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French lacquers of the 18th century and vernis Martin

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ABSTRACT

The Martin family created a taste for Parisian lacquers, painted and varnished objects. The purpose of the work presented here was to gather new data on the construction materials, and to detail the varnishing and painting techniques used on these

INTRODUCTION

Imports of lacquerware from the Far East to Europe had a strong impact on decorative art techniques from the 16th century. Fascination for these objects in the West, described as “the most perfect objects which have ever been issued from the hands of man” (Gonse 1886), and the growing demand led European craftsmen to develop a trend for copying Asian lacquer art as early as the 17th century (Webb 2000). During the 18th century, European painters, gilders and varnishers, particularly in Paris, such as the Martin brothers and their descendants, were able to reinterpret Asian lacquer works through constant experiments to refine the lacquer and varnishing techniques and to create a taste for painted and varnished objects. They decorated objects by using more familiar raw materials and by adapting European techniques.

The imitations of Asian lacquerware, followed by the emergence of original and creative European technical innovations, were associated with a stylistic revolution. Until now, knowledge of European lacquers has provided historical and stylistic information. Through the investigation of the materials and techniques of a large body of French lacquers from 18th-century museum collections, this paper provides new information on the subject. This work is based on a multi-analytical methodology, the results of which are correlated with the study of historical written sources and complemented by art historical research.

Forty-one French lacquer artworks, representing the diversity of the Martin dynasty’s production and that of their contemporary Parisian craftsmen, were investigated, including: furniture (chest of drawers, secretary), toiletry objects (make-up or perfume box), luxury objects (sealing wax case, tobacco box), everyday items with a metallic support (cooling basin, bucket, clock), panel woods, musical instruments and *berlines* (Figure 1).

HISTORICAL CONTEXT

The 18th century was marked by the important development and evolution of the art of French lacquer thanks to the intense activity of Parisian workshops. Due to their desire to copy Asian lacquers, they established workshops during the 17th century which were developed in increasing number during the 18th century. Among them, the Martin brothers were

types of objects during the 18th century in France. A large body of French lacquers was studied using a comprehensive approach combining examinations, physicochemical analyses and a reconstruction of the manufacturing steps used to create the artworks. Parisian lacquers are complex objects, consisting of a succession of five or six levels with specific functions, themselves made up of several layers, and detailed in successive phases during the creation process.



Figure 1

Some examples of studied lacquer objects. From left: table (Louvre, OA8170), secretary (Musée des Arts décoratifs, 32636), chest of drawers (Château Musée de Versailles, 19654), bucket (Musée des Arts décoratifs, D31198B), case (Musée des Arts décoratifs, 31157), magnifier (Musée Cognac-Jay, J661), box (Château Musée de Versailles, V5845.177)

famous painters, gilders and varnishers who also worked for Louis XV in Versailles. Their dynasty lasted for almost eight decades, during which time they practiced in many fields, producing toilet sets, box sets, mirrors, small objects, cases, furniture, wood ornamentation, carriages and coaches. The Martins' reputation and excellence overshadowed a great number of other painter-varnishers of the time (e.g., Garnier, Vincent).

The products of these workshops will undoubtedly remain anonymous because the painter-varnishers did not brand their artifacts or sign their works. Even though the Martins' work cannot be directly assigned, historical manuscripts and texts provide information on their production and enable their assignment by cross checking.

The Martins started by producing small furniture and toilet set embellishments, such as hand mirrors, brushes, boxes and cases of all shapes and sizes. At the same time, they established their reputation because of the varnish they applied to the furniture the *marchands-merciers* decorated with Asian lacquer panels. The trend for furniture with Asian lacquer veneers grew so much that furniture fully decorated with vernis Martin was identical in appearance to Oriental pieces. Beyond their activity of copying and restoring Asian lacquer, they knew how to liberate themselves from the Oriental models by asserting their originality. In the 1750s, they created painted decorations to cover the curved furniture surfaces which were in fashion at the time.

