

The Removal of Coatings on Lacquered Surfaces – Possibilities and Limits

Introduction

The restoration of lacquered furniture or interior decorations has increasingly aroused the interest of experts during the past 10–15 years. Indicators for this development include various publications on the topic, as well as the international conferences held in 1985 and 1993 on initiative of the Getty Conservation Center in Los Angeles and the National Research Institute in Tokyo.¹ Despite this increase in awareness, lacquer objects continue to undergo restorations that damage or even decimate the material. Far too often blinded by the splendour of lacquered works, art restorers who are not trained in this field or lack sufficient experience attempt to treat such objects. Precisely because of their complex layer structure and material composition, lacquer surfaces are especially problematic to examine and develop a treatment concept for and – above all – to restore.

As for European lacquers, there are countless instances of damage to sensitive surfaces shortly after their creation, be it a result of technical deficiencies of production, as a consequence of mechanical stresses or because of display under inappropriate climatic conditions. As a result, they have been restored and altered ever since. Additionally, the removal of lacquers from polychromed or veneered surfaces has a tradition at least as old as the art of lacquering. In Europe itself instructions of this kind can be found in manuals on coating techniques from past centuries.² These frequent interventions have led to a loss of many original surface textures, be they on chinoiserie, veneered or polychromed decorative objects.

Unfortunately, even today the natural ageing process and therefore the value of historical lacquer surfaces is far too rarely accepted. There is a continued increasing demand for the removal of yellowed and dull original surfaces. Examples for such 'restorations' abound in the very recent past. Colour plate XIX.1 shows part of the surface of the altar of the Rococo decoration of the eminent Swabian monastery church of Roggenburg (Günzburg county). The completely intact original lacquer was removed in 1984, because it had yellowed.

In many instances in the 20th century historical gloss lacquers were replaced by wax, shellac, dammar or synthetic resins. Such materials have nothing in common with the intention of the Baroque or Rococo period, neither in materials, technique nor aesthetics. A prominent example is the so-called 'Chamber of Voltaire' in Schloss Sanssouci near Potsdam. The room was furnished under Frederick II between 1745–1747 and lacquered under Augustin Dubuisson.³ The restoration of this well-known lacquer room was carried out in the 1970's. The historical gloss lacquers of the surfaces were removed and replaced by alkyd varnishes. The aesthetic transformation which this lacquer cabinet has undergone does not allow the visitor today to experience the former effect of the original, neither in colour nor gloss.

Methods for the Removal of Recent Coatings

Original surfaces have thus repeatedly been removed, inadequately substituted or thoughtlessly overpainted to satisfy the beholder's concept of luster, depth and colour effects. Traditionally, spirit or oil lacquers were used for this and, increasingly since the 1920's and 30's, various synthetic resin lacquers. The removal of such overcoatings belongs to the most complicated topics in conservation. Damage due to unqualified treatments is unfortunately still very frequent.

For the removal of later applied coatings different methods were developed by Richard Wolbers and have been used in conservation for about the last twelve years. With these methods later lacquer layers can be removed much more precisely than with conventional methods, using for example thickened soaps or solvent gels.⁴ Nevertheless, lacquer removals have been carried out repeatedly with these methods which – taking the condition of the respective object into consideration – can only be called irresponsible.

In the 1960's and 70's an euphoria over technical advances led to the use of synthetic resin lacquers much too quickly (there are famous collections of lacquered furniture in Germany that were all coated with synthetic resins at that time). Today I have the impression that the decision to remove coatings identified as 'not original' is made much too quickly.

In the Bavarian State Department of Historical Monuments the methods developed by Richard Wolbers have been used with positive results since 1992. Therefore, the opportunity is taken here to report about our experiences with the removal of recent retouchings of historical lacquerwork. In this context only a short summary can be given. It is not the intention to go into too much detail about the materials or methods developed by Richard Wolbers, since various publications have dealt with this.⁵

Instead, through case studies, the general preconditions of each object, which led to the success or failure of the lacquer removal, shall be described. It is not my intention to report about successes, but rather to point to the limits of conservatorial decisions, which were the result of unique surface situations. Furthermore, alternative procedures will be referred to briefly, such as mechanical or laser supported removal of lacquer retouchings.

All the objects referred to have in common that they were submitted to an extremely careful and profound conservatorial and scientific investigation beforehand. The GC/MS analyses for the identification of the binding media was kindly carried out by Johann Koller and Ursula Baumer at the Doerner-Institute in Munich. This procedure made it possible to precisely determine original and recoated areas, which provided the basis for focused conservation procedures.

Practical Prerequisites for Lacquer Removal

There are two basic preconditions for a successful removal of recent coatings: First, the object has to have large, flat surfaces. In this respect lacquered furniture and cabinets or ecclesiastical interiors provide much better conditions than painted surfaces with three-dimensional decoration. Only a flat surface usually shows a regular layer build-up, a basic condition for lacquer removal with chemical means. Second, the lacquer layer should be relatively intact, that is, uniform throughout. Many historical coatings have originally been polished to achieve their characteristic shine. In case such untouched surface structures have not been damaged mechanically or chemically during the recoating, the conditions for a removal are good. In such instances chances are good that the subsequent coat has not bonded well to the original. Complications are to be expected where the original lacquer has developed a fine crackle, degraded or been reduced in its original thickness, allowing the recent coating to intrude deeply into the original. In such situations even the clearing of the media used for lacquer removal poses a problem.

The following survey presents three case studies of objects whose surface characteristics offered such positive preconditions that the removal of the recoatings was possible.

Case Studies:

The Polychromed Altar Ensemble of the Holy Cross Church in Landsberg.

