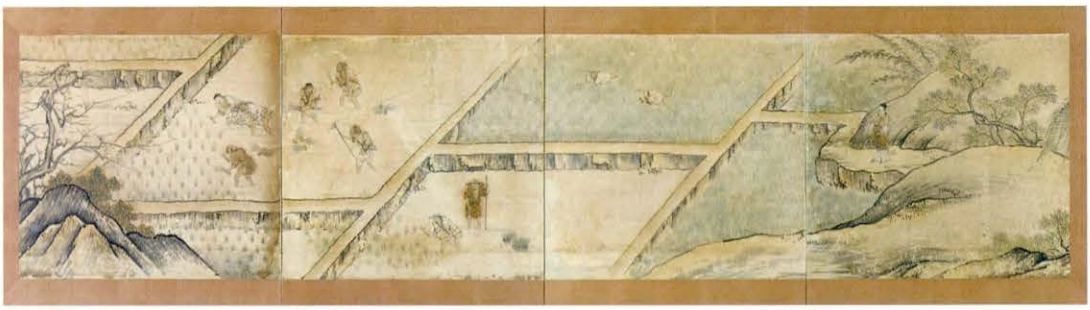
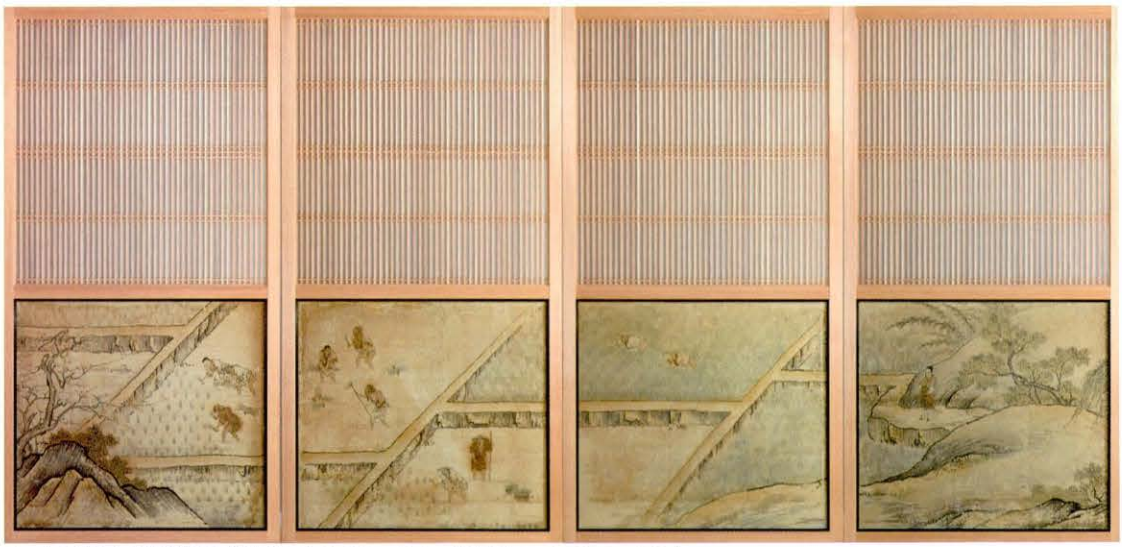
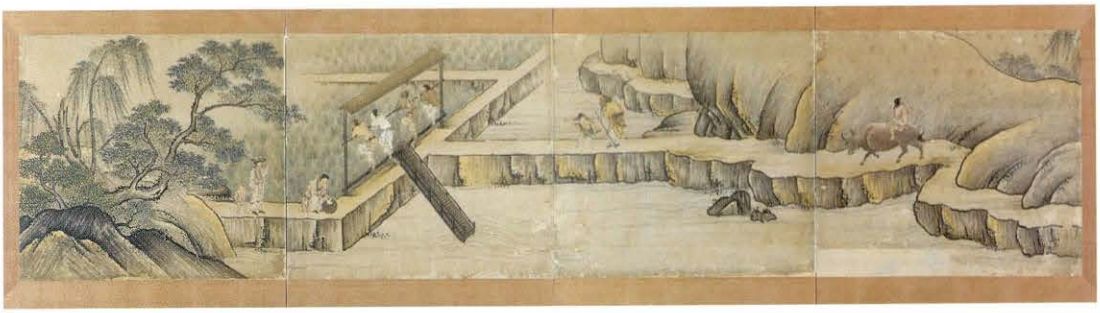
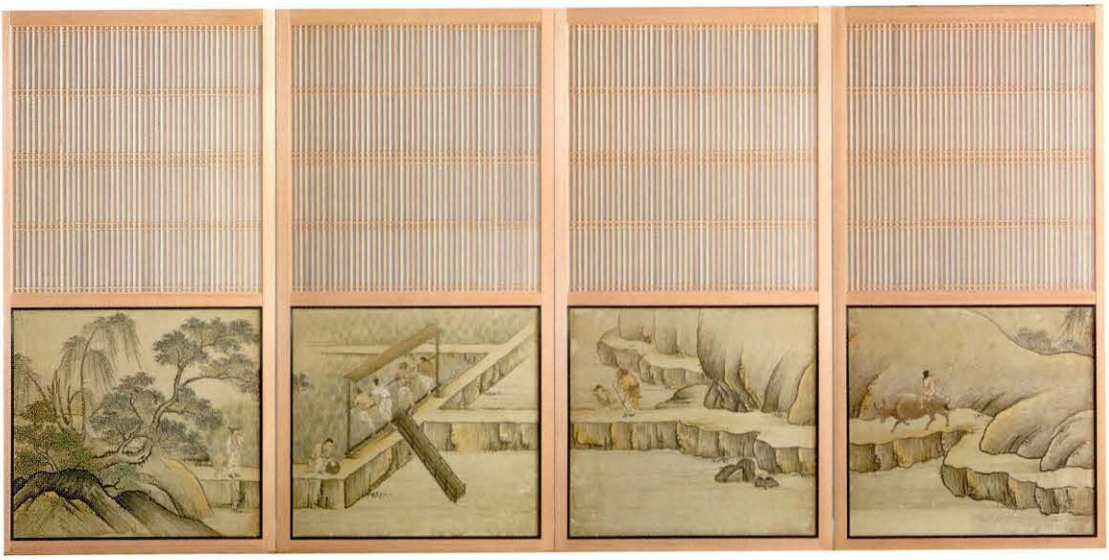


