

## 2) 岩手県指定文化財吉田家文書の修復

岩手県立博物館で安定化処理が施された吉田家文書には、料紙の腐朽が進み、複数丁が固着しているところや、料紙が碎けて抜け落ち、穴があいてしまったところが多数観察されました。汚れに加え真菌や細菌の繁殖に起因するピンク、青、紫色の色素が斑点状に沈着している部分も数多く見受けられ、腐臭も少し残っていました。国立国会図書館では、文書を長期に渡り安定的に保存可能な状態にすること、さらに、学術資料として閲覧、展示等の利用が可能な状態にすることを目的として、修理を行いました。真菌や細菌の色素については、紙の脆弱化を招く恐れがあることから今回の修理ではその除去を見合わせました。以下に修理手順を説明します。

### 解体

まず綴じ糸を外し、洗浄をはじめとする一連の処理に耐えられるかどうか、すべての丁の状態を確認し、処置内容を検討しました。腐朽が進み脆弱化した料紙をそのままの状態での処理を進めた場合、一層破損が進行する恐れがあります。そのような料紙については、あらかじめレーヨン紙とメチルセルロースで表から仮止めを行いました。吉田家文書については過去に修理が行われていて、その折ほとんどの料紙に裏打ちが施されましたが、今回の修理では裏打ち紙はすべて除去しました。劣化した紙どうしが付着してしまっただけの部分については、必要に応じて

## 2) Restoration of the Yoshida Family Documents, a Designated Cultural Property of Iwate Prefecture

Among the Yoshida Family Documents which had been stabilized at the IPMM, many of them had multiple pages that had stuck together as a result of advanced deterioration, and holes created by decaying and pages that had fallen out. In addition to soiled spots, partial deposition of pink, blue and purple pigments in dotted patterns caused by fungi and bacteria growth was observed in many of the documents, and a slight putrid odor was still present. At the National Diet Library, our goals set for the conservation of these documents were to improve the conditions of the documents to enable long-term, stable preservation, and furthermore to enable browsing, exhibiting and other academic use. Removal of fungal and bacterial pigments was not performed in our project since it was likely that such treatment would further weaken the pages. Below is a detailed description of the procedure.

### Disassembling

First, the binding thread was removed and the conditions of all the pages were checked to see if the documents could withstand a series of treatments including washing. Then the treatment details were evaluated. Pages that had weakened because of advanced deterioration could have been damaged further if they were treated directly. Such pages were temporarily reinforced from the front side using rayon paper and methylcellulose prior to the restoration treatment. The documents had been repaired in the past, and most of the pages had been lined at that time. In our project, all such lining paper from past treatments was removed. Parts where deteriorated pages had stuck together were slowly and gradually separated while dampening them with steam whenever necessary.

蒸気で加湿しながら、ゆっくりと時間をかけてはがしました。

### 洗浄作業

洗浄作業では、水洗いを2回行いました。1丁ずつ広げて不織布にはさみ、10丁を一組にします。それらをザルで挟んで固定し、最初はぬるま湯、次に水につけおき洗浄しました。すでに岩手県立博物館で実施された安定化処理で数回の洗浄が行われましたが、今回は綴じ紐を外し、広げて洗いましたので、丁の内側の汚れ、綴じ紐部分に残っていた汚れや砂も落とすことができました。

### 乾燥作業

洗浄後、再び1丁ずつ広げてしわをのばし、ろ紙に挟んで乾燥させました。過去に施された繕い補修は可能な限りそのままにしましたが、補修に使用した和紙がずれていたり傷んでいたりしたものや、大きすぎるものは取り除き、再度、和紙とでんぷん糊を用いて補修し直しました。

### 漉きばめ機による補修

大きく破損した部位や、カビの発生で著しく腐朽し穴があいた箇所は、漉きばめ機で補修しました。

漉きばめ機は、和紙の繊維を分散させた水を欠損部に流し込むことで、欠損部を埋めることができる機械です。裏打ちと比較すると、糊を使用しないためしなやかで、修理後に厚みが増えないことが特徴です。台の下から吸

### Washing

The documents were washed twice by water in the washing process. Each page was unfolded, sandwiched between nonwoven fabrics, and then ten pages were grouped together in a set. Those sets were fixed by sandwiching them with strainers, and washed by soaking them in lukewarm water first and then in cold water. While washing had been performed a few times in the stabilization treatment performed at the IPMM, the unclean parts at the inner side of the folded pages as well as dirt and sand that had remained around the sewing thread were successfully removed by this washing process, as we pulled out the thread and cleaned the pages in an unfolded state.