Lacquer Removal with Solvent Gel

The marbled altarpieces at the Church of the Holy Cross in Landsberg/Lech, executed between 1755–60, were created by Franz Anwander. The restoration history of this important ecclesiastical interior decoration is described in this publication by Thomas Schoeller and Andreas Scheuch.⁶

The original, polished lacquer surfaces⁷ of the marbling had remained in a more or less satisfying condition, until it was decided to have them inpainted and recoated with shellac during a restoration campaign in the late 1980's. Under UV-light it can be reconstructed, with the help of cross sections, that the historical lacquer layer distinguishes itself clearly from the recent coating. Even if cross sections may sometimes deliver misleading pictures⁸, such investigative inquiries are a first basis to gain information about the surface build-up.

The removal of the new coating was not only a matter of aesthetics; it had developed enormous shrinkage cracks, a heavy wrinkling and had turned yellow in a short time (colour plate XIX.2). A solution for this complicated conservation problem was needed since the recent lacquer coating developed increasing inner tensions because of its enormous layer thickness, endangering the original coating – the marbling and the original lacquer – to a degree that could not be stopped any other way.

After intensive research and testing the removal of the shellac mixture was successful with the help of an isopropanol gel on the basis of Carbopol and Ethomeen.⁹ The positive precondition, which made a conservation possible, was due to the fact that the new lacquer was still relatively young at the time of its removal, i. e. not older than ten years; its ageing process had evidently not yet accelerated to a degree that it would have resembled the original lacquer too much, eventhough both lacquers contained spirit soluble natural resins. On the other hand, it proved advantageous that the original surface was of considerable layer volume,

and its polished and therefore compressed surface was well preserved over most areas. Here, the shellac surface could not intrude too intensively into the original lacquer.

The Veneered Interior Decoration of St. Getreu in Bamberg. *Lacquer Removal with Solvent Gel*

Another example for the successful use of solvent gel is the interior decoration of the former convent church of St. Getreu in Bamberg. The exceptional, luxurious marquetry of the altarpieces and the pulpit have been made by the highly appreciated Franconian court carpenters Servatius Brickard and Franz Anton Thomas.

The original coating of the entire interior decoration is still intact today (most unusual). Analyses have shown that different lacquer systems were employed: Besides an oil varnish based on amber and linseed oil, original copal lacquers were also found.¹⁰ These are responsible today for the yellow-toned outward appearance. Additionally, a spirit soluble red dyeing lacquer had been selectively used as well, mostly on burl veneer. Here several small patches were preserved, which had up to now been covered by applied carvings. The veneers had been ennobled with lacquers of different colour, i. e. of varying composition.

The only retouching that this ensemble had undergone probably took place in the 19th century, when a linseed oil varnish of varying layer thickness had been applied. In the course of time this coating aged such that it developed extreme alligating, especially the thicker areas were exposed to a more intensive light in connection with the layer thickness (colour plate XIX.3, fig. 1). For this reason there are some areas, where – due to the high layer thickness of the retouching – the artful variety of the marquetry can hardly be recognized. In addition, the slowly drying linseed oil varnish also bound large amounts of dirt on the horizontal surfaces over an extended period. They cannot be removed by a simple cleaning of the surfaces and deepen the dark-brown natural colour of the linseed oil varnish today.

In such areas we chose test fields for the removal of the linseed oil varnish in 1992 (see colour plate XIX.3). For our purpose the generally well-preserved condition of the original lacquer at the time of retouching proved advantageous. Furthermore, it was helpful that different lacquer systems were lying over one another, and the linseed oil varnish was solvable in polar solvents due to ageing. It could be removed with an isopropanol gel on Carbopol-Ethomeen-basis without damaging the original. Nevertheless, an aesthetic disadvantage remained as the original lacquer had been badly bleached in areas of high light exposure. As a result, the luster of the lacquer surface has survived but the original gold and red toned variations are no longer present.

The Veneered Organ Case in Aich.

Lacquer Removal with Deoxycholate Soap

Frequently, however, nearly insoluble lacquers are laying over original surfaces. An example for this is the veneered organ case in the Catholic Parish Church in Aich, originally made for the Dominican Convent Church in Landshut in 1767.

The gold-toned original lacquer was intact over the entire wood surface. However – as was later discovered – it had been overpainted in the 19th century with a solid coat. This later coat-

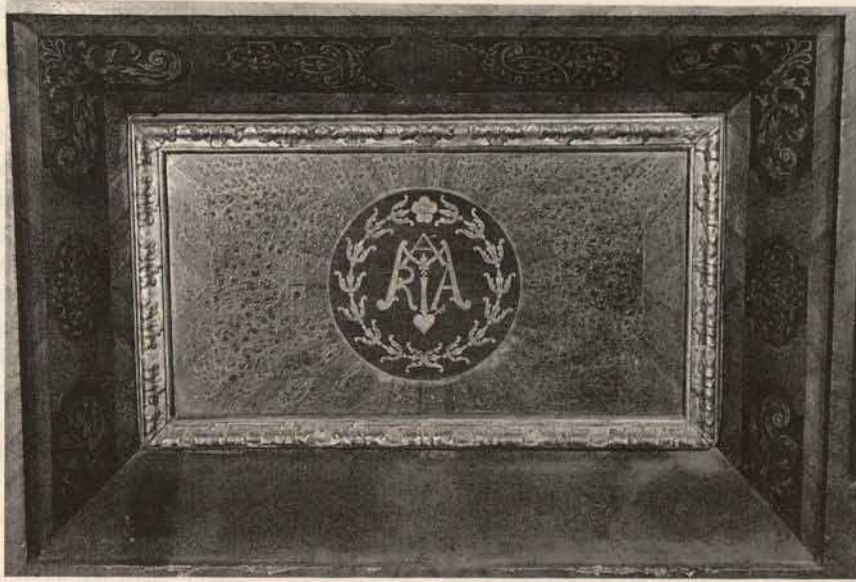


Fig. 1. Bamberg, former monastery church St. Getreu. Mensa of a side altar before treatment. The original stained lacquer marquetry has remained, but was overpainted with a linseed oil varnish in the 19th century

ing had turned matt, differentially darkened and was partially alligatored (colour plate XIX.6). It also bound dirt in certain areas due to its extremely slow drying time, which made it almost impossible to recognize the unique and elaborate marquetry. According to the GC/MS analyses a linseed oil-stand oil retouching of the 19th century was found on the intact original natural resin spirit lacquer. Though these were two different binding media systems the problem was that the original lacquer was much more sensitive to all solvents tested than the stand oil coating. Here, not even solvent gels showed any positive results.