3　伝狩野山楽筆四季耕作図屏風（田植え・溜水）修理前（ミネアポリス美術館）
Scenes of Rice Cultivation: Spring and *Summer* attributed to Kano Sanraku 〈Before Treatment〉
(The Minneapolis Institute of Arts)



4　伝狩野山楽筆四季耕作図障子（田植え・溜水）修理後（ミネアポリス美術館）
〈After Treatment〉





四季耕作図屏風

平成15年度修復事業

品名：伝狩野山楽筆　紙本著色　四季耕作図屏風　4曲1双
所蔵：ミネアポリス美術館

伝狩野山楽筆　四季耕作図屏風（田植え・灌水）

修理報告

(株)岡墨光堂
岡　泰央

Ⅰ．文化財の名称等

1．名　称　　：紙本著色　四季耕作図屏風　4曲1双
2．所有者　　：ミネアポリス美術館
3．修理施行　：(株) 岡墨光堂　京都国立博物館文化財保存修理所
4．施行場所　：京都市東山区茶屋町527
　　京都国立博物館文化財保存修理所第三装潢室

Ⅱ．工期

・田植え図
　自　平成15年6月12日
　至　平成16年3月23日
・灌水図
　自　平成15年6月12日
　至　平成16年3月23日

Ⅲ．文化財の構造

1．本紙
①種別：紙本著色
②材料の特質
　料紙：雁皮　（高知県立紙産業センター調べ）（図39）

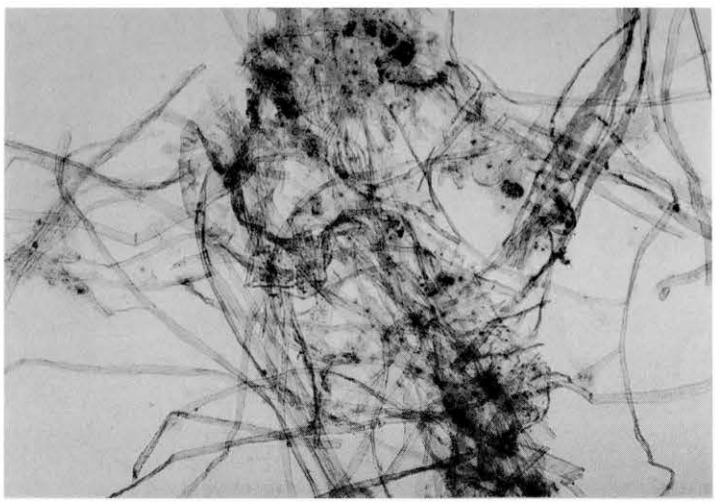
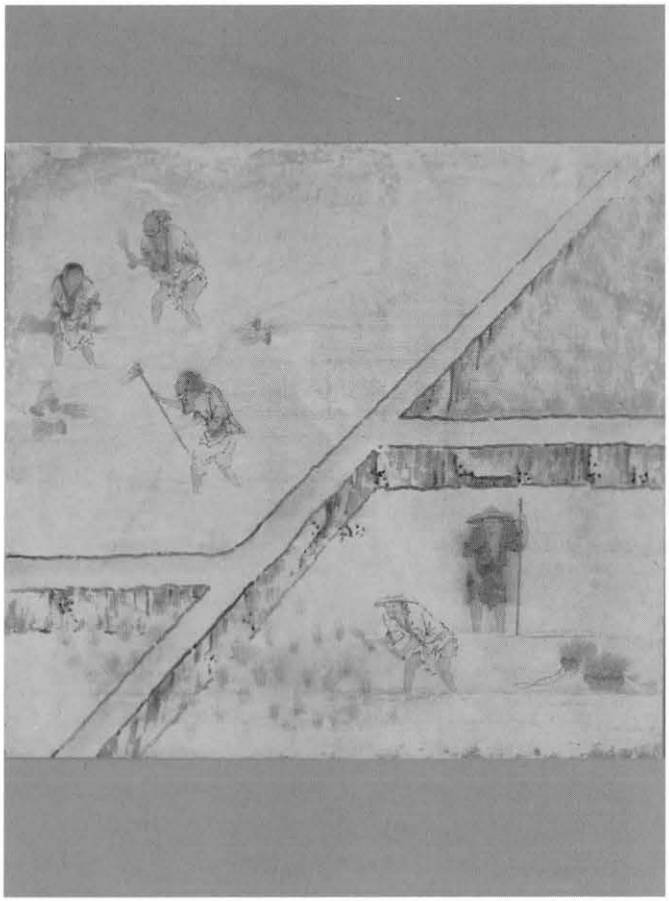


図39　紙質調査写真（雁皮）
Photograph taken to examine paper quality (gampi paper)

図40　修理前（田植え　右から第３面）
Before treatment (Rice planting, third panel from the right)



