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Issues related to material identification of furniture with Boulle's style ornaments on the example of a decorative box from the 19th century

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Abstract: *Issues related to material identification of furniture with Boulle's style ornaments on the example of a decorative box from the 19th century.* Due to this practice of imitating and copying furniture, style analysis is not sufficient for the item's attribution. Material characterisation might prove necessary, because even faithful copies of the furniture's external appearance were made with the use of contemporary materials. The aim of the study consists in explaining the complex issues related to material identification of furniture with Boulle style ornaments on the example of a decorative box from the 19th century. The scope of works includes the box's materials characterization, as well as an analysis of the obtained test results, in order to assess whether the age and origin of a piece of furniture can be identified on the basis of materials characterization.

Keywords: decorative box, Louis XIV style, Boulle, tortoiseshell, imitations

INTRODUCTION

Over the centuries, people have always valued furniture from previous époques. Craftsmen often made faithful copies of old furniture or at least mimicked shapes, techniques or decorative motifs.

Due to this practice of imitating and copying furniture, style analysis is not sufficient for the item's attribution. Material characterisation might prove necessary, because even faithful copies of the furniture's external appearance were made with the use of contemporary materials. It was due to the fact that the price of a given material could rise over time, or the trade in that material become banned or limited, especially in the case of materials of animal origin (e.g. tortoiseshell).

The furniture decorated in the style of André Charles Boulle (1642-1732), a French ébéniste (cabinet-maker) at the court of Louis XIV, is among the most frequently copied and imitated.

RESEARCH BACKGROUND

Marquetry is a decorative technique that consists in gluing patterns made of wood and/or other materials on the surface of wooden objects. It was developed thanks to the method called *tarsia a incastro* invented in Germany that permitted cutting sets of 2-3 sheets of veneer made of different wood species. The elements were alternated - the first pattern had a dark veneer ornament on a light background, and the next one was inverted. The patterns were cut with a fretsaw (***Swaczyna, 1995***) that was invented about 1625 (***Janneau, 1978***).

At the beginning, André Charles Boulle (1642-1732) used only tortoiseshell to decorate his furniture (***Grzeluk, 2000***) and he was the first person who introduced combinations of veneers with tortoiseshell (***Kaesz, 1990***). Later, he created ornaments composed of wood, metal and tortoiseshell, adding ivory, mother of pearl, tin and brass in various configurations (***Miller, 2000***). Rich marquetry was characteristic for the ebony furniture created at that time, but he also used walnut, cedar, maple, palisander and rosewood. Furniture bodies were made mostly of oak, pine and fir wood. He designed his works himself, but he also used motifs of such ornamentalists as Andran, Gillot or Jean Bérain. The decorations usually consisted of complex floral motifs or, in other words, the so called arabesques (***Kaesz, 1990; Janneau, 1978; Grzeluk, 2000***).

Boulle used a method that allowed him to manufacture ornaments for several pieces of furniture at the same time. The technique consisted in cutting a pattern simultaneously of several sheets of different materials placed over one another (***Swaczyna, 1995; Hamilton, 1903***). The elements were cut manually with the use of a very thin saw. The blade moved in parallel to the set of sheets. The elements obtained in this way were combined into one motif made of different materials. As a result, the craftsmen obtained the so called *première–partie* - a pattern made of brass on the background made of tortoiseshell, and the *contre–partie*: with inverted layout. The method permitted to cut elements that fitted one another very precisely, and at the same time to obtain complex patterns with high aesthetical value. The ornaments prepared in this way were glued, with their front side, to paper, in order to keep the decoration elements in place, and later the whole set was placed on the furniture. After the glue dried, the paper was removed and the surface polished. The elements were often additionally engraved, which added a deeper look to the ornament. The grooves were highlighted with a dark coloured dye (***Janneau, 1978; Grzeluk, 2000; Ramond, 1989***).

Tortoiseshell, used at that time for furniture decorations, came in various colour variants. The effect of different colours was obtained by sticking dyed paper on the back side of tortoiseshell or by adding pigments to the glue and applying several layers on the surface. This method was used in order to emphasize the decorative character of the material in dyed backgrounds. The dominant colours were red and blue, sometimes green was used as well (***Ramond, 1989***). Some people claimed that without the dyed background tortoiseshell lost half of its beauty and value (***Hamilton, 1903***).

