
楼閣山水蒔絵箱

平成19・20年度修復事業



所蔵：オーストリー応用美術館

楼閣山水蒔絵箱

山下 好彦

修復品名	楼閣山水蒔絵箱
所蔵美術館	オーストリー応用美術館所蔵（オーストリア）
制作年代	17世紀 江戸時代
修復品寸法	39.0cm×29.0cm 高さ35.0cm
修復期間	平成19年6月～平成21年3月（22ヶ月間）
修復場所	東京文化財研究所 漆修復アトリエ

1. 概要

木製、黒漆塗りの箱で、各面に金銀の蒔絵で楼閣山水や花鳥を描く。蓋や身の内側、高台外側は梨地に仕上げる。文様には日本で描かれた蒔絵以外にヨーロッパにおけるドローイングが多数入っていた。

本資料は長方形の身に屋根形の蓋を2個の蝶番で背面に止める。蓋を上を持ち上げると身の左側面には挿し蓋があり、上に引き上げると内底板と底板との隙間に薄い引き出しが納まる。また、蓋の天板も挿し蓋で、横に引き出すと、蓋の内部は収納スペースがある。蓋の左側板と身の正面に鍵金具、角に隅金具を打つ。蓋と身の鍵がそれぞれ1個付属する。

本資料のような形状の箱は西洋ではカスケットと呼ばれ、宝石箱として使用される。本資料は西洋で使われているカスケットを模して作られ、西洋向けに輸出したものと考えられる。

2. 損傷状態

本資料はヨーロッパにおける後世修理が各所に入っていた。蓋の天板外面、側板外面、身の正面と左右面のみがオリジナルであり、他はオリジナルの上から黒色の西洋塗料を塗り込み、その上に梨地や蒔絵に模して加飾がされていた。蓋や身の鍵金具周辺では下地欠損部分を白色の下地で充填、隅金具の釘の周囲にも後世修理の充填材が認められた。正面右の柱部分は2本の釘で柱を止め直し、蓋には他の資料の隅金具を打ちなおしていた。蓋の内側鍵金具部分に後補の鉄釘が打たれていた。蝶番も後補と考えられ、マイナスの鉄製目ネジを使用していた。

西洋の復元部分の上から西洋の塗料の修理が認められることから後世修理は数度行われたと考えられる。

全体に埃や汚れが付くほか、オリジナル部分にも修復材料が被り、一部で斑になっていた。漆塗膜や蒔絵、後世修理塗膜の表面にも紫外線などによる劣化が認められ、艶がなくなっていた。蒔絵の一部ではすでに多くの蒔絵粉が剥落し、蒔絵の漆や下地が露出していた。高台下部に6箇所穴があり、木釘が欠失したものと考えられた。

素地の接合部のほぼ全てに亀裂が入っていた。特に、蓋の側板と蓋下部材の接合部は素地が完全に離れ、不安定な状態になっていた。底板はほぼ中央で割れ、素地接合部分に亀裂があった。塗膜に剥離が認められ、すでに多くの塗膜と下地が剥落していた。また、擦傷や打損があり、蒔絵粉の銹化や

損傷が著しく進行していた。鍵金具や隅金具の釘が緩み下部の隅金具に緑青が付着していた。また、鍵金具の金属棒が一部突出し、蓋の引板裏側に傷が入っていた。

3. 修復仕様

修復は国内で行われている指定文化財の修復と同様に考え、基本的に伝統的修復材料を用い現状維持修復を基本に行った。西洋塗料による蒔絵の復元部分はそのままとし、塗膜表面に被った後世修理の塗料は出来るかぎり除去した。

修復は塗膜や蒔絵部分だけでなく、金具も対象とした。金具の歪みの修正や後補の釘で緩んでいるものは取り外して新たに新補した。蓋の鍵金具で突出した部分は蓋に傷が付かない程度に鑢をかけて形状を修正した。

釘で打ち直していた柱は釘を取り外し、可逆的な合成樹脂で再接着した。高台を除く下地が欠損した部分や亀裂部分は形状を復元し、周囲に色合いを合わせた。色合せには金粉、錫粉、真鍮粉を使用した。桐製の保存箱と絹の外覆を作製した。修復前と修復後の写真撮影を行った。

修復作業は東京文化財研究所の修復アトリエ（漆）で行い、修復仕様の変更がある場合は修復者と東京文化財研究所の担当者が協議して決定した。

4. 修復工程

1) 調査記録および修復前写真

初めに損傷状態を詳しく調査した。修復前に35mmネガフィルムとデジタル写真で記録した。後世修理箇所については紫外線ランプを用いて後世修理箇所とその状態を明確にし、デジタル写真で記録した。