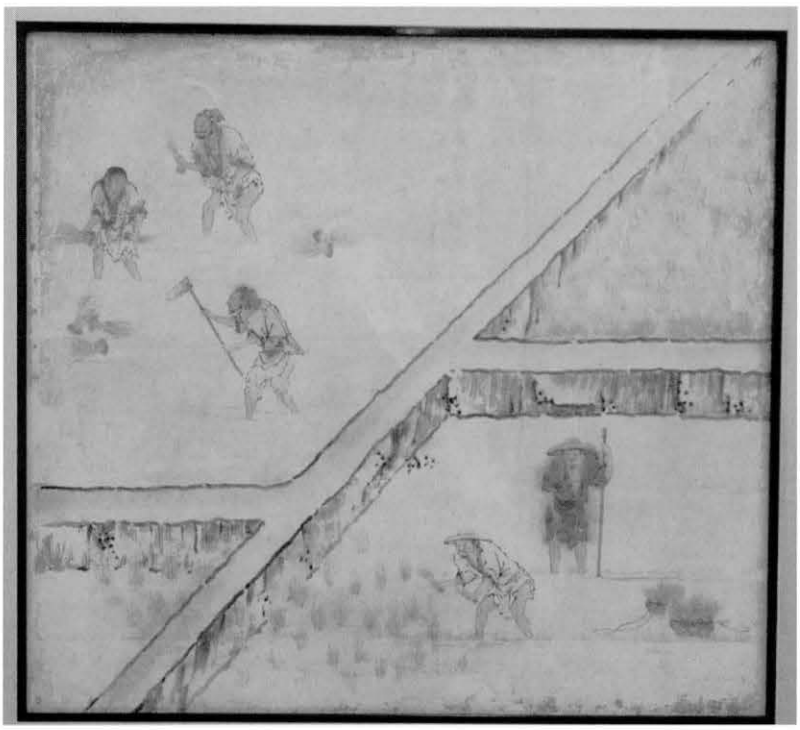


図41　修理後（田植え　右から第３面）
After treatment (Rice planting, third panel from the right)

③修理前本紙寸法（単位：cm）

	第１扇	第２扇	第３扇	第４扇
田植え図	77.3×83.4	77.2×83.2	77.3×83.1	77.1×83.8
灌水図	77.2×83.3	77.3×83.0	7.3×83.3	77.0×83.3

④修理後本紙寸法（単位：cm）

田植え図	77.7×85.6
灌水図	77.7×84.1

２．表装

修理前	修理後
表具寸法（単位：cm） 田植え　99.5×355.7（図40） 灌水　99.5×354.0（図42）	表具寸法（単位：cm） 田植え　186.6×97.0（図41） 灌水　186.6×95.0（図43）
形式　：４曲１双屏風装	形式　：４枚建腰高障子装２組
縁裂　：薄茶地紬入無地裂 隅金物：菊花桐紋透し彫り金物 下地　：木製 下貼り：反故紙 裏貼紙：薄茶地黒雀型唐紙 襲木　：木製木地襲木	下地　：CFPR板ロハセルサンドイッチパネル（挿図44,45） 下貼り 〈本紙面〉 糊漆を用いた楮紙によるベタ貼り 田の字掛け　：楮紙（美濃紙） 田の字縛り　：楮紙（美濃紙） 下浮け　：楮紙（石州和紙） 上浮け　：楮紙（石州和紙） 〈本紙裏面〉 糊漆を用いた楮紙によるベタ貼り 下浮け　：楮紙（石州和紙） 上浮け　：楮紙（石州和紙） 下地裏張り紙　鳥の子二号紙 障子紙：楮紙 裏打紙等 肌裏紙　：楮紙（太田製） ２回目肌裏紙　：楮紙（太田製） 補紙　混合紙（雁皮70%楮30%）

図42　修理前（灌水　右から第３面）
Before treatment (Watering, third panel from the right)

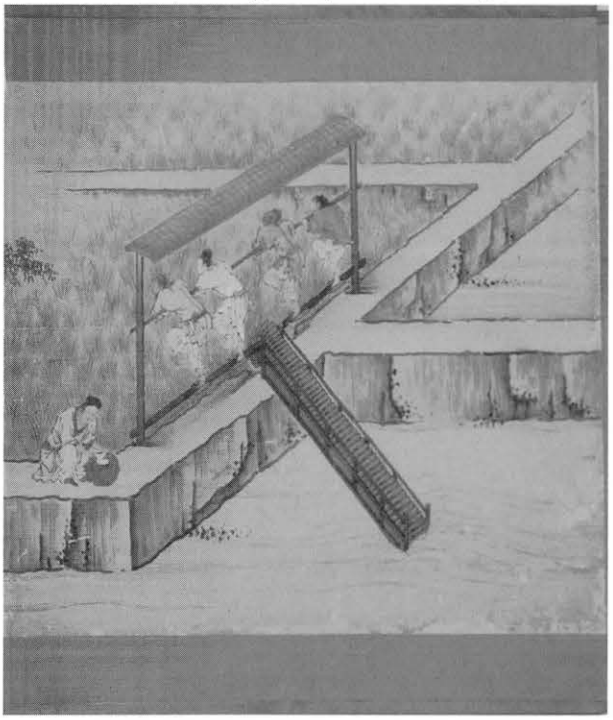
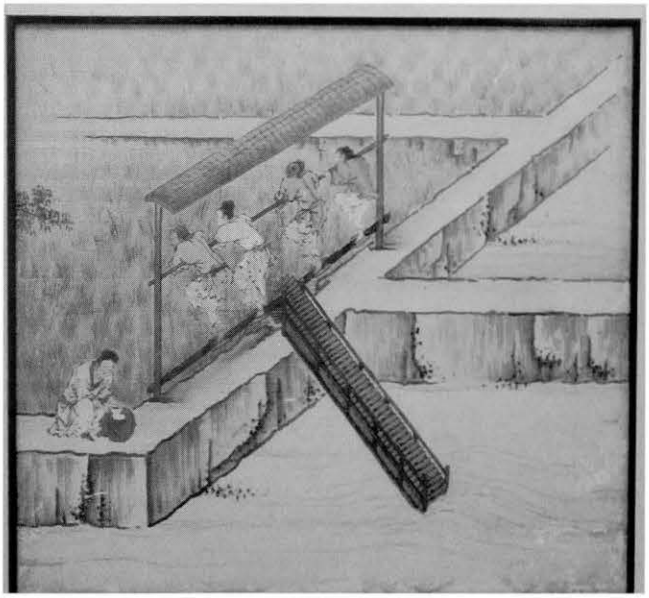