### Drying

After washing, we took out each page again and smoothed out the wrinkled parts. Then each page was sandwiched between filter papers and dried. While the treatments performed in the past were left as they were to the extent possible, the Japanese paper fragments used in the previous mending which were misaligned, damaged, or too large were removed, and those parts were re-repaired using Japanese paper and starch paste.

### Repair using leaf casting machine

A leaf casting machine was used to repair large damaged areas and missing areas caused by marked deterioration due to mold growth.

The leaf casting machine was used to fill in the missing areas by pouring water containing dispersed Japanese paper fiber into the gaps. Compared to the lining, areas treated by this method were smoother since paste was not used and the thickness was not increased. There are two types of leaf casting machines: the suction type which draws the liquid using a suction device



図1 洗浄前の準備  
Fig. 1 Pre-washing preparation

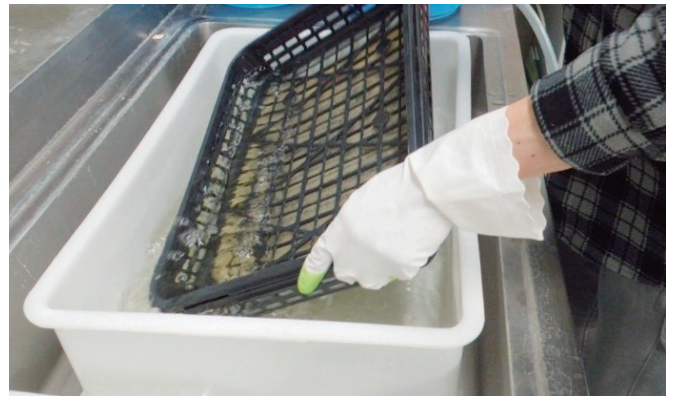


図2 洗浄作業  
Fig. 2 Washing



図3 しわや折れをのばす  
Fig. 3 Flattening out of wrinkled and folded areas

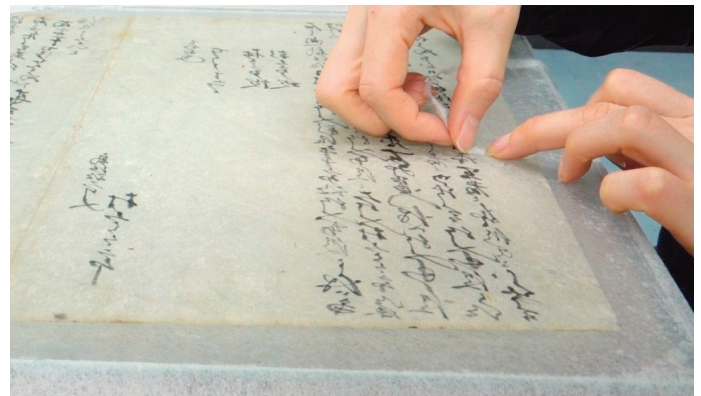


図4 つくろい  
Fig. 4 Mending

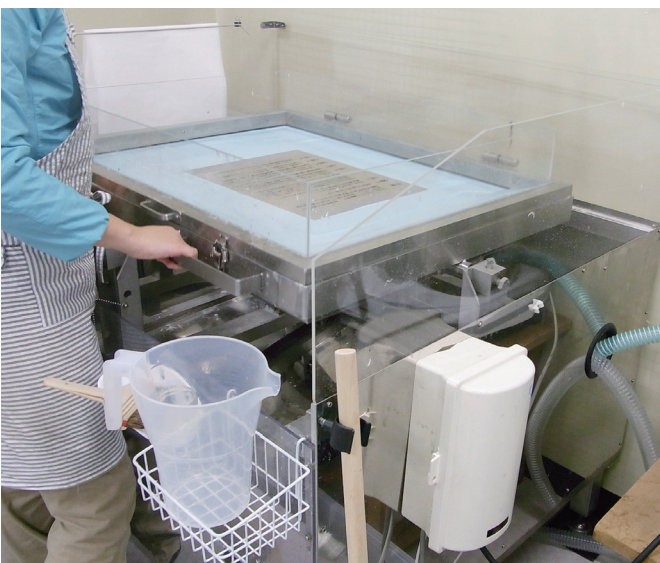


図5 漉きばめ機  
Fig. 5 Leaf casting machine



図6 漉きばめ機を使った作業  
Fig. 6 Repair process using a leaf casting machine



引装置を利用して吸引する吸引式と、入れ子状の大小の水槽の水頭差圧を利用して吸引力を生じさせる水頭圧式の2つのタイプがあります。繊維を分散させた水を流し込んだ後吸引することで、修復する丁の穴があいている部分のみに繊維が入り、その部分を埋めることができます。今回の作業では2種類の機器を使用しましたが、大部分は吸引式で作業を行いました。使用した吸引式漉きばめ機は、和紙を漉く動作に近い形で台をゆすり、補修する箇所繊維の流れをつけることができるタイプの機器です。台は5cmくらいの厚さで中は空洞、上部はメッシュ状になっていて、底の部分が吸引装置と接続されています。