Based on an idea by Johann Koller¹¹, we tried to saponify oil lacquer with deoxycholate soap. After a number of tests which varied the thickness of the soap and the duration of application as well as the relatively complicated method of clearing, the stand oil coating was removed with visibly positive results (colour plate XIX.7).¹² Here, it proved advantageous that the original lacquer surface had remained unbroken and was thick enough, even on the carved elements.

On all three objects described above the original lacquer surfaces were found in such good condition that after removal no new lacquer had to be applied, with the exception of a few severely light damaged patches. The windows of the interiors, responsible for the light damage, were covered with UV-filters to preserve the exposed original surfaces.

As in the cases just described, the following examples present interior decorations from the 18th century whose original lacquers were overcoated, detracting dramatically from the aesthetic intention of the original surface. However, here we decided against a removal of the overcoats with chemical means, for varying reasons.

The Veneered High Altarpiece of the Church of the Guardian Angels in Straubing.

On the Problem of Separating Two Oil Lacquer Layers

The veneered high altar of the Church of the Guardian Angels in Straubing stems from the early 18th century. The original coat-

ing of the veneer has been preserved, though partial damage by light was obvious. The analyses showed an amber-containing linseed oil varnish that had been bulked with colophony.

Only in the 20th century had the original lacquer been overcoated with a 'resin lacquer', i. e. linseed oil-stand oil cooked with hardened colophony (colophony neutralized with chalk). This coating had alligatored and even turned brittle in areas damaged by light, disturbing the visual appreciation. Furthermore, its considerable layer thickness hindered the consolidation of the areas covered with veneer cut from a hand plane.

The altar had been relocated to the end of the choir during the secularization in the early 19th century, where large areas of it were exposed to intense light from nearby windows. It was to be expected that the original lacquer had been affected in these areas, even prior to its recoating. Additionally, it may have been

Fig. 2. Cross section of the surface of the veneered high altarpiece at the Church of the Guardian Angels in Straubing under UV-light, 50x magnification. A light-blue fluorescent original lacquer is seen on the wood in the left half of the picture with nearly the original layer thickness. To the contrary, in the right half of the picture it has been reduced to such a degree that it is barely visible on the wood veneer any more. The retouching (yellow fluorescence) lays over both surfaces





Fig. 3. Side altarpiece of the Catholic Pilgrimage Church at Froschhausen. In the course of earlier restorations it had been partially painted over with a linseed oil-stand-oil lacquer. For this reason the retable shows lacquer runs in several places

mechanically reduced prior to the application of the new lacquer coating. The cross sections of the samples taken seem to support our suspicion (fig. 2). Theoretically this result alone spoke against a removal of the overcoating.

Nevertheless, the conservation needs as well as the absolutely unsatisfying outward appearance made a removal desirable. Therefore several removal test fields were made. However, as both the original amber lacquer and the later applied resin lacquer were oil lacquers, their similarity made the separation trials rather difficult. Furthermore, the more recent lacquer was difficult to dissolve due to its method of production, while the original lacquer reacted very sensitively. As soon as the uppermost lacquer layer began to dissolve, the original lacquer was attacked as well. Even the soaps did not prove successful. As a result of these analyses it was decided to try slow evaporating solvent gels.¹³ All efforts failed to bring the desired result: the removal of the 20th century coating without damage to the original lacquer. It was therefore decided to favour a dry cleaning of the surface.

During the tests it was discovered that a visual deepening (saturation) of the finish could be achieved by rolling over the uppermost layer with a swab drenched in isopropanol. Nevertheless, from the side of the Bavarian State Department of Historical Monuments, such a procedure was not recommended, since it enlarged the danger of intermixing the two layers, which would be a severe hindrance for any future restorers that may have improved techniques at their disposal.

The Polychromed Side Altarpieces of the Pilgrimage Church St. Leonhard in Froschhausen.

The Difficulty of Removing an Unevenly Applied Linseed Oil-Stand Oil Coating

In the Pilgrimage Church in Froschhausen (county of Weilheim) three marbled altarpieces from around 1780 have been preserved, with their original highly polished lacquer coatings. The marbling is mostly resin-bound, the spirit soluble gloss lacquer consists mainly of sandarac with an admixture of larch turpentine, mastic and small amounts of elemi.¹⁴ The side altars underwent a first retouching with copaiva balsam, which at least did not lead to any optical effects, but penetrated through the

original lacquer into the primer. The second retouching can be dated: it was done in 1935. Linseed oil-stand oil had been applied to only certain areas. This coating was most apparent where it had been unevenly applied, having even run or sagged (fig. 3).

The removal of such uneven retouchings or recoverings is always problematic as the solvent gels can only be applied to the affected areas. Practically, this would be possible on the runs and brush strokes with the aid of a microscope. However, experience has shown that the area affected by the solvent gel often tends to be larger than desired. During cleaning of the gel the neighbouring uncoated areas would most likely also be affected.