図43　修理後（灌水　右から第３面）
After treatment (Watering, third panel from the right)



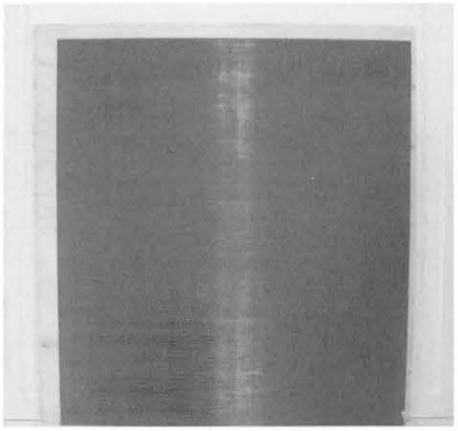


図44　カーボン下地
Carbon core panel

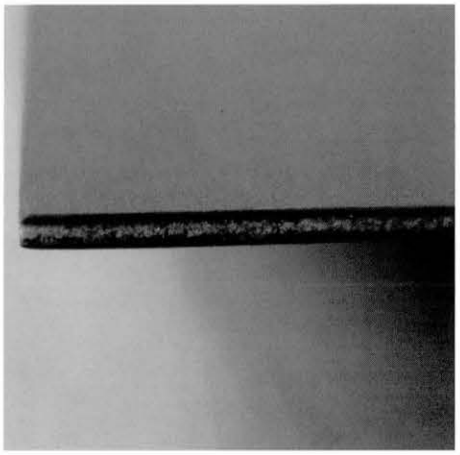


図45　カーボン下地
Carbon core panel

Ⅳ．修理前の状態

1．損傷

・絵具層の剝離・剝落が見られる。
・本紙と裏打紙の糊離れが生じている。(図46、47)
・虫損等による本紙の欠失が見られる。(図48、49)
・本紙紙継ぎ部分の糊離れとそれに伴う本紙料紙の欠失が見られる。(図50、51)
・蝶番、尾背部分にいたみが生じている。
・下地からの本紙の浮きが見られる。
・本紙表面全体への汚れの付着が見受けられる。

2．その他

・旧修理時に本紙欠失箇所に補紙が施され、復元補彩・加筆が施されている。

Ⅴ．修理方針

文献等の調査により、本紙が製作当時に装訂されていた形式は、屏風装ではなく腰高障子装とされる。本修理では、屏風装を元の腰高障子装に改装し、上記の損傷を改善することを修理の基本的方針とする。また、旧修理時に施された復元的補彩・加筆がみられる補紙については、それを除去する事により表現が損なわれると判断された場合にのみ残すこととする。補紙除去に関する判断については修理図面を作成して検討を行う。

Ⅵ．修理仕様

1．写真撮影を行い、本紙の状態を調査する。
2．屏風装を解体する。
3．表面の汚れ等を除去する。
4．絵具層の剝離箇所に剝落止めを行う。
5．本紙の旧裏打紙を除去する。
6．旧補紙で復元的補彩・加筆のあるものは、本紙との重なり部分を除去するものとする。
　本紙欠失箇所には本紙繊維調査の結果に基づいて作製した補修紙を施す。
7．本紙の色合いに合わせて、染薄美濃紙にて肌裏を打つ。
8．楮紙にて2度目の裏打ちを行う。
9．障子にはめ込むカーボン繊維の薄板（以後これを下地と記す）を8枚新調する。
10．下地に美濃紙にて6層の下張りを施す。
11．表面に修理完了の本紙を上貼りする。
12．補紙の箇所に補彩を行う。
13．杉材の障子を8枚新調する。
14．障子の腰部分に修理完了の本紙をはめ込み、漆塗四分一にて固定し、障子装を完成させる。

図46　修理前　本紙と裏打紙の糊離れ
Before treatment. Separation of painting from lining paper due to the weakening of the adhesive.