流し込む繊維は主に、楮と楮の和紙を細かくしたものを使用しました。文書の時代によって使われている紙の厚さや状態はかなり違います。補修する文書に応じ繊維の配合を少しずつ変えて、なるべく本文紙と違和感が出ないよう色合いや風合いを調整しました。

作業効率を上げるため、漉きばめの作業は二人一組で行いました。一人が洗浄した文書のしわやめくれをのばし、もう一人は漉く作業を行って、流れ作業で進めていきました。

紙が砕けた部分は、岩手県立博物館からお借りした被災前の文書の画像を基に、可能な限り元の形に近づけるよう破片を並べて漉きばめを行いました。劣化が進み脆弱化した部分は、漉きばめ機を使用し、紙の裏から和紙の繊維を薄く乗せて補強しました。補強することで劣化

のひどい部分の取扱いが容易になり、紙どうしが付着することもなくなりました。

### 綴じ直し

本文紙は元の順番に並べ、表紙を戻して麻紐を用い綴じ直しました。綴じ穴はもとの位置を活かしました。文書のほとんどにこれまでに何度か綴じ直しが行われた跡がみられましたが、文化11年の定留は修復の痕跡がなく、オリジナルの状態が保持されていると判定されたので、今回はすべて文化11年の定留と同じ方法で綴じ直しました。表紙はオリジナルが残っているものは補修を施し、強化しました。一方、以前の修復時に新調されたと判定された表紙については、新しいものに取り替えました。今回新しくした表紙には、和紙を数枚裏打ちして重ねて厚くしたものを使いました。

文書の厚みは薄いもので5cm、厚いものは15cmもあり、通常の和本を綴じる針では紐を通すことができず、畳針とペンチを使って綴じました。

今回の修復では最終的に約35,000丁を洗浄し、必要なものは和紙でつくろいました。また約11,500丁を漉きばめ機を使って処置しました。修理作業が終了した文書は新たに作製した帙に収め、2014（平成26）年9月に岩手県立博物館に返却しました。

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placed below the table, and the hydraulic head pressure type which uses the suction generated by the differential pressure of the hydraulic heads of two nesting, large and small tanks. Since the water containing dispersed fiber is first poured in and then drawn into the missing area, the fiber enters only into the gap, and the missing area is filled without interfering with other parts of the page. Though we used both types of leaf casting machines, we mostly used the suction type machine for our project. With the suction type leaf casting machine that we employed, the table was rocked in a similar manner to the motions used for spreading the pulpy material when making Japanese paper, and by this, a flow of fiber toward the target area can be created. The table is about 5 cm thick. Its inner part is hollow, the top is made from mesh and the bottom is connected to a suction device.

Fine pieces of *kozo* (mulberry) fiber and Japanese paper made of kozo were mostly used as filling materials. The thickness and conditions of the paper used in old manuscripts considerably differ depending on the age in which the document was created. The fiber blend was altered slightly according to each document in order to adjust the colors and the textures to match those of the original pages.

The leaf casting process was performed by a team of two staff members to improve work efficiency. The two members worked in a flow to perform this process; one smoothed out wrinkled and curled parts of washed documents, while the other performed leaf casting.

Confirming the pre-disaster document images borrowed from the IPMM, the crumbled paper fragments were laid out in their original position to the extent possible, and then leaf casting was performed. The degraded, fragile parts were reinforced by placing a thin layer of Japanese paper fiber on the back of the

paper using a leaf casting machine. This reinforcement treatment enabled easier handling of severely degraded parts and prevented pages from adhering to each other.

### Rebinding

The pages of the documents were collated in the original order, the front cover was returned to its original position, and the documents were rebound using hemp cords. The original sewing holes were utilized in this re-binding process. While most of the documents had signs of repeated rebinding from the past, the *Jyodome* (record of official duties) created in 1814 had no signs of past restoration, and it was judged that the document had maintained its original condition. Thus, all documents were rebound using the method employed for the *Jyodome* 1814. The remaining original front covers were repaired and strengthened. Meanwhile, the front covers which were judged to have been created anew at the time of past restorations were replaced with new ones. The newly created front covers used for our project were reinforced by lining the covers with a few sheets of Japanese paper.