2) 分析

本資料は紫外線による調査の結果、広い面積にヨーロッパにおける修復の手が入っていることが判明したため、数種類の科学分析を行った。素地や蒔絵についてはX線透過撮影を行い、内部の構造を確認した。その結果、身の差し蓋上部に素地割れを修理したと考えられる素地の新補部分があり、身の底板周囲は小さな素地を繋ぎ合わせていることが判った。塗膜材料については赤外線吸収スペクトルによる分析を行った。その結果、多くの部分にシェラックが被っていることが分かった。加飾材料についてはポータブル蛍光X線分析を行った。その結果、オリジナルの蒔絵は金96-97%（残りはCu）、復元には真鍮（Cu90%-Zn10%）を使用していることが判明した。

3) 蓋の取り外し

蓋の亀裂接着作業を進めるにあたって、所蔵館に蝶番を取り外す許可を得、蓋を身から取り外した。蝶番の木ねじは別保管した。

4) 受台の制作

蓋の側板と蓋下部材の亀裂を止めるため、蓋の形状に合わせて合板とゴム板で受台を作製した。

5) 素地接着

外れた蓋の側板と蓋下部材の素地の歪みを直すため、蓋を湿度調節した箱に入れ、素地に柔軟性が戻ってから木枠とヒゴ、クランプを用いて徐々に力を加えて固定した。その後、素地部分に溶剤で希釈した麦漆を含浸し、蓋の側板と蓋下部材の素地を接着した。余分な漆は完全に拭き取り、数週間固定したまま乾燥させた。蓋の押さえを取り外した後、亀裂が入り段差が出来た蓋裏板を出来る限り修正して麦漆で接着した。

6) 鍵金具の取り外し

クリーニングに先立って、身正面と蓋内側の鍵金具を取り外した。釘の取り外しにはプラスティ

クシートと鉄製の篋を用いて塗膜に傷を付けないように丁寧に行った。取り外した金具と釘は別保管した。

7) クリーニング

西洋塗料の除去をするため、有機溶剤によるクリーニングテストを行った。クリーニングは初めに塗膜に付着した埃と汚れを水で除去した。次に、全体にキシレン、トルエン、DMSOを用いて付着物を除去した。蒔絵部分は、表面のみに有機溶剤 (DMSO) を筆塗りし、後世修理の塗料を溶かしてから慎重に紙で押し拭きをした。塗膜や蒔絵のクリーニングは、仕上げに消毒用エタノールを用いて拭き上げた。

金具はエタノールと鼈甲の篋を用いて緑青や後世修理の塗料を除去した。

8) 蒔絵と塗膜の補強

蒔絵部分にクリーンソルGで4～5倍に希釈した本地呂漆を筆で含ませ、乾燥しないうちにリグロインで軽く拭き取った。蒔絵の補強は2度行った。また、塗膜にもクリーンソルGで4～5倍に希釈した生正味漆を含ませ、乾燥しないうちにリグロインで拭き取った。

9) 塗膜の剥落止め

蓋甲板や身の口縁部の塗膜剥離箇所を溶剤で希釈した麦漆を含浸し、木杵とヒゴ、クランプを用いて圧着した。

10) 亀裂の補強

素地構造部のほぼ全てに及ぶ亀裂部分にリグロインで希釈した麦漆を含浸して補強した。余分な麦漆はリグロインで完全に拭き取った。

11) 柱の釘除去と再接着

正面右の柱部分に打たれた後世修理の2本の釘をプラスチックシートと鉄篋で丁寧に取り外した。次に、パラロイドB44Nキシレン35%溶液で元の位置に再接着した。

12) 欠損部の形状復元

打損部や下地が欠損した部分は刻苧を充填した後、錆下地を行って形状を整えた。次に、黒漆を数回塗り表面を整えた。亀裂も同時に下地を行い、必要に応じて漆塗りを行った。

13) 色合せ

形状復元部分の色合せを行った。蓋内部は錫粉と金粉を用い、他は真鍮粉と漆を練り合わせて筆塗りした。茶色味を調節するためその上から本地呂漆を薄く塗り込んだ。

14) 釘の新補と金具調整

蓋の鍵金具に打たれていた後世修理の緩んだ鉄釘2本を交換するため、オリジナルの形状に合わせて真鍮釘を作製した。釘の色を合わせるため、油煙を少量混ぜた本地呂漆を釘に筆塗りし、火で焼き付けた。突出していた鍵金具部分を鉄鑿で形状を整えた。釘穴は釘がしっかり止まるように釘穴を適度に刻苧で充填した。