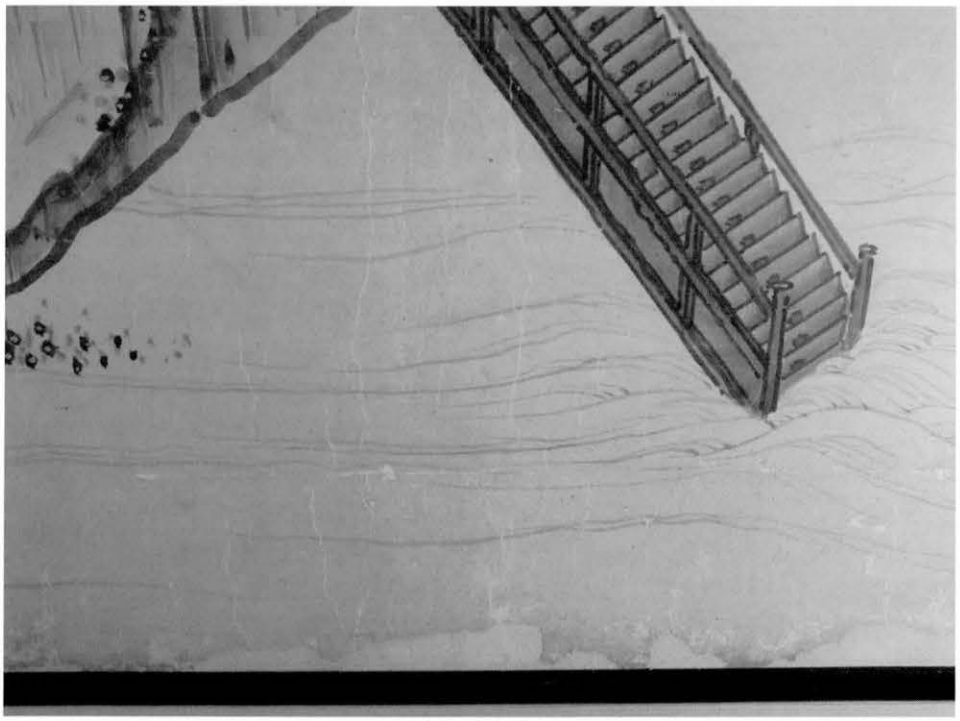


図47　修理後
After treatment

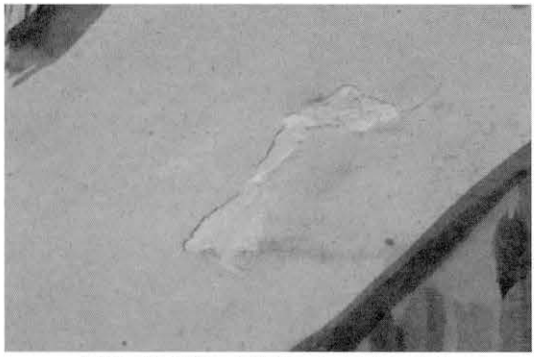


図48　修理前　虫損等による本紙の欠失
Before treatment. An area in the painting damaged by insects.

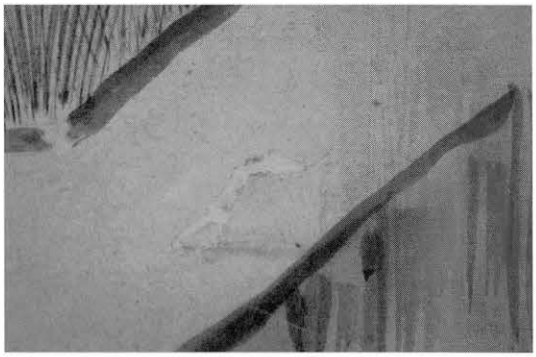


図49　修理後
After treatment

図50　修理前　糊離れとそれに伴う本紙の欠失
Before treatment. Damage to the painting caused by the weakening of the adhesive.

図51　修理後
After treatment

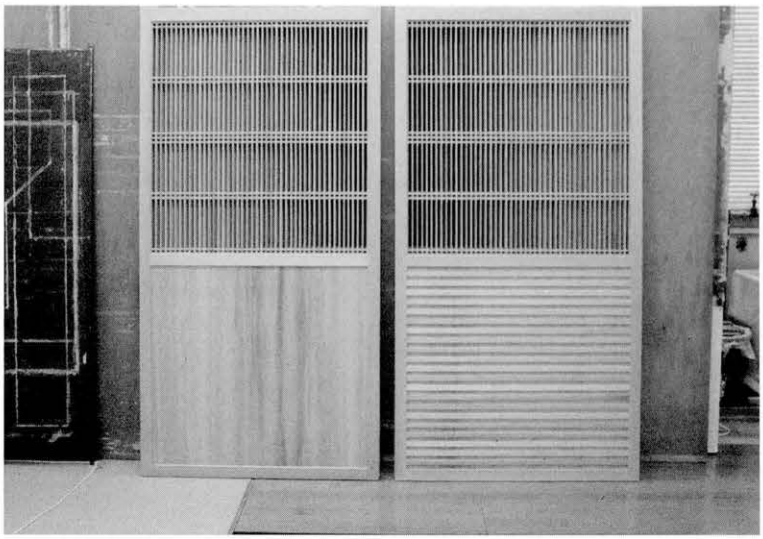


図52　障子
Sliding doors

Ⅶ．修理内容

1．修理前調査

・修理前の本紙の状態、損傷及び寸法等を記録した。

(写真記録は４×５、デジタルカメラで行った。)

2．解体

・飾金具、襲木を外し、本紙を下地より取り外した。

3．本紙修理

・剝落止め

膠水溶液を絵具層に塗布し剝落止めを行った。

・裏打紙除去

旧下張り紙等を最少限度の湿りにて除去した。透過光写真撮影を行い、損傷図面を作成して、その図面を基に旧補紙部分の除去確認を行った。

・クリーニング

本紙表面から精製水を噴霧して浸透させ、本紙裏面にあてた吸い取り紙に精製水を吸収させる事により、本紙の表面に付着した汚れを除去した。

・表打ち

ふのりを用いレーヨン紙にて本紙表面に表打ちを行った。

・裏面処置

・補紙

紙質調査写真に基づき、前年度と同じく雁皮70%・楮30%の補修紙を作成し、欠失箇所に補紙を施した。

・裏打ち

矢車により淡茶色に染色した楮紙にて小麦粉澱粉糊を用いて肌裏を施した。(図51)

・２回目裏打ち

楮紙にて、小麦粉澱粉糊を用いて２回目裏打ちを施した。

4．下張り

・新調した下地に下貼りを行った。

5．障子の新調

・本紙を腰高障子装に仕立てるに適切な寸法の障子を新調した。(図52)

6．組み立て

・下張りを施した下地に本紙及び鳥の子紙をはりこみ、四分一を取り付けて仕上げた。

7．修理後記録

・写真撮影、採寸等を行い記録した。

Ⅷ. 特記事項

・旧補紙について

修理前の方針として、過去の修理で施された補紙は基本的に除去することとされていた。しかし、旧補紙の中に草木、水を表現するための線描写等の一部分が描き込まれたものがみられたことから、積極的な旧補紙の除去を行うことで、修理前と修理後との本紙の印象を大幅に変える可能性が想定された。そのため、そのような事由が予測される箇所については、所有者及び東京文化財研究所の監督官と検討し、除去しないことと決定された。除去の可否の判断材料として、裏打紙の除去後に透過光を用いた写真撮影を行い、本紙の状態が把握できるようにした。