Ornaments made of metals and tortoiseshell, in spite of their multiple aesthetical advantages, are not free from technical drawbacks. Individual elements react to the changes in temperature and humidity in a different manner, and the ornament is brittle (***Janneau, 1978***). Furniture decorated with *contre-partie* is less desirable due to a bigger surface of metal in the ornament and, as a consequence, problems with marquetry detaching from the object. The above preference is also due to aesthetical reasons. At that time, *première–partie* ornaments were considered to be clearer and more balanced (***Ramond, 1989***).

Boulle himself was aware that this kind of decoration was not very durable. In order to improve its durability, he introduced gilded bronze components to his marquetries that reinforced them and additionally had a decorative function as well (***Swaczyna, 1995***). Wide decorative motifs were fixed by him in the places that were prone to damage, such as recess corners.

Later in life (starting from about 1720), Boulle stopped using the combination of brass and tortoiseshell, so characteristic for him, and started using "wood painting" instead. This kind of decoration was more resistant to changing humidity conditions, because only one kind of wood was used. In his late works, Boulle used veneers with natural colours, as well as dyed veneers. A wide range of colours was indispensable to create such rich compositions. His decorations were applied mostly on box-shaped furniture (cabinetry), due to the large surfaces available in those objects (***Ramond, 1989***).

Boulle's original decorative technique was later continued by his sons. Many other 18th and 19th century marquetry craftsmen used that technique as well (***Grzeluk, 2000***). Etienne Levasseur and Philippe-Claude Montigny, appreciated as very talented imitators and restorers of Boulle's marquetries, copied not only his technique, but also the compositions of his ornaments. Levasseur even learnt his craft from one of the master's sons (***Ramond, 1989***).

During the period of regency, furniture shapes evolved, while decoration techniques still referred to Boulle's methods. During the reign of Louis XVI (2nd half of the 18th century) imitations were already very numerous (***Ramond, 1989***) and the influence of Boulle on the furniture industry was apparent during the entire 18th century (***Montenegro, 1998***).

In the 19th century, and especially after 1830, the intensity of trends consisting in copying former styles led to the transition of this phenomenon into a style in its own right. It was called historicism. In that period, craftsmen drew inspiration from furniture shapes and decorative techniques known before, including Boulle's baroque marquetry. Historicist furniture was popular in France approximately between 1815 and 1870. The works created during that period show that Boulle's style was still very popular. In Britain, historicism appeared a bit later and lasted from about 1850 till 1875 (***Swaczyna, 1995; Ramond, 1989***).

In France, the first historicism (Neo-Rococo) was named Louis Philippe, after the king who ruled at that time. The style of Louis Philippe (who ruled from 1830 till 1848) consisted in contrasting dark veneers (mainly mahogany and palisander) with bright wood such as holly or sycamore maple. Ancient styles and techniques were also studied at that time, because the king loved furniture decorated with inlays. In 1838, Louis Philippe ordered his court carpenters to copy furniture made by André Charles Boulle (***Ramond, 1989; Montenegro, 1998***).

The next style inspired by former époques was the Second Empire, during the rule of Napoleon III. At that time, the craftsmen made reference to: Gothic, Renaissance, Louis XIV, Louis XV and Louis XVI. The influence of Chinese, Moorish and Pompeian styles was also noticeable (***Montenegro, 1998***). There was a huge wave of Boulle marquetry imitations. Combination of red tortoiseshell with copper alloys became fashionable once more. There were many copies made with the use of Boulle's technique. The marquetry craftsmen from that period were very talented and worked with great precision (***Ramond, 1989***). The principal followers of the master from that time were: Alexandre-Louis Bellangé and Henri Leonard Wassmuss (***Montenegro, 1998***).

Historicism was characterised by the rebirth of materials that used to be popular before, or their equivalents - as the expensive materials were replaced with equivalents that were either cheaper or easier to process. Tortoiseshell was replaced with resins, while pearwood (dyed black) was often used instead of ebony (***Serwa, 1986; Swaczyna, 1995; Grzeluk, 2000***).