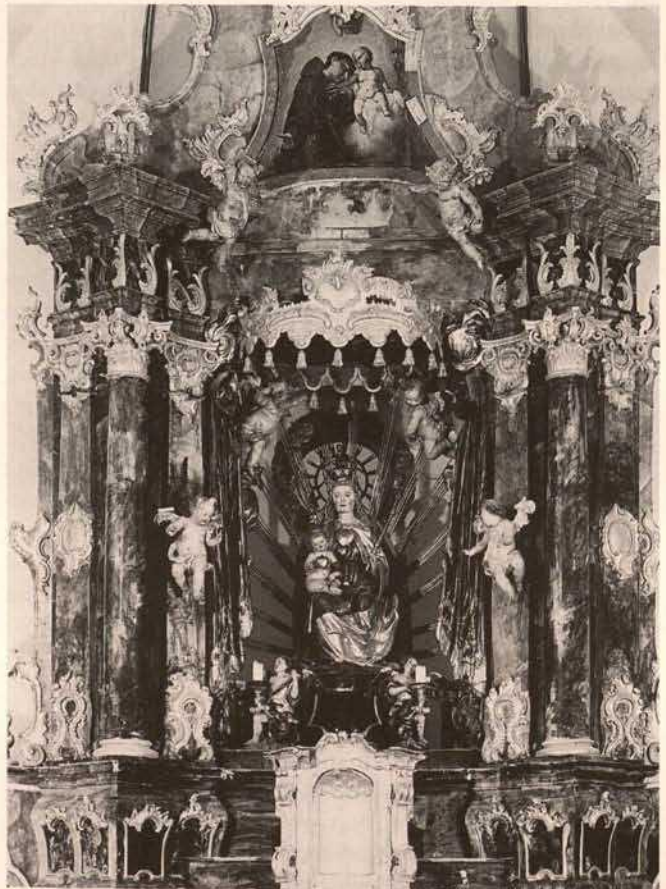
For these reasons we decided to leave both overcoats since they did not pose any particular conservation problem. Nevertheless, aesthetically unsatisfying parts, like drips of the linseed oil-stand oil coating from the 1930's, were mechanically removed with the help of a cotton swab and tripoli until they were no longer visually disturbing.

The Polychromed High Altar at Baierbach.

On the Difficulty of a Spirit Lacquer Saturated with Synthetic Resin Components

A rather similar problem was encountered with the removal of the retouching of the original lacquered marbling at the high altar of the Catholic Filial Church in Baierbach (county of Landshut, fig. 4).

Fig. 4. Baierbach, district of Landshut, retable of the high altarpiece of the Catholic filial church, the original marbling and its gloss lacquer has been overpainted with a brownish phenolic resin coat in the 20th century



According to the GC/MS analyses the original gloss lacquer of the coating consists of sandarac, larch turpentine resin, mastic and camphor. Additionally, small amounts of copal have been found. The brownish overcoat is a phenol-based synthetic resin lacquer. Components of this coat had penetrated the original lacquer as well as the marbling, which also contained large amounts of lacquer, as it was also bound by resin. For this reason a separation of both layers in the strict sense of the word was not possible; nevertheless, for aesthetic reasons a solution was sought that could reduce the retouching at least superficially. A further problem was that both lacquer layers showed similarities in their composition and solubility. The greatest difficulty was that the lacquer to be removed showed considerable differences in layer thickness, just like in Froschhausen (figs. 5a), 6b), colour plate XIX.4). To compound the problem, there were numerous small areas that had not been coated.

The aforementioned solvent gel and thickened soap that were utilized so successfully affected the surface – due to their nature – uniformly. In the case of the Baierbach altarpiece the retouching covered the original very unevenly. While the gel would still be softening the thicker sections of the lacquer, other areas would already have been dissolved. A deleterious effect on the original lacquer could therefore not be completely excluded. After several tests, it was decided to exclude this method completely.

Removal Attempts with Laser Techniques

In cooperation with Jan Hauptmann and Thomas Heinze at the Fraunhofer-Institute für Werkstoff und Strahltechnik Dresden test series have been carried out with a transportable Nd-YAG-short pulse laser.¹⁵ The samples have been tested under 1064 nm, i. e. in the infrared range, a wave length which has proven its efficiency in comparable fields of conservation.¹⁶ The result of these tests was that the removal was possible without doubts at higher intensities. Nevertheless the exposed original lacquer showed an undeniable yellowing as well as partial losses or punctures, as was later confirmed by cross sections. At lower intensity, which was reached by enlarging the working spot diameter, the removal of the retouching was not possible. In this technique at least one further area was shot, since it could be deducted that at least a certain brittleness of the uppermost layer would be achieved, which could facilitate a subsequent mechanical removal with a scalpel. However, the tests of this hypothesis revealed that this method did not lead to an improvement of the removal technique (see fig. 5c)).

After these tests, which at least showed a partial realization of removal, a laser with OPO-system (optical parametrical oscillator) was used, which allowed an infinitely variable change of the wave length in an area from 400 nm to 700 nm. With this instrument it was possible, due to the different wave length, to test the optical qualities of the lacquer layers that had to be separated. The aim was to find the wave length which would be absorbed by the retouching but reflected or transmitted by the original layer.¹⁷

With tests in a wave length from 650 nm to 530 nm the laser rays were absorbed by the original lacquer layer, which led to damages of this layer. In contrast, tests in a range from 510 nm to 450 nm succeeded in the originally desired absorption in the uppermost, i. e. the retouching layer. However, its optical parameters resembled those of the original lacquer layer so much,