また、前年度と同じく、本紙が残っている箇所、補紙が施されている箇所、補紙に復元的補彩や加筆が施されている箇所については損傷図面を作成し、本紙の劣化が著しく肌裏紙との見分けが付かないように補彩が施されている箇所は緑色に、復元的な補彩や加筆が施されている補紙箇所には青色に色分けを行った。また、本紙と補紙の重なり部分はそれぞれの色の濃い色で示した。(損傷図面省略)

・ カーボン下地について (図53、54)

今回の修理に使用したカーボン下地は、0.6ミリ厚CFRP素材の板二枚の間に1.8ミリ厚のロハセル（高断熱材……注１参照）を挟み込んだサンドイッチ構造をとっている。また、CFRP板の表面に通常の下張り作業を行うために、糊漆による楮紙の貼り付け作業を施し、従来の下貼りを行えるように加工されている。

下地素材にカーボン下地を用いた目的として、本紙表面の損傷を未然に防ぐことがあげられる。障子腰に使用されている板は、経年による痩せから板継ぎ部分の割れを引き起こし、随伴して障子腰へと直接貼り込まれた本紙に影響を与えること可能性が想定される。本修理では、本紙障子本体と本紙を張り込む下地を別に作り、本紙を独立させ建具と分離する事により、建具自体の損傷の影響を直接受けない仕様とした。

また、下地使用材料としては、炭素繊維と樹脂によって形成された、先端複合素材でもあるCFRP板を使用し、独立した極薄い下地の状態での急激な温湿度変化に対処している。

過去の修理例として、木製の薄板の下地に本紙を張り込むことにより、本紙を建具から分離させる方法が試みられているが、今回の腰高障子の場合は、設計上、障子腰に嵌め込む事の出来る厚みが3mm強であるため、木製の薄板の下地で温湿度等の変化に対して十分な強度を持たせることは容易でないと考えられた。そのため、温度、湿度の変化に対して殆ど伸び縮みをすることがないとされ、薄い板の状態での形態の安定度に優れているCFRP板を下地材料として採用することとした。

また、室内外等の温度差に急激な変化が生じた場合、熱伝導率の良いCFRP板の表面に　結露をしてしまう事態が懸念されたため、高断熱効果のあるロハセルを間に挟み込むことで、CFRP板の表面の結露に対して対処している。

（注１）ドイツRohm社が開発したPMI（ポリメタクリイミド）をベースとした硬化プラスチック独立気泡（クローズドセル）発泡体。他の材質に比べ、機械的強度・耐熱性・熱加工性に優れている。航空機器構造体等に使用されている。

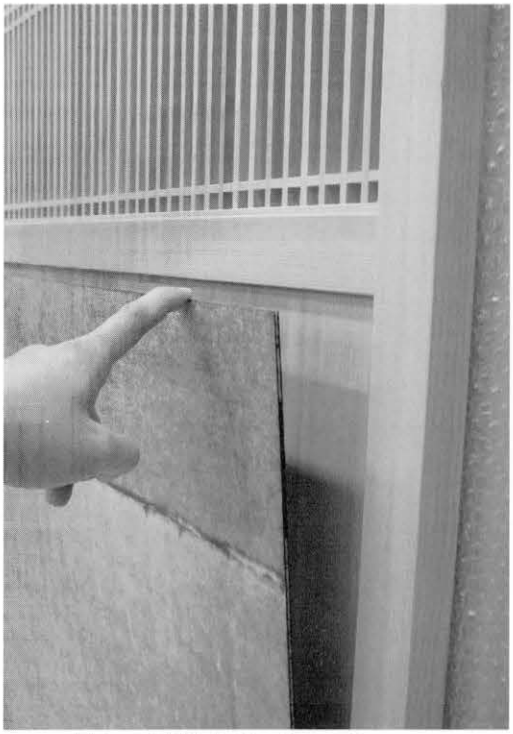


図53　下地素材に用いたカーボン
Carbon material used for the core panels

図54　下地素材に用いたカーボン
Carbon material used for the core panels

Scenes of Rice Cultivation: Spring and *Summer* attributed to Kano Sanraku

Treatment report

OKA Yasuhiro
Oka Bokkōdō Co.

Ⅰ. Title and Details of Object

1. Title: *Scenes of Rice Cultivation*, pair of four-paneled screens. Ink and color on paper.
2. Collection: The Minneapolis Institute of Arts
3. Conservator: Oka Bokkōdō Co., Kyoto National Museum Department of Conservation of Cultural Properties
4. Location: 527 Chaya-machi, Higashiyama-ku, Kyoto-shi, Kyoto National Museum, Department of Conservation of Cultural Properties, Conservation Studio #3

Ⅱ. Period

・Rice planting scene

From June 12, 2003
To March 23, 2004

・Watering scene

From June 12, 2003
To March 23, 2004

Ⅲ. Structure of Object

1. Painting

① Media: Ink and color on paper

② Characteristics of material

Paper: *gampi* (examined by Kochi Prefectural Paper Technology Center) (Fig. 39)

③ Dimensions of painting before treatment (cm)

	First panel	Second panel	Third panel	Forth panel
Rice planting scene	77.3×83.4	77.2×83.2	77.3×83.1	77.1×83.8
Watering scene	77.2×83.3	77.3×83.0	77.3×83.3	77.0×83.3

④ Dimensions of painting after treatment (cm)