The huge number of imitators and forgers, as well as the perfection of copies made it practically impossible to identify Boulle's original works (***Montenegro, 1998***). The attribution is also hampered by the fact that André Charles Boulle never signed the furniture he made (***Piva, 1997; Ramond, 1989***). Only after 1741 such obligation was introduced in France, and its strict enforcement led to a situation when we can find furniture attributed to Boulle that was signed by the restorer who made the necessary repairs (***Ramond, 1989***).

AIM OF STUDY

The aim of the study consists in explaining the complex issues related to material identification of furniture with Boulle style ornaments on the example of a decorative box from the 19th century (Fig. 1).

Fig. 1 Decorative box

The scope of works includes the box's materials characterization, as well as an analysis of the obtained test results, in order to assess whether the age and origin of a piece of furniture can be identified on the basis of materials characterization.

The material analysis is focused on identifying the materials that were used to manufacture the item, in the context of the time when they were used.

METHODS

In order to identify the materials, macroscopic visual analysis of the item was carried out and samples were taken for microscopic tests. The chemical composition was also analysed.

The tests and analyses were carried out to identify: the structural wood, the veneer, the metal, the material in the background of the ornament, the finish layer and the lining fabric.

Identification of Wood

The wood used for the item's structure was identified on the basis of macroscopic characteristics, with the use of 4x and 10x magnifying glasses. We also used microscopic photographs of the collected samples, analysed in reflected light. The structural wood was identified in a spot inside the box, where the lining fabric was detached.

Due to the doubts concerning the type of wood used to finish the item's surface, additional destructive tests were carried out, with the smallest possible disturbance of the antique substance of the item. In order to do that, samples were taken from several different places on the object's body and lid. Afterwards, the samples were photographed under an optical microscope Nikon SMZ 1500 with Nikon HR Plan Apo 1.6x lens. A 20×1 mm sample was collected from the thin surface of the back wall of the item's body - the place of connection between the lid and the body; another sample, with the dimensions of ca. 4×10 mm, was taken from the surface of the lid. We searched for characteristic features of materials that could have been used (e.g. wood or shellac-like resins).

Identification of Decorative Materials

Identification of Metal. In order to identify the kind of metal that was used to make the fittings and the decorations, we used the optical microscope (Nikon) owned by the National Museum of Archaeology in Warsaw. To obtain more precise results, the identification of metal was carried out with the help of an XRF - SPECTRO MIDEX M spectrometer. This method was chosen due to the non-destructive character of the test, as well as the effectiveness of the device available at the Wood Science Department. The analysis was carried out without disassembling the fittings. 5 measurements were made on the metal surfaces of the lid.

The analysis consisted in placing the element under research - in this case the lid of the decorative box - in the spectrometer's chamber, calibrating the device adequately and radiating the point of interest with X-rays. The identification of chemical elements is based on the length of the reflected waves or the emitted energy.

Identification of Decoration Background. In order to identify the material used to fill in the background of the metal decoration, several methods were applied. The first of them consisted in cleaning the surface under examination and radiating the lid with UV-A light in a disinfection chamber at the Department of Wood Science and Wood Protection of the Warsaw University of Life Sciences (SGGW) in Warsaw. Material identification was based on assessing the colour of the emitted light.

Another test consisted in examining the surface under an optical microscope - SMZ 1500 with Nikon HR Plan Apo 1.6x lens. At first, the examination was made on the surface of the decorative box; however, due to the thinness of the material and to the fact that the underlying material was visible through the top layer, a decision was made to take a sample (ca. 3 × 3 mm) from the ornament.

Identification of the Finish Coatings

In order to examine the coating, a colour test was carried out with the use of a piece of cotton soaked in dehydrated alcohol (96% ethanol, 3.5% methanol, 0.5% isopropyl alcohol). Later, the solubility of the coating was assessed. The test was carried out on a fragment of the back wall surface.

Identification of Inside Lining Fabric

The kind of the lining fabric used inside the decorative box was identified on the basis of macroscopic analysis.