The Martins used everything in their power to protect, with royal privilege, a varnish recipe that they invented and that bore their name. They also extended their activities to the ornamentation of wood panels and carriages (Le Hô 2011). This played a determining role in the Martins' reputation, enabling them to express themselves on large surfaces. During the second half of the 18th century, lacquered wood panels and carriages, which were a very lucrative activity, progressively lost their importance and fell out of fashion. Lacquered furniture, however, remained the style of the day.

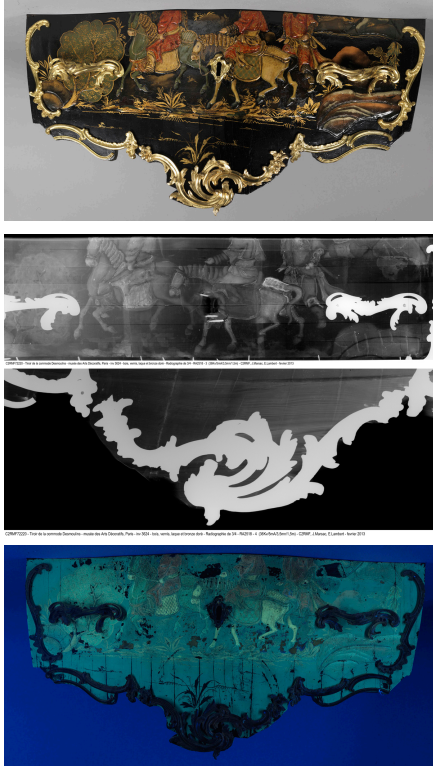


Figure 2

From top: drawer from a chest of drawers (Jean Demoulin, Musée des Arts décoratifs, 36240), radiography, UV photography

Finally, the Martins truly excelled in the field of small luxury objects (snuffboxes, toilet sets, sealing wax cases, weaving shuttles, spinning wheels, etc.). Even though their production was widely diverse, it was mainly composed of “small merchandise.” In this field, they also based their work on Asian models. By seeking inspiration in the French paintings of the time, they created a stylistic resurgence, associated with the technique of *peinture à l’huile vernie-polie*, which was directly connected to the art and style of the time. As a result, they introduced a large range of colors (red, blue, green, yellow, pink, purple, orange) from the 1740s that were absent from the imported Asian black, red and gold pieces.

The trend was temporary, and the Martin varnish disappeared with the French Revolution. While the lacquer technique remained in use in some workshops, its esthetic appeal waned. However, renewed interest in the style was observed under the Second Empire.

TECHNICAL STUDY

Historical and stylistic knowledge of 18th-century French lacquer has increased thanks to scientific examinations and analyses. A set of various non- or micro-invasive techniques was employed to characterize these systems, from a visual examination to specific elementary and structural component analyses. Lacquerwares are heterogeneous and complex objects. For that reason, a combined investigative approach was used based on scientific examination (photography, radiography), complementary analytical techniques (optical and electronic microscopy, energy-dispersive x-ray analysis, x-ray fluorescence analysis, infrared and Raman micro-spectroscopy¹) and chromatographic techniques (gas chromatography-mass spectrometry and pyrolysis-gas chromatography-mass spectrometry).² Results revealed elaborate techniques with a large range of materials.

The first phase of the study of lacquer is the photographic and radiographic examination. This non-intrusive approach provides much information on the construction and the conservation state of the objects, which is particularly useful for studying the furniture. For example, the scientific imaging of the chest of drawers, which was attributed to Jean Demoulin (Musée des Arts décoratifs, inv. 36240), revealed the construction of the drawers. The drawers were in fact a piling of rectilinear wooden elements, which were simply glued to each other (Figure 2). This type of construction prevents the façade from losing its shape and also increases the resistance of the wooden frame. The two extremities of the drawers displayed pieces of oak wood butt joint glued to the dovetails. The apron of the inferior drawer was also butt joint glued to the bottom.