15) 金具の取り付け

蓋と身の鍵金具を元の位置に取り付けた。蓋内側鍵金具には新補の釘2本を使用した。

16) 桐箱と外覆の作製

資料に合わせて桐箱と外覆を作製した。桐箱は日本産の桐、外覆は羽二重を用いた。

17) 修復後の写真撮影

修復前に合わせて修復後の写真撮影を行い、修復作業を終了した。

5. おわりに

輸出漆器は西洋において何度も修理がなされ、漆塗膜の上に何度も塗料が被っているケースが多い。

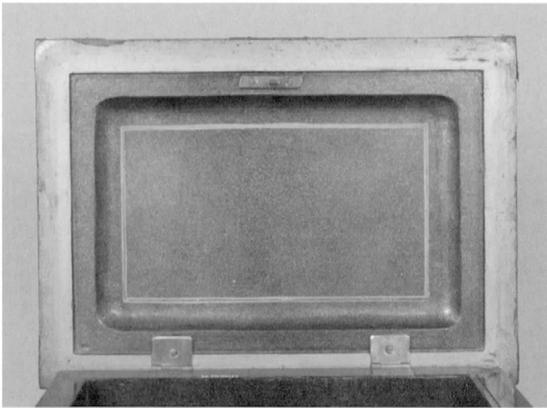
本資料は西洋塗料による修理だけでなく、オリジナルの蒔絵の上に真鍮粉と塗料でドローイングするばかりか、本来文様がなかったと考えられる部分にも新たに文様を描いていた。今回、X線透過撮影写真や表面観察によって木地部分にも修理の手が加えられていたことが判明した事から、本資料はいったん部分的に解体して組み直した可能性がある。輸出漆器の修理には漆器の技術だけでなく、西洋の材料や技法に関する知識が要求されることから、西洋の研究者と修復家が協力して修理を行っていくとの姿勢が重要と言えよう。



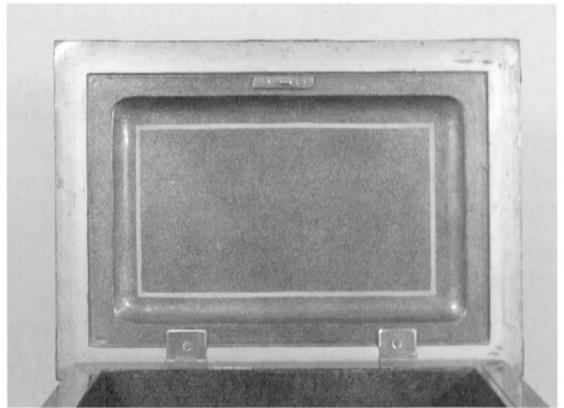
修復前
Before restoration



修復後
After restoration



蓋裏 修復前
Inside of the lid, before restoration



蓋裏 修復後
Inside of the lid, after restoration



蓋の亀裂 修復前
Crack on the lid, before restoration



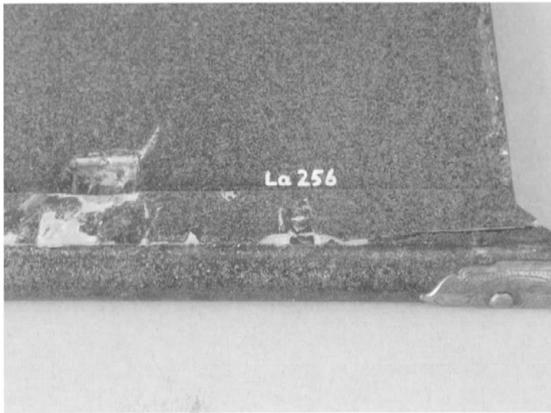
蓋の亀裂 修復後
Crack on the lid, after restoration



