
Aging - natural or chemically assisted changing with time
Breakage - disruption of surface by force or as result of age and fragility
Cockled - wrinkled or puckered, usually as a result of high humidity, water damage or repaper papers not drying evenly
Corrosion - gradual destruction by chemical action
Crease - bent or folded over and pressed or crushed
Delamination - separation into thin layers, peeling away
Dirty - marked by or covered in dirt or pollution; soiled
Discoloration - change in the original or desired color; fading, darkening, yellowing
Distortion - bending, twisting, stretching, or forcing out of normal shape
Dusty - covered with or containing dust
Embrittlement - becoming brittle or fragile, usually as a result of aging or oxidation

Fading - losing color or brightness gradually
Fold - bend or crease with resulting damage to the fibers
Foxing - random reddish or brown somewhat circular staining of fibers, perhaps due to mineral deposits from water used in manufacture or organisms which feed on those minerals
Frass – debris or excrement produced by insects.
Ink corrosion – as iron gall, tannic or iron water ink slowly deteriorates, turning from blue-brown-black to dark brown, it can "eat" its way through to the back of the paper. This can eventually lead to the total loss of the paper wherever the ink was applied
Insect damage - losses, accretions, flakes, or stains due to activity of insects
Losses - also called lacunae: holes or missing edges
Mat burn - discoloration of edges that have been in contact with acidic mats or acidic paper
Mold (Mould) - fungus that causes organic matter to decay
Oxidation – a chemical process whereby oxygen combines with an element and changes the appearance of that element - example when iron reacts with oxygen iron changes to rust
Pulpy - soft or spongy condition due to manufacturing process and/or aging; floccular
Puncture - hole produced by sharp object such as a staple or pin
Scorched - discoloration of the surface caused by heat
Shelf tear – a tear with an over and under flap
Skinned -
Soiled - covered by material which may become embedded in the fibers, dirty
Splitting - separating along a fold, or delaminating
Staining - chemical discoloration of fibers, can be result of foxing, adhesive residue, tape, mold, or mat burn
Tear - ripped or pulled apart, usually with stretched, ragged edges
Tideline - stain from the accumulation of chemicals at the edge of a liquid spot
Warp - a twist or distortion out of shape


Demonstration using 2% Methylcel to flatten crimped pages


Separating humidified sheets with a Teflon lifter

PURPOSE OF HUMIDIFICATION
Conservation of support to realign paper fibers in order to reduce sheet distortions such as cockles, strain or rolling; realign deformations in the sheet such as creases, folds and ridges; reestablish original configuration of the paper, such as original flatness or embossing created by use of a ruling board (*mistar*). Conservation of media to consolidate pigments by reviving aqueous binders; relax desiccated gums and inks. Restore moisture content of desiccated papers. Soften support so that a new dried configuration can be achieved. Increase moisture content of inks in order to separate stuck sheets.

FACTORS TO CONSIDER when deciding whether or not to humidify and in choosing humidification technique:

Sensitivity of Support and Media

A. Sensitivity of inks, dyes, media, gums, paper coatings, and surface finishes to vapor or liquid moisture. The media's solubility in water should be considered when selecting the method of humidification. Testing media sensitivity to treatment solutions using blotting paper. Gentler methods of humidification should be used for highly soluble media, which may bleed or sink into the paper support if over-humidified.

B. Paper hygroexpansivity. The degree to which paper expands when humidified can dislodge inks and pigments from the paper sheet.

C. Inherent memory of paper which might be necessary to retain plate mark and/or embossing and/or hard, calendared surfaces of some modern papers.

Tendency of support or media to water stain

A. Presence of foxing spots

B. Presence of active mold: mold can be expected to proliferate in a humid environment

C. Presence of adhesive residues: when damp the adhesive may be reactivated or possibly bleed through paper support

Speed of Humidification

A. Degree of paper degradation: faster or direct humidification may cause damage to degraded, brittle paper fibers than slower methods

B. Possibility of uneven expansion of supports: in multiple sheet constructions each sheet may expand at a varying rate and to different degrees and if done, slower humidification may be more controllable

C. Condition of media and relationship to support: media such as oil paint, or heavily pigmented inks on paper may not be well bonded to the support and may expand differently from it

D. Degree to which humidification is desirable

E. Efficiency in accomplishing humidification

MATERIALS AND EQUIPMENT:

Water

A. Should be free from contaminants harmful to paper such as chlorine, iron, copper, and debris, etc. We used bottled distilled water.