ITEM MATERIAL ANALYSIS

Decorative Box Description

The object under analysis is a wooden decorative box (Fig. 1) with rectangular section and a wavy line of the front wall. The item consists of a body and a lid on hinges. The overall dimensions of the cuboid shape in which the box can be inscribed are: 278 × 195 × 100 mm (width × depth × height).

The box is covered with veneer and inlaid with golden-coloured metal. The inlay in the form of veins appears on the lid, the front, the sides and the back of the box. In the area of its central decoration, the box is also inlaid with tortoiseshell or its imitation. The ornaments are based on the contrast between black and gold, while the background of the pattern has red colour.

The external surfaces of the decorative box are covered with a finish layer with slight gloss.

The inside of the box has one single compartment, lined with blue fabric over a soft base with corners decorated with string in the same colour as the fabric.

Material Analysis of Wood

The wood used as the structural material of the box is diffuse-porous wood of broadleaf trees from the temperate climate zone. Its macroscopic features, namely: simple pattern of wood grain, colour, lack of visible pith rays or pith spots and the linting of fibres indicate that it is poplar wood (*Populus* sp.). A precise identification of the species out of the poplars that grow in Poland and in Central Europe was impossible due to their close similarity. Taking into account the density, the use of white poplar (*Populus alba* L.) or black poplar (*Populus nigra* L.) is more probable than common aspen (*Populus tremula* L.).

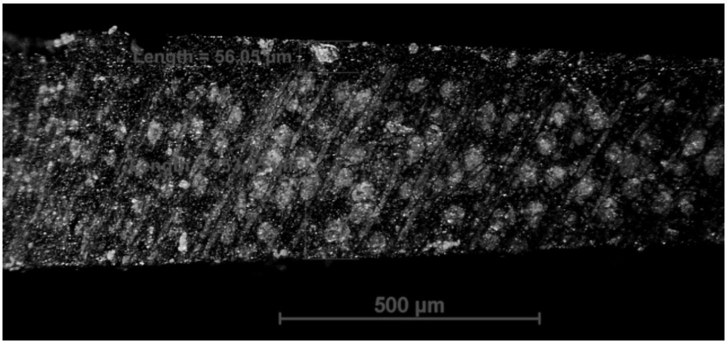


Fig. 1 Cross-section of the veneer sample (Photo by Andrzej Cichy)

At first, the veneer that covers the decorative box was not identified clearly as wood - the use of resins was also taken into account. However, after analysing additional samples, some features characteristic of wood became apparent, among others: clear anatomic directions and pores (Fig. 2-3).

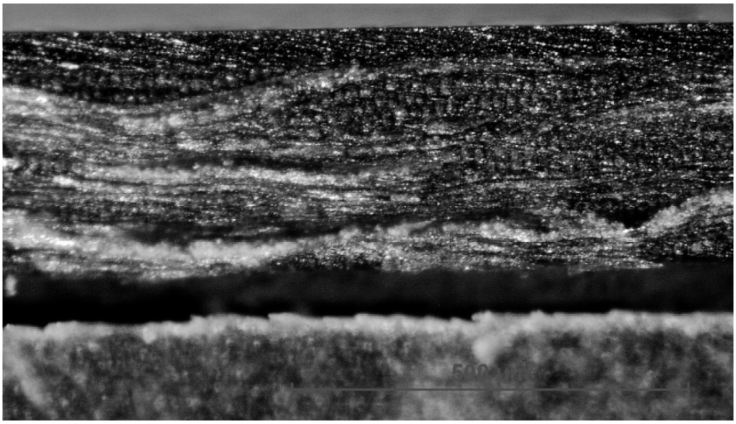


Fig. 2 Longitudinal section (Photo by Andrzej Cichy)

The veneer's wood species was not identified due to a limited possibility of collecting samples and the fact that the structure of the samples was oversaturated with a shellac-like substance.

Material Analysis of the Metal

Photographs taken under an optical microscope revealed that the metal under examination is a copper alloy: brass or bronze, contaminated with other metals that appear as grey stains scattered over the entire surface (Fig. 4).