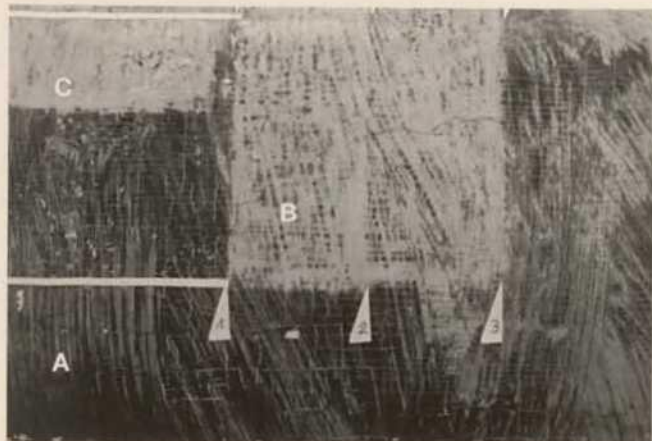


Fig. 5. Detail of a marbled column from the high altarpiece at Baierbach. a) right and lower detail of the picture: The synthetic resin coating shows a brownish colour and an extremely irregular brush stroke. b) upper center: first step in the removal: the uppermost layers of the synthetic resin coat had to be removed mechanically. c) left upper detail: the smaller test field had been pre-treated before with the YAG-laser; the removal of the thereby embrittled lacquer was done mechanically, as can be seen in the detail above

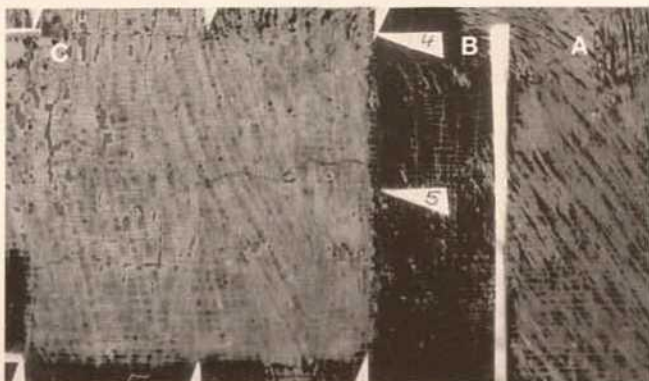
that no possibility existed to affect a separation without damaging the original.

Mechanical Removal Methods

For these reasons the removal was once again attempted with mechanical means. The removal of the relatively stable overlying phenolic resin lacquer with the scalpel was too risky for the original lacquer layer even after pre-treatment with a laser. On the other hand it was possible to maintain control with the swab and abrasive powders (like pumice, tripoli or diamantine). On the other hand, the necessary addition of some drops of distilled water for this technique would have endangered the stability of the original coating, as the original gloss lacquer evidenced a crackle pattern, allowing moisture to penetrate.

Therefore it was finally decided to try a removal in two steps: After thinning of the retouching with abrasive powders

Fig. 6. Fluorescence photograph of a detail of the column with test fields (see fig. 5). From right to left: a) First step: partial mechanical removal, b) Before treatment, c) Nearly complete removal after consolidation; the remains of synthetic resin are visible in daylight (see: colour plate XIX. 4) and are apparent under UV-light



(see fig. 6a)) a consolidation of the mostly exposed cracked lacquer was undertaken. For this purpose a 3 % approx. solution of isinglass as well as a volatile fastening medium cyclododekane, dissolved in mineral spirits, were tested. Both materials proved successful, so that a nearly complete mechanical removal was possible without risk to the polychromy and the original lacquer surface. Minute remnants of the more recent lacquer, which lay imbedded within the original gloss lacquer, were purposely left to minimize the loss of original lacquer by abrasive powders (colour plate XIX.4). A positive side effect of this technique was an enhanced surface gloss, in contrast to its appearance before treatment. In contrast to the above mentioned high altarpiece in Straubing the mechanical removal could be successfully applied in this case only because the surfaces and the original lacquer layer were relatively intact. Furthermore, the synthetic lacquer had the advantage of being rather brittle.

*The Lacquer Cabinet in the Residential Palace of Rastatt.
On the Problems of a Spirit Lacquer Saturated with Synthetic
Components*

As a last example the lacquer room in the residential palace at Rastatt shall be presented – a ‘japanned’ interior, imitating East Asian lacquer, and executed in the first decade of the 18th century.¹⁸

The lacquer used here was a spirit lacquer, in which mainly shellac, sandarac and amber have been detected.¹⁹ In 1973 the lacquer panels underwent their first comprehensive restoration: The goal was to restore the aged original surface to a ‘high gloss’. This was achieved by first mechanically abrading all surfaces, both flat and relief, and afterwards reforming it with E 33,

an ester-methanol mixture. This procedure caused heavy losses to the original surface of the lacquerwork. Especially visible is the damage to the chinoiserie decorative painting. The figures have been damaged to such a degree that their original outlines are hardly recognizable today; additionally they have been improperly painted over (colour plate XIX.8). The mechanically as well as chemically reduced and softened original surface has been – according to our latest investigations – retouched and at least recoated twice with a synthetic resin lacquer containing copal- and shellac. Even if the modern coating has until now not led to surface tension problems or the like, its milky natural colour and its extreme lustre caused the colleagues of the Administration of the Castles and Gardens of Baden-Württemberg in Karlsruhe to raise the legitimate question, whether a removal might be both possible and justifiable.

Tests on a small area showed that the surface of the new lacquer was relatively easy to dissolve with polarized solvents. However, an investigation of the painting technique and layer structure dashed our hopes: cross sections showed that the new lacquer had intruded deeply between the original lacquer layers, which had obviously not been consolidated before overcoating.

There is also an additional fundamental problem: During the production of these lacquers a common technique was to apply at least some of the fine drawing of the decoration over the final lacquer layer. As a consequence these parts of the painting are in greatest danger during a restoration. Unfortunately, examples of destruction of these important final decoration drawings are innumerable (fig. 7). Only a fraction of the European imitation lacquers have survived undamaged over the centuries.

The artistic abilities and the refinement of these decorative paintings can therefore only be studied on a few still untouched pieces of furniture or lacquer rooms today.