B. Should not be allowed to stand for long periods without a fungus inhibitor (thymol)

Equipment

Should not provide sources of iron, copper, chlorine, etc. which may be dissolved into water used for humidification.

A. Container or tray

1. The container or tray must be sufficient depth that water or damp blotters may be placed at the bottom with a rack over the blotters and then a cover over the container to seal the environment from loss of humidity. Containers may include sinks, enamel trays, photographic trays, or wood slats adjusted to the desired size and covered with polyethylene or another tray.

2. A rack is secured above the base of the tray so that it does not come in contact with the water supply yet maximizes the circulation of air within the chamber. Care must be taken that water does not reach the surface of the rack. Racks may be made from light diffusing grates or floating screens.

3. A tray cover is required to seal the environment. The more complete the seal the higher the relative humidity. A transparent cover enables observation of the object during humidification. Covers may be made from another tray, polyethylene or polyester film, Plexiglas, or other clear, rigid plastic sheet.

4. Additional variations of the above include inverted jars with damp blotter insert

B. Water application:

Spray Equipment produces non-uniform spray, large to very large droplets may be present. Water droplets much larger than dust, which may produce 1/16" to 1/4" wet spots.

1. Hand pump sprayers: Use "tightened-down" tip settings and strong even strokes for even coverage. Suitable for dampening blotters.
2. Small watercolour type mister: Suitable for smaller application. Has a fine mist.
3. Smaller brushes for localized use: Requires special skill to use

Humidification chamber, humidification bottles and assorted equipment

HUMIDIFICATION TREATMENT VARIATIONS

1. Humidity Chamber Techniques

Overall introduction of moisture through vapor phase in contained environment. Speed of humidification will be influenced by: ratio of air volume to water volume; exposed surface area of moisture source; temperature of contained environment (warm water will speed process as well as increase chance of condensation in chamber and mold growth); quantity of hygroscopic materials in contained environment; moisture content of hygroscopic materials in environment.

A. Water is introduced at the bottom of the tray either by creating a pool or laying down a damp or wet blotter

B. The object is placed in the contained environment generally resting on a blotter or Holytex or both. It may be necessary to put the object in a rolled or folded state until it becomes sufficiently limp to allow opening

C. The length of safe and necessary humidification is dependent on the characteristics of the object; however longer periods of exposure may cause the growth of mold within the chamber. Thymol in the water supply may diminish this threat. Non-soluble media may eventually bleed or soften after long exposure to very high humidity.

D. Condensation of water within the chamber may be a danger to object being humidified. This danger may be minimized by avoiding liquid or water which is warmer than the outside environment. The sealing cover can be lined with a blotter or the object can be placed between blotters, although this reduces visibility.

2. Inverted jar technique – for use on localized areas
   A. Blotter at bottom of wide mouth jar is wetted. It is secured at jar bottom.
   B. Jar is inverted over area to be humidified.

3. Methyl-cellulose (Methylcel) Poultice Pak Technique – for small localized areas

A. Preparation of Methylcel poultice: 1 part powder to 7 parts water (warm water is best; prepare at least 24 hours in advance of use. Can be kept indefinitely in tightly sealed jar.

B. Preparation of pack: spread small quantity of Methylcel poultice the size of the area to be treated onto Holytex support.

Treatment steps:

1. Completely cover object to be treated with another piece of Holytex
2. Place poultice pack over area to be treated
3. Cover pack with plastic film
4. Be sure to check the object often - at least every 5 minutes.

4. Brush Application Technique- for small localized areas

A. Type of liquid: water only or ethanol and water combination (30% ethanol/70% water)or 2% methyl cel solution

B. Brush patterns.

5. Spray Technique

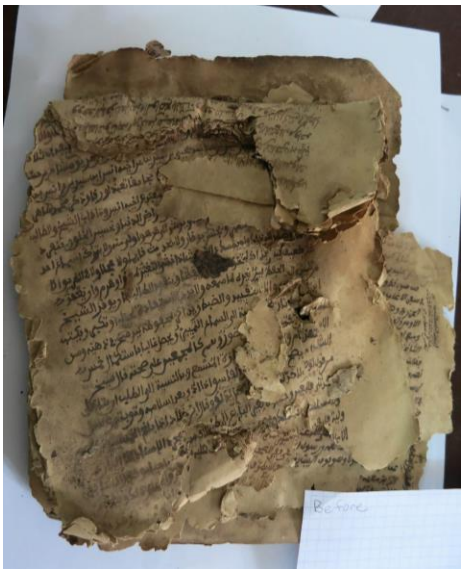
Used to achieve quick and efficient wetting with control over the amount of moisture. Need to consider droplet size, uniformity of droplet size, and speed of application. With either a hand-pump sprayer or a watercolor type mister this method can be used to wet blotters but not directly on manuscripts.