The thickness of the documents ranged from 5 cm to 15 cm. Since none of them could be bound by using the needle normally used for binding traditional Japanese books, a plier and a needle used for producing *tatami* mats were used to bind the documents.

Ultimately, approximately 35,000 pages were washed in our project, and the damaged pages were mended using Japanese paper. Furthermore, approximately 11,500 pages were treated using leaf casting machines. The treated documents were each placed in a freshly created traditional folding case for book storage called a *chitsu* and returned to the IPMM in September 2014.

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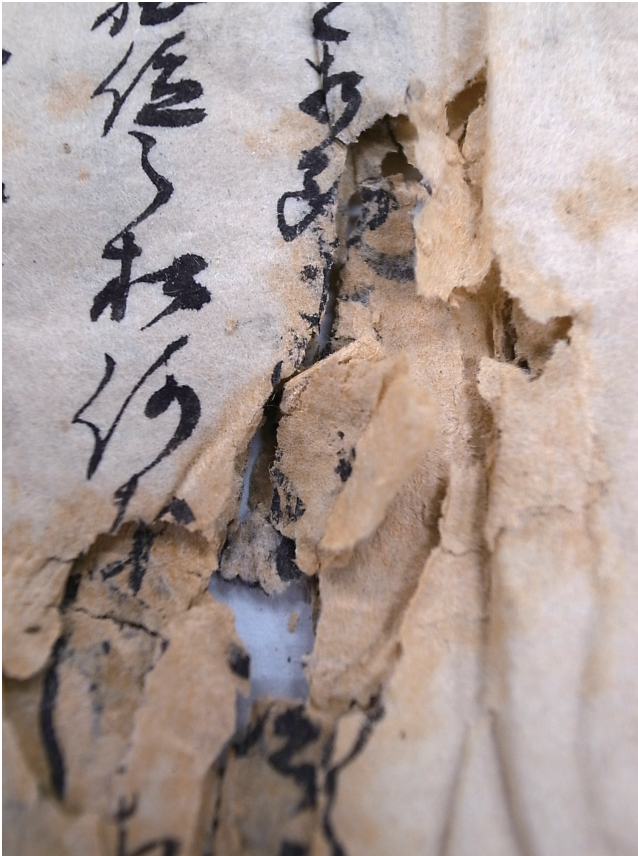


図7 漉きばめ補修前  
Fig. 7 Pre-casting

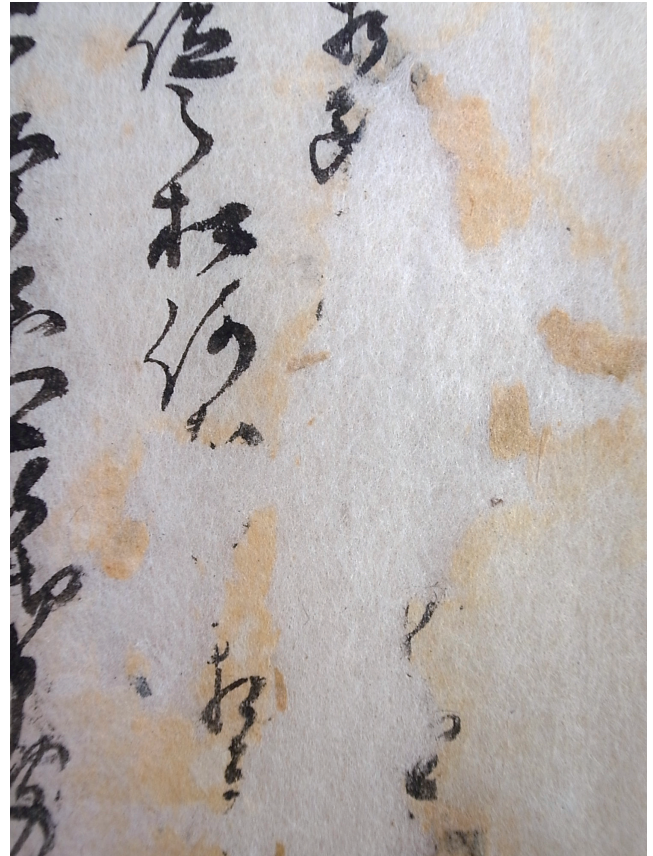


図8 漉きばめ補修後  
Fig. 8 Post-casting



図9 表紙の補修  
Fig. 9 Front cover repair



図11 新たに作製した帙に収納したところ  
Fig. 11 Treated documents placed in newly created folding cases for book storage



図10 綴じ  
Fig. 10 Binding