Rice planting scene	77.7×85.6
Watering scene	77.7×84.1

2. Mounting

Before treatment	After treatment
Dimensions of the mounting (cm) Rice planting scene 99.5×355.7 (Fig. 40) Watering scene 99.5×354.0 (Fig. 42)	Dimensions of the mounting (unit: cm) Rice planting scene 186.6×97.0 (Fig. 41) Watering scene 186.6×95.0 (Fig. 43)
Format: Pair of four-paneled folding scree	Format: Two sets of four *koshidaka* (wainscot) sliding doors
Border fabric: Pale brown, plain weave silk Metal ornaments: metal pieces with fretwork of a chrysanthemum and paulownia pattern. Core: Wood Under-lining paper: used *kōzo* paper Final backing paper: Chinese style paper with black sparrow pattern on a pale brown background Exterior frame: oil-stained wood frame	Core: Panels composed of Rohacell (Fig. 44, 45) sandwiched between CFRP Under-lining paper <Front surface of the core panel> Kōzo paper is attached by applying adhesive lacquer to the entire surface. *tanojikake*: *kōzo* paper (Mino type) *tanojikake*: *kōzo* paper (Mino type) *shitauke*: *kōzo* paper (Ishizu type) *uwauke*: *kōzo* paper (Ishizu type) <Back surface of the core panels> Kōzo paper is attached by applying adhesive lacquer to the entire surface. *shimouke*: *kōzo* paper (Ishizu type) *uwauke*: *kōzo* paper (Ishizu type) Paper on the reverse side of the core: *torinoko* paper #2 *Shoji* paper: *kōzo* paper Back lining paper, etc. First lining paper: *kōzo* paper (Made by Ōta) Second lining paper: *kōzo* paper (Made by Ōta) Mending paper: Mixed paper (70% *gampi*, 30% kōzo)

Ⅳ. Condition before treatment

1. Damage

- There is flaking and peeling of paint layers.
- There is separation between the painting and the lining paper due to the weakness of the adhesive. (Fig. 46, 47)
- There was visible insect damage in the painting's paper support. (Fig. 48, 49)

- There is weakening of the adhesive along the paper joint sections of the painting that resulted in damage to the painting. (Fig. 50, 51)
- Parts of paper and hinged areas are damaged.
- Some parts of the paintings have separated from the core.
- Soiling found throughout the surface of the paintings.

2. Others

- Infill paper was used to repair damaged sections of the painting during previous treatment(s). Toning and added drawing were also completed on those sections. (Photograph 12)

Ⅴ. Treatment plan

It is confirmed by written sources that the original format of the painting at the time of its production was not as folding screens but *koshidaka* sliding doors. As a result, this project aimed to repair damage and restore the work to its original format. Paper infill from previous repair attempts that contained toning and drawings were left untouched where their removal would disturb the integrity of the painting. Conservation maps were drawn to evaluate whether each infill should be removed.

Ⅵ. Treatment process

1. Photo documentation and examination of painting condition
2. Dismantlement of folding screens
3. Cleaning of soiling on painting surface
4. Consolidation of pigments
5. Removal of previous lining paper
6. The previous infill paper with toning and added drawings was removed only if it overlapped undamaged painting areas. For repair of damaged sections, infill paper of similar fiber (determined through analysis) to the original support was used.
7. A first lining of thin *mino* paper dyed to match the color tone of the painting was applied.
8. A second lining using *kōzo* paper was applied.
9. Eight thin panels of carbon fiber (hereafter referred to as "core") were newly prepared to be fitted into the sliding door panels.
10. Six sheets of *mino* paper were applied to the core panels.
11. After the treatment was completed, the painting was attached to the front of the panels.
12. Toning was applied to the paper infills.
13. Eight sliding door panels were newly made from cedar.
14. The painting was fitted into the lower part of the sliding doors panels and was framed with lacquered *shibuichi*.

Ⅶ. Contents of treatment

1. Pre-treatment examination
   - The condition of the painting, damages, and dimensions were recorded before treatment. (4x5 photographs as well as digital photographs were taken)

2. Dismantling
   - Ornamental metal fittings and the existing frames were removed, and the painting was separated from the papered wooden core.
3. Repair of painting
   - Consolidation

     The paint layer was consolidated using an animal glue solution to prevent flaking.
   - Removal of the lining paper

     The old *shitabari* paper was removed using a minimal amount of moisture. Photographs were taken with transmitted light to create a map of damaged areas. Based on this map, decisions were made regarding which old paper infills needed to be removed.
   - Cleaning

     Purified water was sprayed onto the surface of the paintings, and stains were removed by allowing the water to seep through the original to the blotter paper (*suitori-gami*) underneath.
   - Applying temporary facing

     Using rayon paper and seaweed paste, a temporary facing was attached to the surface of the paintings.
   - Treatment of the support from the verso
   - Infill paper

     Based on photographs taken to examine the quality of paper, the same infill paper like the one used last fiscal year (70% *gampi*, 30% *kōzo*) was prepared and affixed to the missing sections.
   - Lining

     The first lining was completed by applying *kōzo* paper dyed a light brown color (with the *yasha* plant) with wheat starch paste. (Fig. 51)
   - Second lining

     The second lining was completed by applying *kōzo* paper with wheat starch paste.
4. Underlining of the core
   - Under-paper was laid on the new wooden core.
5. Making new sliding door panels
   - New sliding door panels were made with dimensions matching those of the paintings. (Fig. 52)
6. Assembling
   - The painting and the *torinoko* paper were mounted onto the core that was covered with the new under-papering, *shibuichi* frames were affixed to complete the work.
7. Documentation of results of restoration
   - After photo documentation, new measurements were taken.

Ⅷ. Additional notes

Paper infill from past treatment (s)

As a general policy in preparing for treatment, all paper infills applied during past treatment (s) were to be removed. However, part of the lines to express plants and water had been drawn onto some of these paper infills. Therefore, aggressively removing all the infills was expected to significantly alter

the impression of the painting compared to before treatment. For this reason, a decision was made upon consultation with the owner and the supervisor at National Research Institute for Cultural Properties, Tokyo, not to remove those infill located in areas where such alterations could occur. As a way of determining whether such removal should take place, photographs were taken using transmitted light after detaching the lining paper to ascertain the condition of the painting.