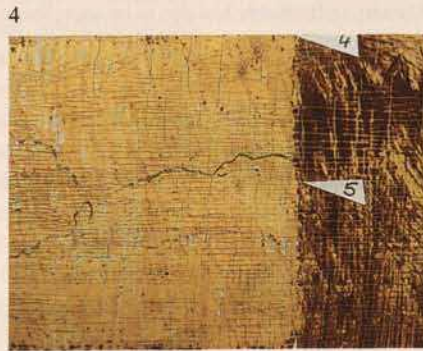
Farbtafel XIX / Colour Plate XIX

- 3 Detail of the left side of the mensa of a veneered altarpiece at St. Getreu in Bamberg. Alligatored surface of the linseed oil varnish from the 19th century and test window of the exposed original lacquer using isopropanol gel (right detail)
- 4 Baierbach, district of Landshut, detail of the High altar of the Catholic Filial Church. Right: The original marbling and gloss lacquer was painted over with a brownish phenolic resin coat in the 20th century. Left: Test field for a nearly complete removal of the retouchings of the Baierbach column. Last remains of a brownish synthetic resin have intentionally been left within the original gloss lacquer surface to keep from having to sand it more than absolutely necessary
- 5 Macro photograph from a detail of a lacquer panel from Rastatt. The lower half of the picture shows the current condition, the surface being coated several times with a glossy synthetic resin lacquer of great thickness. The upper half of the picture shows the condition after the removal of the retouchings with an isopropanol gel in raking light. The fissuring of the original surface – caused by an earlier restoration – can now be seen. A removal would endanger the gold drawings lying on the surface
- 6 Detail of a side door of the organ case of the Catholic parish church at Aich before treatment. The picture shows the brownish-toned linseed-stand-oil which recovers the original lacquer surface since the 19th century
- 7 Side door of the organ case after removal of the linseed oil-stand-oil (see 6). The marquetry shows the intact, closed original surface and is of a golden-yellowish colour
- 8 Detail of the panelling of the Rastatt lacquer cabinet. The original lacquer painting was mechanically and chemically damaged in the course of a more recent restoration, and was only fragmentarily preserved, as the gold painting in the photograph illustrates. The flowers and leaves were subsequently partially repainted in another colour



1 Top of a marbled side altarpiece in the Convent Church at Roggenburg, with remains of the historical gloss lacquer on the left, which has already been removed on the right half. Condition report during the restoration 1983–1985

2 Damage of the historical gloss lacquer on the marbled altarpieces of the Church of the Holy Cross at Landsberg. The details show the extent of yellowing and alligating caused by the recent lacquer coating after only six years, additions also caused the here visible delaminating and losses of polychromy



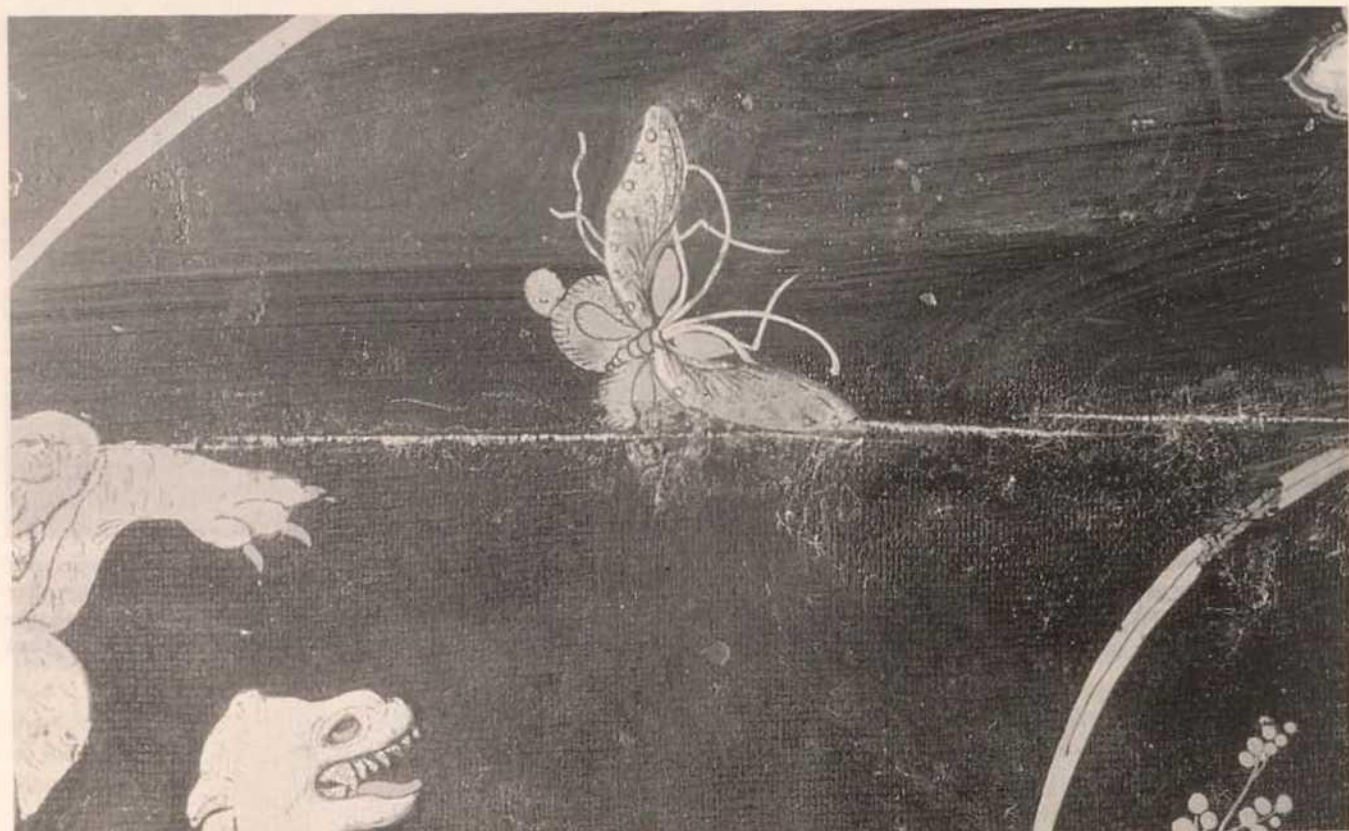


Fig. 7. A butterfly on a French secretary by Jean Rhenon, irretrievably lost due to an unprofessional restoration

In the case of the Rastatt lacquer room a major part of the gilded decoration is also on top of the final lacquer layer and has therefore – at least where it survived the restorations of the 1970's – been embedded in the new lacquer. In the cross section under UV-light it is readily apparent that the gold decoration lies between the original lacquer and the retouching. The removal of the retouching lacquer would consequently lead to a further loss of original decorations.