The front of the drawers displayed a clear interface and different networks of cracks between the curved superior part and the rounded inferior part of the drawer (Figure 2). This provides evidence that the raised lacquer decorative part was smaller in length and width than the frame of the drawer. The back of the drawer was held together with nails at the sides, front and back. Finally the absence of intermediate sleepers between the two drawers was a characteristic of chests built in the 1740s and prevented any split in the ornamentation.

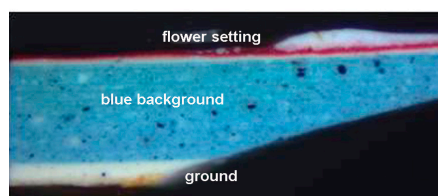
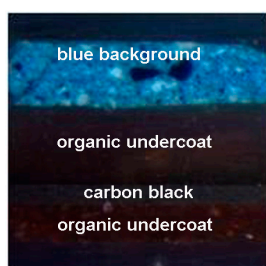


Figure 3

Bucket (Musée des Arts décoratifs, PR.2013.2.511)
and cross section from the blue background

Figure 4

Cooling basin (Musée des Arts décoratifs, 643bis)
and cross section showing the 10 layers of the
blue background

The next step is the chemical analysis of the sampled objects. Parisian craftsmen were able to develop artifacts by using familiar raw materials and adapting European techniques. They used different substrates to give body to the lacquerware: wood for furniture, wall paneling and instruments, as well as boxes and toiletry objects; metal, particularly copper and iron, for toles, shuttles and *pagodes*; papier mâché, due to its lightness, for cases, candy boxes and snuffboxes; or even cardboard. In a unique case, straw was also encountered as a base for a lacquered box (box with straw marquetry, Musée des Arts décoratifs, inv. 31235).

The reconstruction of the lacquer process is presented by focusing on a description of each step of the painted and varnished background and decorations realized. The first phase was based on the preparation of a substrate through the application of undercoats or a ground layer. Lacquered metalware, especially toles, *pagodes* or even metallic cases, usually received a special treatment. Their substrate was generally covered with several organic layers, sometimes more than a dozen brown to black ones, made of siccative oil and *Pinus* sp. resin. These undercoats may also have included a layer of carbon black (Figure 3), which promoted the adhesion of upper layers to the metal. It is possible that this served as a barrier to prevent the migration of metallic elements, as compared to the protective layer applied to the surface of metallic Asian lacquerwares to prevent corrosion. Moreover, an organic coat made of one or many thin layers composed of siccative oil mixed with pine resin was found on the surface of several *bijoux de laque*, such as small boxes or cases which have a porous substrate (wood, straw or papier-mâché). No other preparatory layer was observed for metallic objects or *bijoux de laque* on which this organic underlayer had been applied.

On the contrary, a pigmented preparatory layer was identified on the wooden objects studied, which included furniture, panels and movable objects. Generally, the substrate in these cases had received a preparatory layer to unify and smooth the surface while ensuring good adherence of the pictorial layers. This preparation also allowed the porosity to be overcome and thus to waterproof the wood. A great variety of materials were identified for the preparation layer. These consist either of white with a calcium carbonate or lead-white base, especially for movable objects, or pink to orange, made of earths, or even gray, which looks similar to the preparation of Asian lacquer. The furniture displayed the greatest variety in terms of preparation, since all of the compositions mentioned were characterized.

The colored background was then applied. On some objects, the base consisted of a great number of layers, sometimes more than twenty, all in the micrometer range, which were applied one after the other once each layer had dried (Figure 4). These layers were polished, some traces of which were observed under a microscope. This process was named *peinture à l'huile vernie-polie*, during which a white base was usually applied, polished and then put into color and varnished.