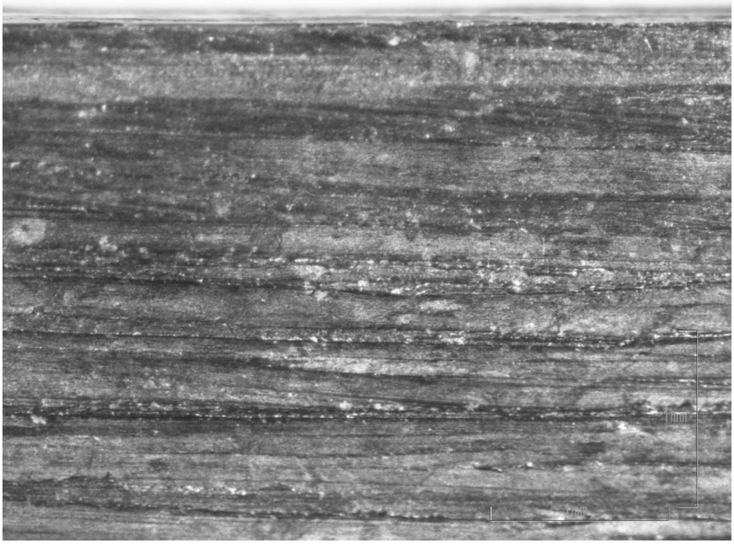


Fig. 4 Different coloured stains on the metal surface (Photo by Władysław Weker)

In order to specify the kind of alloy, an XRF analysis was carried out at the Wood Science Department. The test was performed on the surface of the lid, within the area of the ornament, without dismantling the metal element. The analysis showed that it is an alloy of copper with zinc (Table 1), that is: brass.

Tab. 1 The average values of XRF measurements

Symbol	Element	Concentration		Abs. Error	
Cu	Copper	6.5306	%	0.0078	%
Zn	Zinc	1.979	%	0.004	%

Other elements were omitted in the table, because their content was within the error range.

The total content for the chosen calibration does not add up to 100%. It might be caused by the manner of performing non-destructive tests on the antique object, because the signal goes through the thin layer of metal and reaches the underlying wood.

Material Analysis of the Ornament Background

Methods of Tortoiseshell Identification. In colloquial speech, the word “tortoiseshell” might refer to specific kind of patterning, as it is the case with the tortoiseshell cat or tortoiseshell butterfly or bags and other objects with tortoiseshell pattern. However, the genuine tortoiseshell is a material obtained from the scutes that form the shells of sea turtles: the hawksbill sea turtle (*Eretmochelys imbricata*) and later (since the 19th century) also the green sea turtle (*Chelonia mydas*) or the loggerhead turtle (*Thalassochelys caretta*) ***(Dyèvre, 2013; Rivers and Umney, 2003***).

A turtle’s shell is made of the dorsal part called carapace that covers the animal’s back and the plastron that covers its abdomen. The material obtained from the carapace is harder and its thickness falls in the range between 2 mm and 5 mm. The slices obtained from the plastron usually have only 1/3 of that thickness (***Ramond, 1989***).

Tortoiseshell as a material was obtained by softening layers of scutes in hot water and then pressing them flat. Finally, its surface was scraped to achieve the desired thickness (***Rivers and Umney, 2003***).

In its natural state, the material is semi-transparent with darker spots or streaks (Fig. 5). It is characterised by great colour diversity, from pale yellow to dark brown, but the most frequent colours are: blond, yellow and red (***Ramond, 1989***). Scutes from the entire shell were used in ornamental techniques, but the most precious ones come from the central part of the carapace. Tortoiseshell can be easily processed and polished, it becomes soft after heating and can also be embossed (***Serwa, 1986; Swaczyna, 1998***).

As a material, tortoiseshell was used from ancient times. In the 17th century, it was used mostly to cover furniture and wooden objects. Moreover, it served for making eyeglass frames, jewellery or hair ornaments (***Hainschwang and Leggio, 2006; Rivers and Umney, 2003***). It was also used in the manufacture of decorative or artistic items (***Serwa, 1986***). In case of furniture decorations, its colour was often modified on the back side (***Dyèvre, 2013; Ramond, 1989***).

Due to the high price of tortoiseshell and its lessening availability (caused by earlier massive catching and exploitation of turtles), it was used only in the ornaments of the most precious and ostentatious furniture. It was often replaced with cheaper materials that imitated its colour and structure (***Ramond, 1989***).