Moreover, in the same manner as in last year's treatment, conservation maps showing intact, damaged, repaired and/or retouched areas were drawn. Areas of the painting that have deteriorated significantly and which were retouched in such a way that it is almost impossible to tell the painting apart from the first lining paper are indicated in green. Paper infill with toning and added drawings are shown in blue. Darker shades of these colors are used to show parts in which paper infill overlap painting areas. (The conservation maps are not shown.)

・Carbon core panels (Fig. 53, 54)

The carbon panels used for this treatment are made of a 1.8 mm layer of Rohacell (high-heat insulation material; see Note 1) sandwiched between two 0.6 mm sheets of Carbon Fiber-Enforced Polymer (CFRP) material. Furthermore, the surface is processed so that the under-lining can be done in a traditional manner, by pasting *kōzo* paper with *noriurushi* (adhesive made from lacquer) onto the CFRP sheet.

One of the purposes of selecting carbon as a material for the base is to prevent the surface of the painting from being damaged. Wooden boards used for the lower portion of sliding doors can deteriorate with age and possibly crack at the seams, affecting the painting that is pasted directly onto the board. For this treatment process, a separate base layer for the painting was made separately from the sliding doors. This method was adopted to allow the painting to stand independently and to protect the painting from being directly influenced by any damages caused to the fixtures.

Moreover, sheets of CFRP, an advanced composite material made from carbon fiber and resin, were selected as material for the core because CFRP can cope with sharp changes in temperature and humidity.

In the past, attempts have been made to separate the painting from the fixtures by attaching it to a core made of thin wooden sheets. However, the design of the *koshidaka* sliding doors only allows for a sheet that is up to slightly over 3 mm thick to be fitted into it. Therefore, it was determined that a core made of wooden sheets would not be strong enough to withstand shifts in temperature and humidity. For this reason, CERP was selected for the core, because its expansion and contraction is minimal even when temperature or humidity changes, and is highly stable even as thin plates.

Furthermore, because the CRFP sheets have good thermal conductivity, there were concerns that a drastic change in indoor or outdoor temperature may cause condensation on their surfaces. To avoid such condensation, a layer of Rohacell, which is an effective insulator, was placed in between the CFRP sheets.

(Note 1) Closed-cell rigid foam plastic based on polymethacrylimide (PMI) developed by Rohm GmbH of Germany. Compared to other materials, Rohacell is superior in mechanical strength, heat resistance, and heat processing. It is used for aircraft equipment structures.

Translated by Amy Mccaleb (Urban Connections), edited by Yasuhiro Oka and Regina Belard.

伝狩野山楽筆　四季耕作図（田植え・潅水）

作品解説

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ミネアポリス美術館に所蔵される本図は、昨年修復の完了した８面の襖とともに１室の内部を飾る障壁画「四季耕作図」を構成する。すなわち、田植えを描く春景の腰障子４面（本図・81.1.9-12）、灌水を描く夏景の腰障子4面（本図・81.1.13-16）、刈入れを描く秋景の襖４面（81.1.5-8）、そして田起こしと苗床を描く冬景の襖４面（81.1.1-4）が順に東、南、西、北に位置する。この「四季耕作図」には大岡春卜(1680-1763) 筆の文書が付属している。この文書によれば、京都・大覚寺の障壁画を揮毫した春卜が宝暦５年（1755）に同寺よりこの作品を拝領したという。大覚寺の正寝殿の竹の間は、東と南が縁に面し正方形の平面をもち、４組の障壁画の構成と寸法が一致するところから、この「四季耕作図」は竹の間の障壁画であったと考えられる。また、皴法と樹法に桃山時代に活躍した狩野山楽（1559-1636）の作風がよく現われていることから、17世紀初頭の山楽の工房作と考えてよい。詳細については本報告書平成15年版(2004.3) を参照されたい。

Scenes of Rice Cultivation: Spring and *Summer* attributed to Kano Sanraku

Description of Artwork

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These paintings, which are stored at the Minneapolis Institute of Arts, are part of the *shōhekiga* (partition or interior wall painting) entitled *Scenes of Rice Cultivation* that decorate the interior of a room, along with eight other *fusuma* (sliding door panel) paintings, the restoration of which was completed last year. Four *koshi shōji* (room partition with a panel board in the bottom portion) paintings depicting a rice planting scene in spring (shown here/81.1.9-12); four *koshi shōji* paintings depicting a watering scene in summer (shown here/81.1.13-16); four *fusuma* paintings depicting a harvesting scene in autumn (81.1.5-8); and four *fusuma* paintings depicting a tilling scene and seed bed in winter (81.1.1-4) are located at the east, south, west, and north sides respectively. Attached to this *Scenes of Rice Cultivation* series is a document written by Ōoka Shunboku (1680-1763). According to this document, this set of artwork was given to Shunboku in the fifth year of Hōreki (1755) by Daikakuji Temple in Kyoto, for which he painted his own *shōhekiga*. The Take-no-ma (bamboo room), one of the rooms in Shōshin-den, Daikakuji Temple's main temple, is square-shaped and the east and the south walls face a veranda. This layout matches the structure and the size of the four sets of *shōhekiga* which is why it is assumed that the *Scenes of Rice Cultivation* have been located in the Take-no-ma. Moreover, the technique used by Kano Sanraku (1559-1636), an artist active during the Momoyama period, to portray trees, rocks and ground can be seen clearly in these paintings. Therefore, we can safely assume that they were created in Sanraku's studio in the beginning of the 17th century. See the 2003 Report (March 2004) for more details.

Translated by Amy Mccaleb (Urban Connections).