The principles laid down in the beginning of this paper may be recalled here once again: a prerequisite for the separation of lacquer layers is the presence of a compressed, intact original surface. The GC/MS analyses unquestionably proved that the synthetic lacquer from the 1970's had even penetrated the underlying layers of the original lacquer in a characteristic way and did not allow a 'separation' in the strictest sense of the word. Furthermore, the original surface of the lacquer room had been abraded and sanded prior to retouching. In an approximately 1 x 2 cm large test window the completely ruined surface structure could be observed (colour plate XIX.5). Had this surface been exposed it would have urgently required a new coating. Considering the tremendous problems the removal of later overcoats poses, there are good reasons against an overlacquering of original surfaces. This is especially true in cases such as this, where the surface structure has been so badly damaged. The considerations led to the conclusion, in spite of the completely unsatisfying modern coating, not to carry out a removal.

Recent studies by Daniëlle Kisluk-Grosheide and Oliver Impy²⁰ on French furniture of the 18th century with East Asian lacquer applications have shown that some pieces of furniture were disassembled only shortly after their creation. Their forms already considered unfashionable, they were partially reused in

pieces of furniture of the latest fashion. A prominent example is given by a French secretary by Jean-Henri Riesener, dated 1787, in the Metropolitan Museum of Art in New York, integrating – besides the European lacquers – also East Asian lacquer panels of different provenance and date.

Also in German interior decorations from the 18th century it can be repeatedly observed that one object can combine lacquered surfaces of different techniques and from different periods. To recognize this it requires detailed and lengthy examination. When considering the removal of more recent coatings this fact demands an increased sensitivity to the manifold qualities of the original object. Much too often it can be observed that the variety lacquer objects offer is neither expected, respected nor searched for.

Later repairs are not always so easily recognized as in the case of the Riesener secretary at the Getty Museum in Los Angeles, California. Here, a later shrinkage crack in the East Asian lacquer panel has been covered, as can be seen in figure 8, by painting over it with a dragonfly. The preservation of such later additions seems to be increasingly accepted by specialists today, but this view is gaining ground only slowly. To the contrary, subsequent clear lacquer layers, possibly also worthy of preservation, are gaining much less attention. Were this to happen this would most certainly lead more often to the decision not to expose the original lacquer regardless of condition and at any cost.

The preconditions and practical solutions presented in this essay with the aid of case studies – not nearly exhaustive – should reflect the arguments for and against a removal of lacquer retouchings from a technical point of view. They were also meant to illustrate that it is not always sensible nor justifiable to undertake a lacquer removal merely to satisfy our contemporary aesthetic ideals.

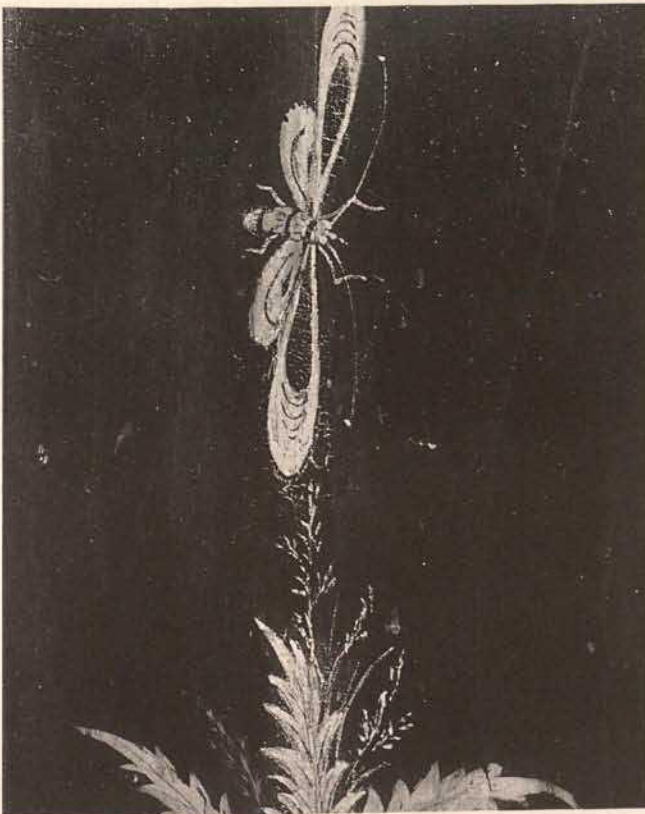
Final Remarks

To conclude, a group of European lacquer furniture from the 18th century will be highlighted, which have been decorated with East Asian lacquer panels. It is by now well-known that these East Asian 'implants' have sometimes been over- or in-painted with European lacquers at the time the respective piece of furniture was made. One example is a French *table de toilette* by Criard: the Japanese lacquerwork of the table top is covered with additional French decorations from the period. Such barely recognizable details must first be detected prior to tests for the removal of later retouchings. In such cases the chosen method must not effect the Asian original or the European lacquer. The possibilities for a damage-free removal of later coatings are necessarily reduced in such a case.