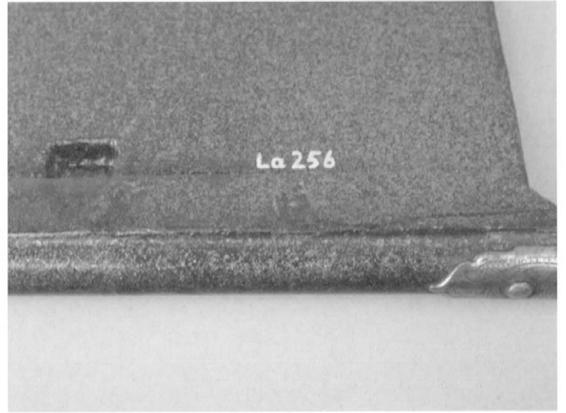
蓋周囲の塗膜と下地の欠損 修復前
Coating film around the lid and the missing foundation, before restoration



蓋周囲の塗膜と下地の欠損 修復後
Coating film around the lid and the missing foundation, after restoration



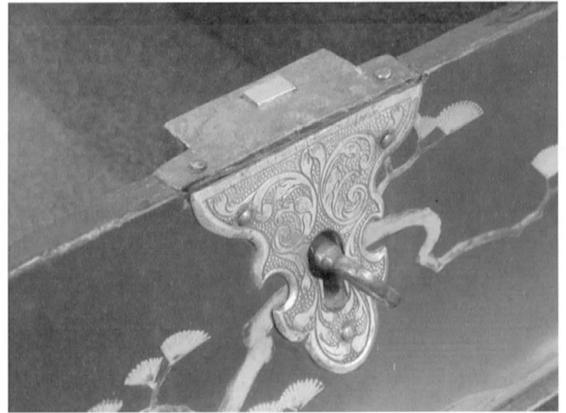
蓋天板裏側の亀裂と剥落 修復前
Crack and detached coating film on the reverse side of the top board of the lid, before restoration



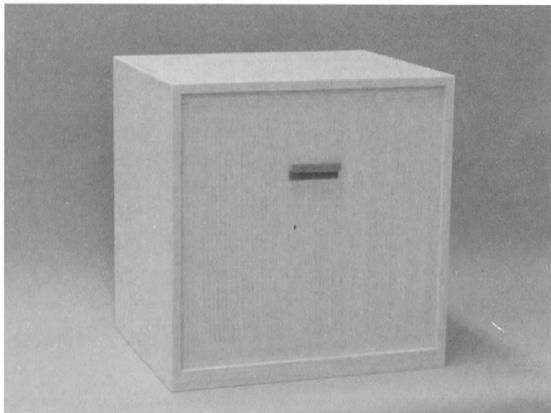
蓋天板裏側の亀裂と剥落 修復後
Crack and detached coating film on the reverse side of the top board of the lid, after restoration



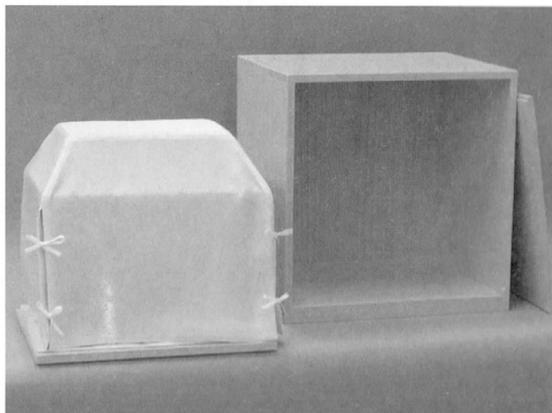
蓋の鍵金具 修復前
Metal lock on the lid, before restoration



蓋の鍵金具 修復後
Metal lock on the lid, after restoration



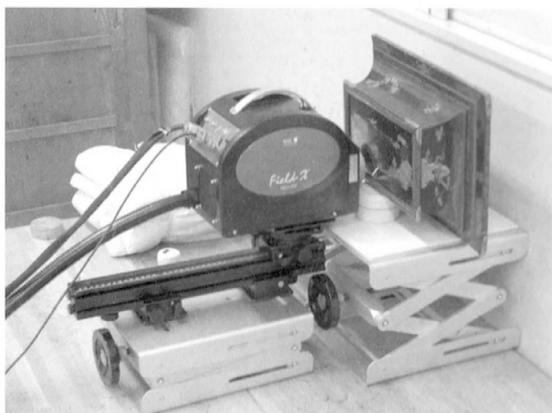
桐箱
Paulownia box



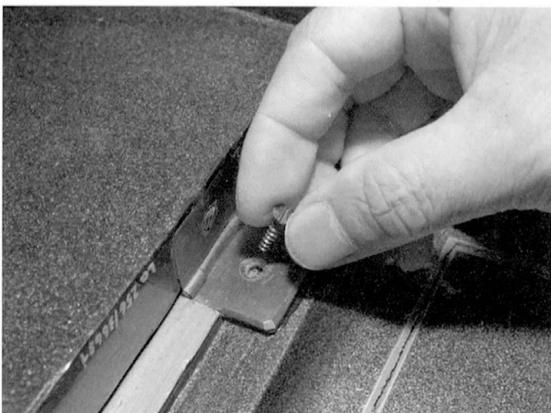
桐箱と外覆
Paulownia box and a wrapping cloth