The backgrounds displayed a large range of colors, hence the use of a large palette of coloring substances: green (copper acetate), blue (Prussian blue),

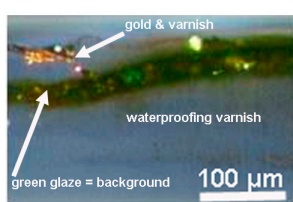


Figure 5

Guilloche case (Château Musée de Versailles, V5845.201), sampling and cross section of the background

pink to lilac (lake pigment from madder or cochineal), red (vermillion), black (animal or carbon black), white (lead white) or yellow (orpiment). The craftsmen adapted the rendering of the colors by mixing several pigments and charges, the result of esthetic research on the perception of their artworks. Therefore, thanks to a subtle mix of Prussian blue and lead white, the blue lacquers look more or less bright according to the proportion of blue pigments. Similarly, green lacquers were sometimes associated with yellow pigments (Naples yellow, orpiment) for warmer tones. Colored backgrounds generally appeared under the form of opaque pictorial layers. However, on some objects (buckets, cases, small boxes), some green or red bases were made of glazes applied on silver, copper, bronze or pewter foils for transparency and brightness.

The next step was the creation of the decorations. Numerous techniques, usually encountered in paintings, were used to enhance the background of furniture, paneling and small objects. Painted settings such as geometric patterns, flowers, figures, pastorals scenes and portraits were carried out on the painted background with the same kind of compounds. In the case of guilloche ornaments, the papier maché support appeared to have been incised and varnished. A silver or gold foil was then applied on a glaze, after which the whole was varnished (Figure 5). Metallic powders made of brass, silver or gold were sprinkled into the surface varnish layer in the manner of Asian *makie-e* to imitate aventurine.

Raised decorations were also made on furniture, paneling or tea boxes in imitation of Asian lacquers. Rocks, figures, animals, trees, architectural elements and so forth were depicted using different processes. Raised works were applied on the colored background, or on the colored and varnished background. The reliefs consisted of calcium carbonate or orange earth.

Finally, the surface varnish layers were laid. Three types of varnishes were found: one type consisted of drying oil, Manila copal with a possible small proportion of *Pinus* sp. resin, which corresponded to the famous recipe for vernis Martin; another kind was made of drying oil; a last type, darker than the previous ones, consisted of drying oil and *Pinus* sp. resin.

COMPARISON OF DATA WITH OLD WRITINGS

Several treatises describe the processes of painting and varnishing. Dossie (1758) and Stalker and Parker (1688), at the end of the 17th century, gave a good overview of the substrates, grounds and finishing techniques used to create European lacquer. Their work will not be looked at in detail here because it has already been done elsewhere (Ballardie 1994, Webb 2000). They mention a large range of substances that can be lacquered, such as wood, metals, leather and paper. In the French manner of lacquering, a priming coat or undercoat was usually laid on papier maché to reduce the quantity of varnish or color used and to gain an even surface. Wood, metals and leather could be prepared by the application of two or three layers of varnish (seed lac and spirit of wine). The appropriate colored background was then applied. This consisted of a shellac varnish and pigments which gave the desired color, but sometimes it was done in an oil, gum animi, sandarac and mastic medium. Shellac hardened the

varnish for polishing. A white varnish composed of sandarac, mastic and turpentine could be chosen to preserve the brightness of the colors. The texts describe a wide variety of colored backgrounds and some painting decorations used to enhance a plain background: white (white lead), blue (Prussian blue, smalt or verditer glazed over by Prussian blue), red (vermillion, glaze with carmine or fine lake, Indian lake), yellow (orpiment, stil-de-grain), green (verdigris, orpiment with Prussian blue, turpeth mineral and Prussian blue), orange (vermillion, orpiment, stil-de-grain, annatto glaze), purple (cochineal or Brazil wood lake, Prussian blue, vermillion) and black (ivory or lamp black). The examination of old recipes and practices appears to correspond closely to the materials in colored backgrounds identified in the investigated works. Nevertheless, no shellac varnish was identified, probably because it is prejudicial to glossy finishes (Stalker 1688).