Water is usually sprayed in alternating layers (obverse and reverse) in whatever scheme is required.

General Treatment Steps:

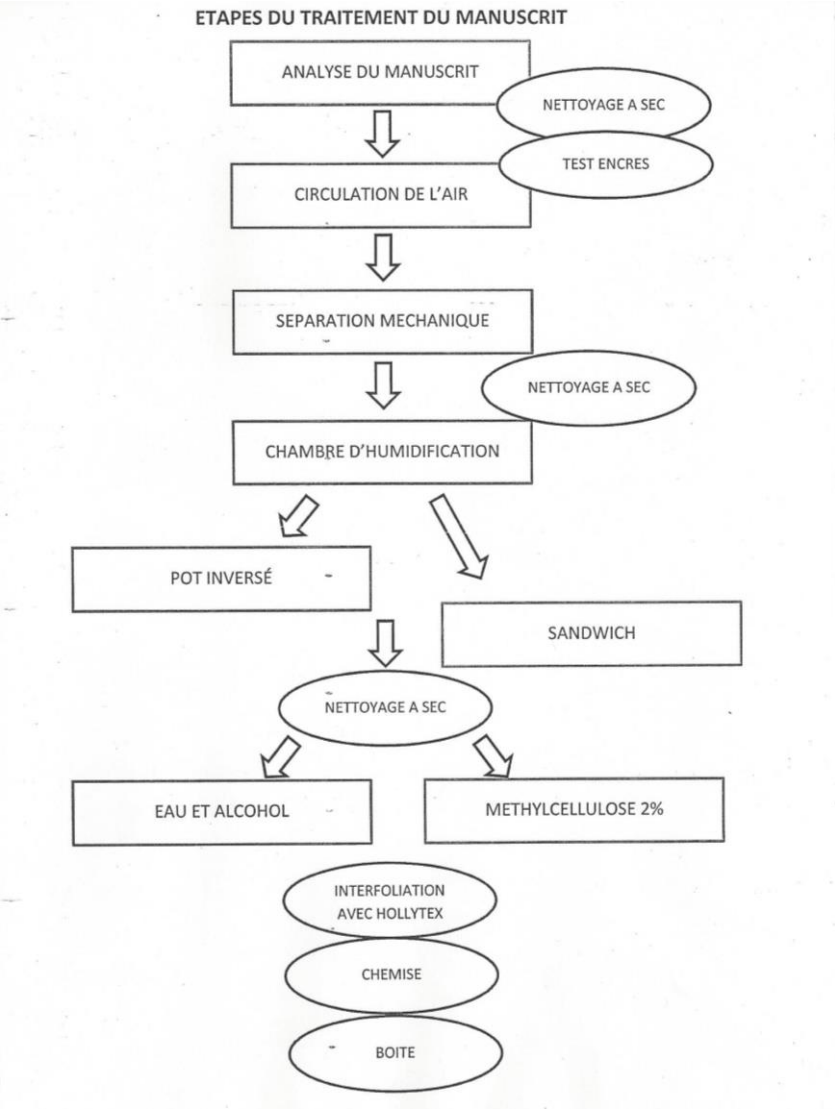
1. The spray is applied in overlapping rows until the first coat of moisture has been applied to the entire blotter
2. The blotter is then turned over and the other side is sprayed.
3. Continue as above until the support has become as limp as required.

This course syllabus was translated by Maria Luisa into French. She and I also created a flow chart poster – Steps of Manuscript Treatment - to aid in decision making after we left.



Before treatment

After treatment



They were also instructed as to the care, upkeep, and organization of the provided tools and materials.

Each technician has their own box of tools

Storage cupboard with supplies organized, boxed and labeled

During the workshop there were several delegations who visited to see the results, something that is encourage as a way to raise awareness of the importance of the manuscripts of Djenné and to promote positive attitudes towards the library.