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Fig. 8. Detail of the front panel of a secretary by Jean-Henri Riesener. A dragonfly has been painted onto it to cover an earlier shrinkage joint



Notes

- 1 On this topic see: *Urushi, Proceedings of the Urushi Study Group*, June 10–27, 1985, Tokyo and *Preprints, The 17th International Symposium on the Conservation and Restoration of Cultural Property, Conservation of Urushi Objects*, November 10–12, 1993, Tokyo.
- 2 A remarkable description of this procedure is given by JEAN-FÉLIX WATIN, *Der Staffmaler, oder die Kunst anzustreichen, zu vergolden und zu lackieren*, ..., Leipzig, 1774, pp. 297–300: 'Erneuern oder Abputzen einen Firniß, heißt, ihn von allem Schmutz der Fliegen und anderen Insekten, oder von der Fettigkeit, dem Staube, und was sonst darauf gekommen, reinigen, und ihm sein ehemaliges Ansehen geben. Man bedient sich einer Lauge darzu, die auf verschiedene Art gemacht wird. Die beste in dieser Art ist ohnstreitig diejenige, die man von Pottasche und calcinirten Weinhaefen verfertigt. ... Wenn die Farben schmutzig sind, so muß man sie mit schwacher Lauge waschen. Bedient man sich obiger Lauge, so gießt man nur $\frac{1}{2}$ Nössel davon in eine Kanne Wasser, so ist es stark genug, um den Schmutz abzunehmen. Man muß sich hüten, daß es nicht strichweise läuft, sondern allenthalben gleich ausgebreitet wird, damit es keine Flecken giebt. Wenn diese Lauge 3 oder 4 Minuten darauf gewesen ist, muß man gleich hinter drein mit Flußwasser recht naß waschen, damit der Schmutz und die Lauge abfließen, sonst würde letztere die Farben und den Firniß anfressen. Die Farben sehen alsdann frischer wieder aus, und wenn alles recht trocken ist, so giebt man einen oder zwey Anstriche mit Firniß. ... Wenn eine Farbe gänzlich zernichtet oder weggeschafft werden soll, um eine andere an ihre Stelle zu bringen, so ist überhaupt das sicherste, alles durch die Lauge wegzuschaffen, nicht nur den Firniß und die Farbe, sondern auch den Kreidegrund, den Leimgrund, die harten Tinten, und vornehmlich die unterste Grundfarbe, ...' ('Renewing or cleansing a finish means restoring its previous appearance by removing all dirtying flies and insects, or all greasiness, dust and whatever else may have come on it. To do so one uses a caustic solution, that can be made in different ways. The best wash, without a doubt, is made from potash and calcined wine yeast ... If the colors are dirty, they must be washed with a weak solution. Using the above mixture pour only a pint into a can of water, so it is strong enough to remove the dirt. One must be careful that it does not run but rather be spread out evenly so as not to become spotty. After leaving it on for 3 to 4 minutes it should immediately be washed rather wet with river water so that the dirt and caustic solution run off, otherwise the finish and colors would be attacked. The colors will once again appear fresh, and when everything has dried well, coat once or twice with lacquer ... If a color is to be completely removed, to be replaced with another, the most certain method is to remove everything with a caustic solution. Not only the lacquer and color, but also the gesso, glue size, the hard inks, and particularly, the base color.')
- 3 WÜRTEMBERG 1998, pp. 97–98.
- 4 The problem of residues, which may eventually remain on surfaces after clearing of solvent gels based on Carbopol and Ethomeen, is rightly discussed controversially. Recent investigations on this topic, initiated by the Getty Conservation Institute Los Angeles under the working title 'Surface-Cleaning-Systems', will soon be published. See the summary on this research project by JOHANN KOLLER: *Restauro*, 3/1999, pp. 216–217.
- 5 See e. g.: KOLLER 1990, pp. 106–110. GILSA 1991, pp. 48–58. HALLER 1994. PELLUDAT 1994.
- 6 THOMAS SCHOELLER, ANDREAS SCHEUCH in this volume, pp. 173–180.
- 7 The original gloss lacquer consists of 85–90 % sandarac, 5–15 % mastic and max. 1 % elemi. For further details see the scientific analysis results in KOLLER/BAUMER 1997, pp. 70–72.
- 8 E. g. the plasticizers of synthetic resin retouchings e. g., which penetrate into the underlying historical layers, are usually not visible.
- 9 For a more detailed description of the removal technique see SCHOELLER/SCHEUCH in this volume.
- 10 More details about the results of the scientific analysis of original lacquers and their retouching in: KOLLER/SCHMID/BAUMER 1997, pp. 187–190.
- 11 KOLLER 1990.

- 12 For the removal of the linseed oil-stand oil coating a recipe by Richard Wolbers was used consisting of deoxycholic acid, triethanolamin, hydroxypropylmethyl cellulose and water. For more details about the restoration and the results of the scientific investigation see: WALCH/KOLLER/BAUMER 1997, pp. 335–346.
- 13 Used were gels based on Carbopol and Ethomeen, with the addition of e. g. Methylacetate, Cyclohexanone and Ethanol, Xylol and Polyvinylether or Buthylacetate and Isopropanol, as well as a mixture of methanol and potassium hydroxide in HPMC.
- 14 More on the scientific investigations in: KOLLER/BAUMER 1997, pp. 67–70.
- 15 WAGNER 1998, p. 382.
- 16 HEILEIN 1998, pp. 410–415.
- 17 Each sample was begun with a lower intensity, to remain under the intensity threshold value (liminal value) of the lacquer retouching, so as not to cause any damages to the original layer. Gradually the intensity, i. e. the energy per irradiated unit area was increased, or the working distances and the frequency were changed.
- 18 For more about the lacquer cabinet and its creation see: GRIMM 2000.
- 19 For the layer structure and the scientific analysis of the binding media used see: KOLLER/WALCH/BAUMER 2000.
- 20 IMPEY/KISLUK-GROSHEIDE 1994, pp. 48–61.

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