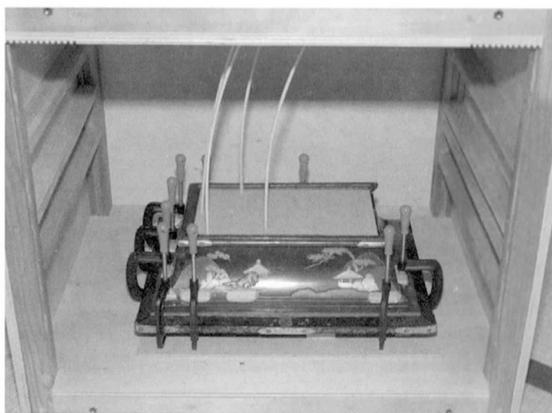
後世修理箇所（紫外線写真）修復中
Part restored in the past (UV photograph), during restoration



蛍光X線分析 修復中
X-ray fluorescence analysis, during restoration



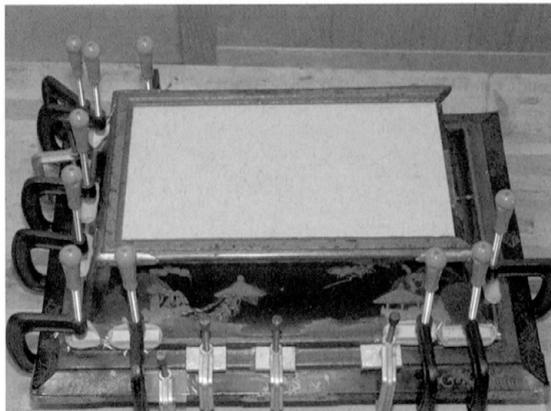
蝶番の取り外し 修復中
Removing a hinge, during restoration



蓋亀裂の形状調整 修復中
Adjusting cracks on the lid, during restoration



蓋亀裂の接着（麦漆含浸） 修復中
Adhering a crack (impregnating *mugi-urushi*), during restoration



クランプによる蓋亀裂の接着 修復中
Adhering cracks on the lid using clamps, during restoration



鍵金具の取り外し 修復中
Removing the metal lock, during restoration



DMSOによるクリーニング 修復中
Cleaning with DMSO, during restoration



隅金具のクリーニング 修復中
Cleaning a corner metal fitting, during restoration



蒔絵の補強 修復中
Reinforcing *makie*, during restoration



塗膜の剥落止め 修復中
Preventing detachment of the coating film, during restoration



亀裂の補強と接着 修復中
Reinforcing and adhering a crack, during restoration



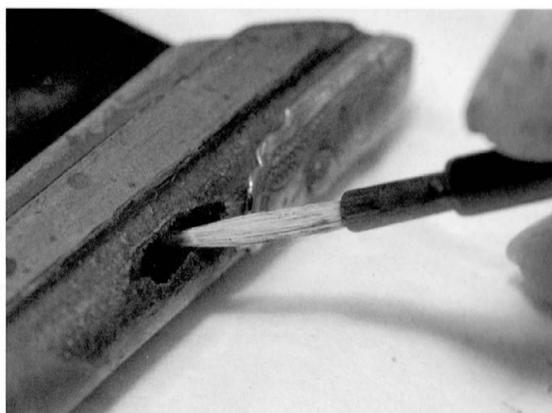
釘の取り外し 修復中
Removing a nail, during restoration



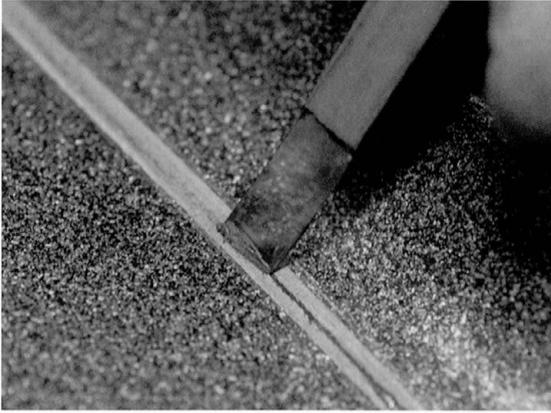
パラロイドB44Nによる柱の接着 修復中
Adhering *hashira* with Paraloid B44N, during restoration