The possibilities of replacing tortoiseshell with other natural materials were discovered already in the 17th century. At that time, imitations were made of horns that were heated and cut, in order to obtain a flat shape. The surface was painted to achieve the characteristic tortoiseshell pattern (***Ramond, 1989***).

The first semi-synthetic material used for tortoiseshell imitations was nitrocellulose (together with camphor, dyes and fillers; Fig. 6b), also known as celluloid or Parkesine. It was invented in 1862 by Alexander Parkes. The material was highly inflammable (***Hainschwang and Leggio, 2006***). The website of the students of conservation and restoration at West Dean College provides some clues on celluloid identification. Tiny cracks on the material's surface are typical of early imitations made of nitrocellulose (http://westdeanconservation.com/). Celluloid was soon replaced with cellulose acetate (Fig. 6a), invented in 1892. It was called "the safe celluloid", due to its much lower flammability. It was also more resistant to scratches. Not much later (1897), Adolf Spitteler obtained a semi-synthetic material from isolated milk protein (casein) and formaldehyde. It was known under the name of galalith. The first fully synthetic material imitating tortoiseshell was Bakelite, invented and patented, around 1907, by Leo Baekeland. It was obtained by condensing phenol and formaldehyde. Another synthetic material used in the imitations was polyester (including PET and polyurethane) invented between 1930 and 1950 (***Hainschwang, Leggio, 2006***). Nowadays, together with the technological progress, other new materials are being added to the list of tortoiseshell imitations; often confusingly similar to the original tortoiseshell.

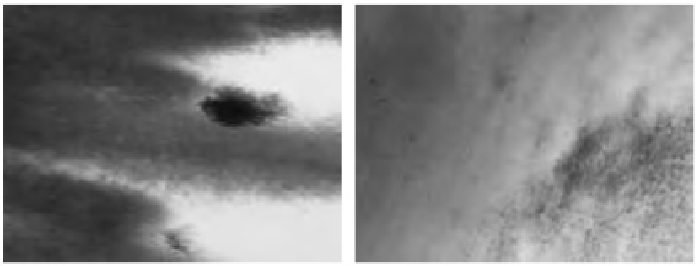
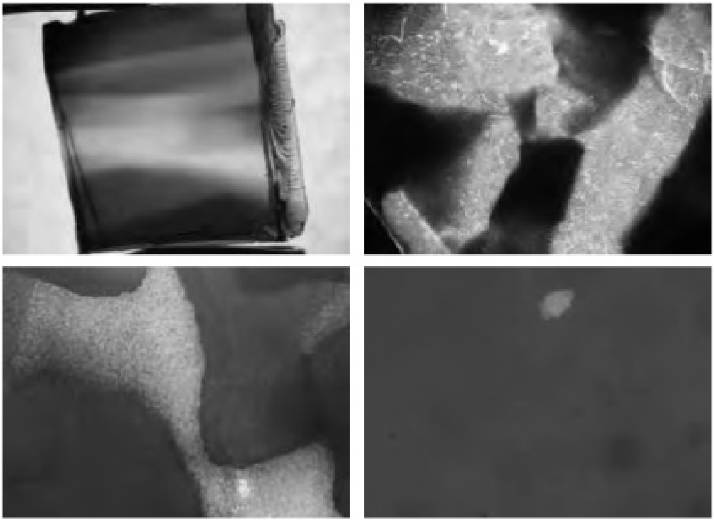
a  b

Fig. 3 Tortoiseshell - magnification of 25x (a) and 60x (b) (Photo by T. Hainschwang)



a b c d

Fig. 4 Imitations: cellulose acetate 15x (a), nitrocellulose 10x (b), polyester magnification 13x (c), polyester magnification 80x (d) (Photo by T. Hainschwang)

The original tortoiseshell can be distinguished from the imitations with various methods, some of which are described below.