The last part of the lacquerwork was the laying of outer coats of varnish. Two kinds of varnishes were used: a convenient varnish based on seed lac and spirit of wine, or a glossy white varnish. Watin (1773) praised the Martins' white varnish and revealed one of its components, a copal resin, which gave the varnish an exceptional gloss and a high quality of finish.

Watin also describes the process of *peinture à l'huile vernie-polie* to give light and brightness to the color. A white background was usually applied with seven or more layers, polished, painted and then coated with a white spirit of wine (with sandarac and turpentine) or a multi-layered oil varnish. This description matches the authors' analytical results, as a very clear glossy varnish made of oil or copal was found.

Other important sources of information about the Martin family are historic inventories, sale catalogues and the accounts books of the *marchants-merciers*. Ancient inventories conducted during the Martins' lifetime or after their death describe products, tools and lacquerworks that were present in their workshops.³ Sale catalogues were also drawn up of the possessions of varnishers who worked with the Martin brothers. Their workshops contained raw materials or formulated spirit, oil, white and karabe varnishes. The terminology is sometimes obsolete or insufficiently detailed, which means that the designation can refer to different materials. But the Martin family usually used linseed oil, Venice turpentine, colophony, karabe (a bituminous or fossil substance?), sandarac, gold foil and particles. These earlier writings also report the use of lac and various green, yellow, red, blue, white and black pigments. Some of them are precisely reported as stil-de-grain, Naples yellow, ochre, vermillion, Prussian blue, lead white, carbon and ivory bone.

Even today it is difficult to attribute lacquerworks to the Martins with absolute certainty. It is clear that Parisian craftsmen made their wares from wood, papier maché and metals on which they applied numerous layers with different functions and different compositions. This means that a large variety of recipes and processes were used to create imitations of Asian lacquer, but also of gold, enamel, porcelain, mother-of-pearl and so forth.

CONCLUSION

This work was based on a multi-analytical methodology. As a large number of French lacquers was examined and analyzed, a better understanding of the technologies used was achieved. This provides new and strong scientific evidence of the ingredients and the sophisticated varnishing and painting processes used by Parisian craftsmen in the production of lacquers during the 18th century. French lacquers are complex systems made of a ground, a multi-layered opaque colored background and varnish layers. The colored and varnished body could be left in a plain state or be highlighted by painted or metallic settings. Unlike Asian lacquers, there was not one sole compound used as the main ingredient of the varnish used in French lacquer production.

The production of a wide variety of lacquer objects allowed for a variety of forms, compounds and processes. The combination of the analytical results obtained, historical treatises, after-death inventories and art historical research appeared to confirm the nature of the compounds used, and also revealed complex techniques specific to the field to which French lacquers belong and a variety of processes within the same group of objects.

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NOTES

- ¹ Micro-infrared spectroscopy analyses in attenuated total reflectance mode (mono reflection-ATR), and surface-enhanced Raman spectroscopy (SERS) using a 458 nm excitation wavelength and silver colloids and FT-Raman.
- ² The area analyzed on each object was selected following discussions between scientists, conservators and curators. The lacquerworks were sampled according to the state of conservation, and the presence or absence of older restorations. The sampling was required for the analyses of deeper layers and the identification of the buildup of layers. When sampling was possible, it was performed by a scientist with scalpels and was limited to micrometric amounts. In parallel, in-situ analyses were performed by XRF and Raman spectroscopy when sampling was not possible to characterize the composition of the upper layers (colored background and decorative settings).
- ³ After-death inventory, Guillaume Martin, Archives nationales, M.C., ét.CXXI, 345 (18 août 1749). After-death inventory, Marie-Louise Lamy, Archives nationales, M.C., ét.LVII, 332 (22 août 1730). After-death inventory, Etienne-Simon Martin, Archives nationales, M.C., ét/CV/1302 (13 juin 1770).

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