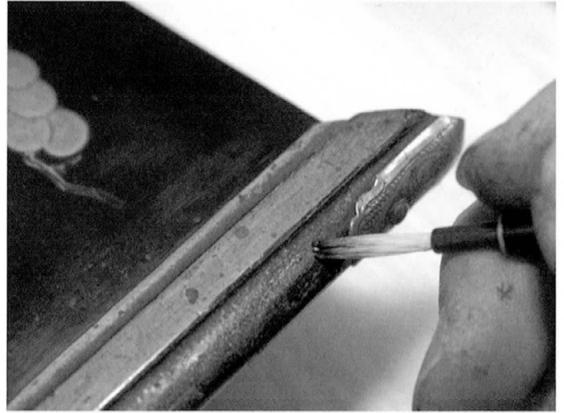
刻苧による欠損部の充填 修復中
Filling a missing area with *kokuso*, during restoration



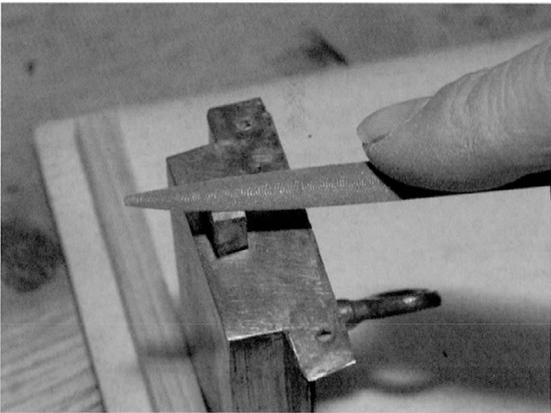
漆による欠損部の成形 修復中
Re-shaping a missing area with *urushi*, during restoration



蓋裏の色合せ 修復中
Adjusting colors on the back of the lid, during restoration



梨地部分の色合せ 修復中
Adjusting colors on the *nashiji* portion, during restoration



鍵金具の形状修正 修復中
Re-shaping the metal lock, during restoration



鍵金具の取り付け 修復中
Attaching the metal lock, during restoration

On the Restoration of *Cabinet with Mounting*

Yoshihiko Yamashita

Name of the object: *Cabinet with Mounting*

Collection of Österreichisches Museum für Angewandte Kunst

Period of manufacture: 17th century, End period

Dimensions (cm): 39.0 x 29.0 x 35.0

Period of restoration: June 2007 – March 2009 (22 months)

Place of restoration: Restoration Studio (Urushi)

National Research Institute for Cultural Properties, Tokyo

1. Description

A wooden box coated with black urushi. All the sides of the box are decorated with a scene of a landscape as well as birds and flowers in gold and silver *makie*. The lid, the inside of the body and the outer side of the foot are finished in *nashiji*. Several designs made in Europe are found in addition to the *makie* designs made in Japan.

A lid in the shape of a roof accompanies the rectangular body of the object. This lid is joined to the body with two hinges at the back. When the lid is lifted, there is a sliding panel on the left side of the body, and when this panel is lifted, a thin drawer appears in the space between the inner bottom board and the bottom board. Moreover, the top board of the lid is also a sliding lid, and when it is slid out to the side, there is storage space in the inside. There is a metal lock on the left curved side board of the lid and another metal lock on the front of the body. There are corner metal fittings on all the corners. A key for the lid and one for the body accompany the object.

A box like this is known as a casket in the West and is used as a jewelry box. It is believed that this object was made in imitation of a casket used in the West and exported.

2. Condition of damage

There were many traces of restoration having been done in Europe. Only the outer side of the top board of the lid, the outer side of the curved side board of the lid and the front, left and right sides of the body were original. All other areas of the original had been coated with black western coating material and then decorated to imitate *nashiji* and *makie*. A white foundation was used to fill parts of the missing foundation on the lid and around the metal locks of the body. Filling material applied in a European restoration was also found around the nails of the corner fittings. Two nails had been used to re-fix the half-cylindrical column-like attachment (*hashira*) on the front right and a corner fitting of another object was used on the lid. An iron nail had been used when repairing the metal lock on the inner side of the lid. The hinge, which was also thought to be from a past restoration, was attached with slotted iron screws.