The first action should consist in examining the material under the microscope. Identification can be done by analysing certain features of the material. The shell of a turtle grows with age, so the material has certain layers, which does not happen in case of imitations. Dark spots or streaks characteristic of tortoiseshell can be seen as small dots (Fig. 5a, 5b). On the other hand, the imitating materials can contain visible portions of undissolved pigment (Fig. 6d), and the coloured spots present on them are more uniform. Polyester materials can have certain similarities to the original in the form of coloured spots or dots (Fig. 6c). Nonetheless, the spots or blurs in the imitations have much sharper edges than in case of tortoiseshell, and their forms are often more geometrical. Another sign allowing to recognize an imitation consists in air bubbles that are often embedded in the surface of plastics.

Another non-destructive method useful for identification is the assessment of light obtained by exposing the material to UV radiation. According to ***Hainschwang*** (***2006***), tortoiseshell emits white-blue light in the area of its bright parts. On the other hand, ***Mallalieu*** (***1998***) describes the colour of this light as yellowish brown. The luminescence of plastic depends on the type and amount of dyes they contain (***Hainschwang and Leggio, 2006***). Nonetheless, due to the possible large disparities in the obtained results, this method is not sufficient for identification.

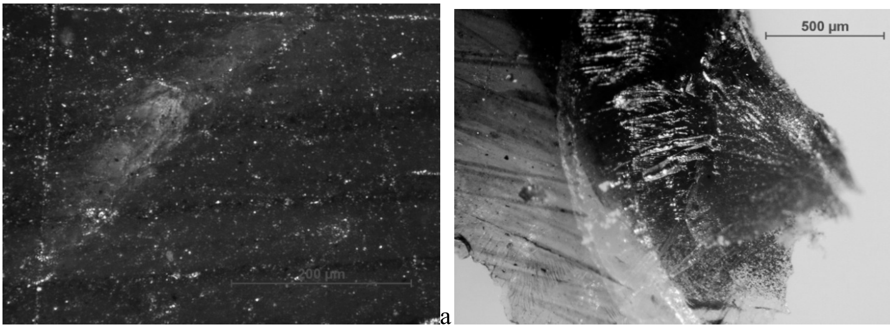
Certain treatment processes that entail heat generation cause tortoiseshell to emit characteristic smell (***Mallalieu, 1998***) resembling burnt hair. This test can also be done by submerging the sample in hot water (30 sec, ca. 60°C) or by touching the surface with a hot needle. According to ***Hainschwang and Leggio*** (***2006***), horn also smells of burnt hair, celluloid smells of camphor, while cellulose acetate - of vinegar. The odour of acrylic is characteristic of polyester and Bakelite, while galalith smells of burnt milk.

More advanced methods of identifying tortoiseshell and its imitations include infrared spectroscopy that permits to specify the functional groups of the analysed compound. IR spectroscopy is a non-destructive test and allows to obtain unambiguous results. The assessment of efficiency of different methods and test results can be found in the article by Hainschwang and Leggio entitled *The Characterization of Tortoiseshell and its Imitations* (2006).

Material Analysis of the “Tortoiseshell” on the Decorative Box. The surface of the supposed tortoiseshell subjected to UV-A light in a disinfection chamber did not change its colour. This might mean that a synthetic imitation was used instead of original tortoiseshell.

Microscopic examination of the sample under analysis did not reveal any layers characteristic of a turtle shell that grows over the animal's lifespan.

The spots present in the collected sample pass through the entire thickness of the material, and the groups of pigment grains contained within them are a bit similar to tortoiseshell (Fig. 7). In the places where the material is thinner (damaged), spots of different colour are visible at high magnification (Fig. 7b). The coloured spots were obtained by using red pigment.



a b

Fig. 7 Microscopic images of the decorative box ornament background with red pigment (a and b) (Photo by Andrzej Cichy)

Single dark dots are also visible on the surface of the collected sample (Fig. 8, 9) - probably pigment, which suggests tortoiseshell imitation. However, due to the state of the item and numerous scratches on the surface, it can also be secondary contamination.

The surface of the thinner damaged area of the material is bright and the edges are sharp.

Taking into account the above analysis and the characteristic cracks on the entire surface, the material was identified as tortoiseshell imitation, most probably, dyed celluloid.