Since western coating material had been applied over parts that had been reproduced in Europe, it is assumed that the object had been repaired several times in the past.

There was dust and dirt over the entire object and restoration materials were also found on the original portions, resulting in blotches. Deterioration caused by ultraviolet ray was also found on the urushi coating film, *makie* and even on the surface of the coating film applied in past restorations so that the object had lost its luster. A great amount of *makie* powder had already become detached and fallen from parts of the *makie*, exposing the urushi and foundation. There were six holes on the lower part of the foot and it is assumed that wooden nails had been lost.

There were cracks on almost all of the joints of the substrate. In particular, the substrate had become completely separated at the point where the curved side board of the lid and the frame of the lid join. For this reason, this area was very unstable. The bottom board was cracked near the center, and there were cracks around the joint of the substrate. The coating film had become lifted and a great amount of the coating film and foundation had become completely detached. There was also damage caused by abrasion and impact, and the *makie* powder had rusted and was damaged severely. The nails of the metal locks and the corner fittings had become loose and there was patina on one of the lower corner fittings. In addition, a part of the metal bar on the lock had protruded, causing damage on the reverse side of the top board of the lid.

3. Restoration specifications

The object was restored in the same way as with the restoration of designated cultural properties in Japan. In other words, the maintenance of the present condition was enforced and traditional restoration materials were used in principle. Part of the object where *makie* had been reproduced with western coating material was left as it is, but the coating material from such previous restorations that covered the surface of the coating film was removed as much as possible.

Restoration was executed not only on the coating film and *makie* portions but also on the metal fittings. Distortions of the metal fitting were corrected and nails used in previous restorations that had become loose were removed and replaced with new ones. The part of the metal lock on the lid that was protruding was filed to a degree that the lid would not be damaged and its shape was corrected.

The nails of the *hashira* that had been re-attached were removed and reversible synthetic resin was used instead to adhere the *hashira*. The shape of the parts where the foundation had been lost, other than on the foot, and the cracks were reshaped and the color adjusted to match the surrounding. Gold powder, tin powder and brass powder were used for color adjustment. A paulownia box for storage and a silk wrapping cloth were made. Photographs were taken before and after restoration.

Restoration work was conducted in Restoration Studio (Urushi) of the National Research Institute for Cultural Properties, Tokyo. When it became necessary to change parts of the restoration specifications, a discussion was held with the person in charge at the Institute.

4. Restoration procedures

1) Investigation and documentation, photographing before restoration

First, the condition of damage was examined carefully. Thirty-five millimeter and digital photographs were taken before restoration. An ultraviolet lamp was used to clarify the condition of the parts where restorations had been executed previously, and digital photographs were taken.

2) Analysis

As a result of investigation using ultraviolet ray, it became clear that several restorations had been made in Europe over a large area of the object. For this reason, several scientific analyses were conducted. X-ray radiography was conducted on the substrate and *makie* in order to confirm the inner structure. As a result, it was

found that pieces of wood had been joined around the bottom board of the lid since there were places where additions had been made on the substrate to repair the crack on the upper part of the sliding panel. Fourier transform infrared absorption spectroscopy was conducted to analyze the coating material. As a result, it was found that shellac had been used over a large area. Portable x-ray fluorescence analysis was conducted on the materials used for decoration. As a result, it was found that the original *makie* consisted of 96-97% gold (the rest being copper) and that brass (90% copper and 10% zinc) had been used for the reproduced *makie*.

3) Removal of the lid

In order to proceed with the work of adhering the cracks on the lid, permission was obtained from the Museum to remove the hinges. The lid was removed from the body. The screws of the hinges were stored separately.

4) Manufacture of a stand

A stand was made to hold the lid while doing work to prevent the cracks on the curved side board of the lid and the frame of the lid from spreading. A plywood board and a rubber board were used to make the stand in the shape of the lid.

5) Adherence of the substrate

In order to correct the distortion of the substrate that had occurred around the area where the curved side board of the lid and the frame of the lid join, the lid was placed in a box whose humidity had been adjusted. Once the substrate regained its resiliency, a wooden frame, bamboo sticks and clamps were used to gradually apply pressure. Then *mugi-urushi* diluted with a solvent was impregnated into the substrate, and the curved side board and the substrate of the lower portion of the lid were adhered. Excess *urushi* was wiped off thoroughly, and the object was left to harden for several weeks. After removing the press from the lid, the reverse side of the lid where there was a difference in level due to cracking was corrected as much as possible and adhered with *mugi-urushi*.

6) Removal of the metal lock

Before cleaning, the metal lock of the body was removed from the front of the body and that of the lid from the inside of the lid. In removing the nails, care was taken so as not to damage the surrounding coating film. A plastic sheet and an iron spatula were used. The metal fittings of the locks and nails that were removed were stored separately.

7) Cleaning

In order to remove the western coating material, a trial test was done by using organic solvents. First, dust and dirt that had accumulated on the coating film were removed with water. Then xylene, toluene and DMSO were used to remove the substances that had attached themselves to the entire surface. For the *makie* portion, an organic solvent (DMSO) was applied to the surface only with a brush. After having dissolved the coating material that had been applied in the past, the solvent was carefully wiped off with paper. Finally, sterilizing ethanol was used in the final step of cleaning the coating film and *makie*.

Patina and coating material from previous restorations were removed from the metal fittings with ethanol and tortoise shell spatula.

8) Reinforcement of the *makie* and coating film

Kijiro urushi diluted 4 to 5 times with Cleansol G was applied to the *makie* with a brush and lightly wiped off with ligroin before it hardened. *Makie* was reinforced twice. *Kijomi urushi* diluted 4 to 5 times with Cleansol G was applied to the coating film and wiped off with ligroin before it hardened.

9) Prevention of the loss of the coating film

Mugi-urushi diluted with a solvent was impregnated into the lifted coating film on the top board of the lid and

the rim of the body. A wooden frame, bamboo sticks and clamps were used for press-stabilization.

10) Reinforcement of cracks

Cracks that were found on almost all the parts of the substrate were reinforced by impregnating *mugi-urushi* that had been diluted with ligroin. Excess *mugi-urushi* was completely wiped off with ligroin.

11) Removal of the nails from the *hashira* and re-attachment

A plastic sheet and an iron spatula were used to remove the two nails that had been used in a previous restoration to hold the *hashira* on the front right. Then it was re-attached to the previous position with a mixture of Paraloid B44N and 35% xylene.

12) Reproduction of the shape of the missing parts

Parts damaged by impact and parts where the foundation had been lost were filled with *kokuso* and then reshaped by using *sabishitaji*. This was followed by applying *kuro-urushi* several times to adjust the surface. Foundation was also applied to the cracks, which were then coated with urushi as needed.

13) Color adjustment

Color adjustment was made to areas where the shape had been reproduced. Tin powder and gold powder were used for the inside of the lid, while brass powder and urushi kneaded together was applied to other parts with a brush. *Kijiro urushi* was applied over this to adjust the brown color.

14) Manufacture of new nails and adjustment of metal fittings

In order to exchange the two iron nails of the metal lock of the lid that had been used in a previous restoration and that had become loose, new brass nails were made in the shape of the original. In order to adjust the color of the nails, *kijiro urushi* to which a small amount of oil soot had been added was applied with a brush and heated over fire. The shape of the protruded part of the metal lock was adjusted with an iron file. *Kokuso* was filled as necessary into the nail holes so as to make sure that the nails would stay firmly in place.

15) Attachment of the metal fittings

The metal locks of the lid and the body were attached to their original positions. Two new nails were used to attach the metal lock on the inside of the lid.

16) Manufacture of the paulownia box and wrapping cloth

A paulownia box and a wrapping cloth were made for the object. Paulownia grown in Japan was used for the box and *habutai* silk was used for the wrapping cloth.

17) Photographing after restoration

As a final procedure, photographs were taken after restoration to complement those taken before restoration.

5. In conclusion

Exported urushiware have been restored repeatedly in the West, and in many cases coating material has been applied many times over the urushi coating film. This object was restored by using western coating material. Moreover, not only were designs drawn over the original *makie* with brass powder and coating material, but also new designs were even drawn on parts where it is believed that there was no design originally. X-ray radiography and observation of the surface of the object also revealed that restoration had been executed on the wooden substrate as well. For this reason, it is possible that the object was once partially dismantled and re-assembled. Since not only restoration techniques for urushi objects but also knowledge about western materials and techniques are necessary for the restoration of exported urushiware, it may be said that cooperation with researchers and restorers of the West is also important.

楼閣山水蒔絵箱（オーストリー応用美術館）
Cabinet with Mounting
(Osterreichisches Museum für Angewandte Kunst)



修復前 前姿
Before restoration, front view



修復後 前姿
After restoration, front view



修復前 後姿
Before restoration, back view



修復後 後姿
After restoration, back view