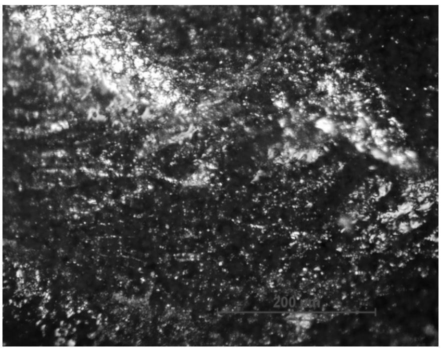


Fig. 8 Groups of pigment grains scattered in the examined sample (Photo by Andrzej Cichy)

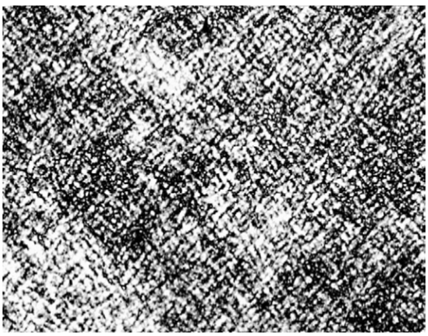


Fig. 9 Groups of pigment grains scattered in tortoiseshell (Rivers S., Umney N., 2003**)**

Analysis of Finish Coating

Examination of the finish coating revealed that it lost its gloss and became matt after applying alcohol. Such sensitivity of the coating to this solvent suggests that shellac (French polish) was used to finish the decorative box.

Analysis of Lining Material

The inside of the decorative box is lined with silk moire that can be recognized on the basis of its wavy and shiny thread pattern and densely weaved warp and woof (type of material: silk fabric, type of fabric: moire).

CONCLUSION

Material identification is an efficient tool for furniture attribution and a valuable tool that can complement style, functional and construction analysis.

The major methodological problems are related to tortoiseshell identification. The high quality of imitations makes it very difficult or close to impossible to distinguish between tortoiseshell and its imitations. Single features indicating specific materials are not enough for reliable identification, because we must take into account an entire set of features. Very often, identification requires the use of specialised equipment and qualified staff, which additionally increases the costs of conservation.

In case of tortoiseshell imitation, its precise qualitative and quantitative composition needs to be specified. It is necessary, because any repairs should be done (if possible) with the use of the same material that was used in the antique object. The differences in material ageing processes, as well as the differences in their properties might influence the appearance of the item later on.

When we recognise a material as genuine tortoiseshell, another problem arises consisting in acquiring the material for repairing the damages. Trade in sea turtles and derivative products is currently banned and strictly controlled under the Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, www.mos.gov.pl).

Therefore, when tortoiseshell repairs are needed, careful consideration, tests and consultations become necessary. Nonetheless, in spite of a wide range of different tests available, not all of them can be applied to a given item. Both destructive and non-destructive tests are dedicated mainly to analyse the material. If the material forms an integral part of the item, especially in case of antique objects, most identification methods will prove useless. The first principle of conservation and restoration is: *primum non nocere* - first, do no harm (www.nid.pl).

In the 19th century, tortoiseshell imitation was often used together with dark veneer and brass, just as in the box under research. However, the use of poplar wood (*Populus sp*) as the construction material was not a frequent practice.

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Streszczenie: *Problematyka identyfikacji materiałowej mebli z dekoracją boulle'owską na przykładzie XIX - wiecznej szkatułki***.** Praktyka naśladowania oraz kopiowania mebli sprawia, iż sama analiza stylistyki obiektu staje się niewystarczająca do jego atrybucji. Niezbędna może okazać się charakterystyka materiałowa, gdyż przy wiernym odtworzenia wyglądu zewnętrznego mebla, w kopiach czy replikach wykorzystywano materiały sobie współczesne. Celem pracy jest nakreślenie skomplikowanej problematyki identyfikacji materiałowej mebli z dekoracją boulle'owską, na przykładzie dziewiętnastowiecznej szkatułki. Zakres pracy obejmuje charakterystykę materiałową szkatułki oraz dyskusję wyników badań pod kątem możliwości określenia wieku i pochodzenia mebla. Analiza materiałowa dotyczy identyfikacji materiałów użytych do wytworzenia obiektu, w aspekcie czasu ich stosowania, a kluczowe znaczenie przypisano w niej imitacjom szylkretu.

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