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BALANCING ETHICS AND RESTORATION IN THE CONSERVATION TREATMENT OF AN 18TH CENTURY SEWING BOX WITH TORTOISESHELL VENEER

LORI TRUSHEIM

ABSTRACT

The AIC *Code of Ethics* provides a framework for professional conduct in treatment decision making, and it is a universal understanding among conservators that a conservation treatment should not entail the removal of original material. However, what is the ethical approach to a treatment when an object is so badly damaged that the only way to recover the artist's original intent is to remove original material? Is it ever acceptable to deconstruct in order to reconstruct?

This fundamental challenge was encountered during the conservation treatment of a Palais Royal sewing box dating to the 18th century. The box is fabricated from wood and decorated overall with tortoiseshell veneer, of which the top panel contains carved mother-of-pearl inlay. Owned by a private collector in Maryland, the box held deep sentimental value to the collector and his family. Unfortunately, the box had sustained damage resulting in dimensional changes to the wood substrate as well as splitting, warping and significant loss of tortoiseshell veneer and associated mother-of-pearl inlay. More specifically, over one quarter of the tortoiseshell veneer with inlay on the top panel was missing, completely destroying any semblance of the original appearance. The dimensional changes to the tortoiseshell created jagged edges and protruding points that put the object at greater risk for loss.

The initial treatment involved stabilization, loss compensation and as much in situ flattening of the tortoiseshell as possible. The angles of the tortoiseshell cleavage combined with the location of the inlay and dimensional changes of the wood substrate inhibited a satisfactory result in flattening the veneer, but the treatment stayed within the ethical guidelines for our profession. The client, however, was not satisfied with the outcome and requested further treatment to bring the sewing box closer to its original appearance.

This paper will explain the decision making process employed to navigate this complicated treatment. Topics to be covered include: manufacturing techniques for tortoiseshell and mother-of-pearl inlay specific to this box; overview of structural and chemical features of tortoiseshell; loss compensation techniques for tortoiseshell veneer; the role of AIC code of ethics in the conservation treatment process, and discussion of conservator conduct in relation to client expectations for restoration as part of the conservation treatment.

1. INTRODUCTION

The degree of restoration desired by collectors and private clients can potentially challenge established standards of practice for conservators in private practice. This paper will describe how the concepts outlined in the AIC *Code of Ethics* and Guidelines for Practice guided the author through a composite object conservation treatment.

2. BACKGROUND

The object at the center of this discussion is an 18th century Palais Royal sewing box owned by a private collector; the box embodied precious family memories and held extreme sentimental value (figs. 1–2). Many can relate to the appeal of such boxes as described in the book *Antique Boxes, Tea Caddies & Society 1700-1880*, “The box is the great temptation. ‘Open me’ it says. The human cannot resist it; its charm is overwhelming” (Clarke and O’Kelly 2003, 5). The box’s date of manufacture places it in context with the public opening of the shopping and entertainment district at the Palais Royal, which was originally constructed in 1639 for Cardinals and royalty.



Fig. 1. Palais Royal sewing box, before treatment (Photograph by Lori Trusheim)



Fig. 2. Palais Royal sewing box, before treatment (Photograph by Lori Trusheim)

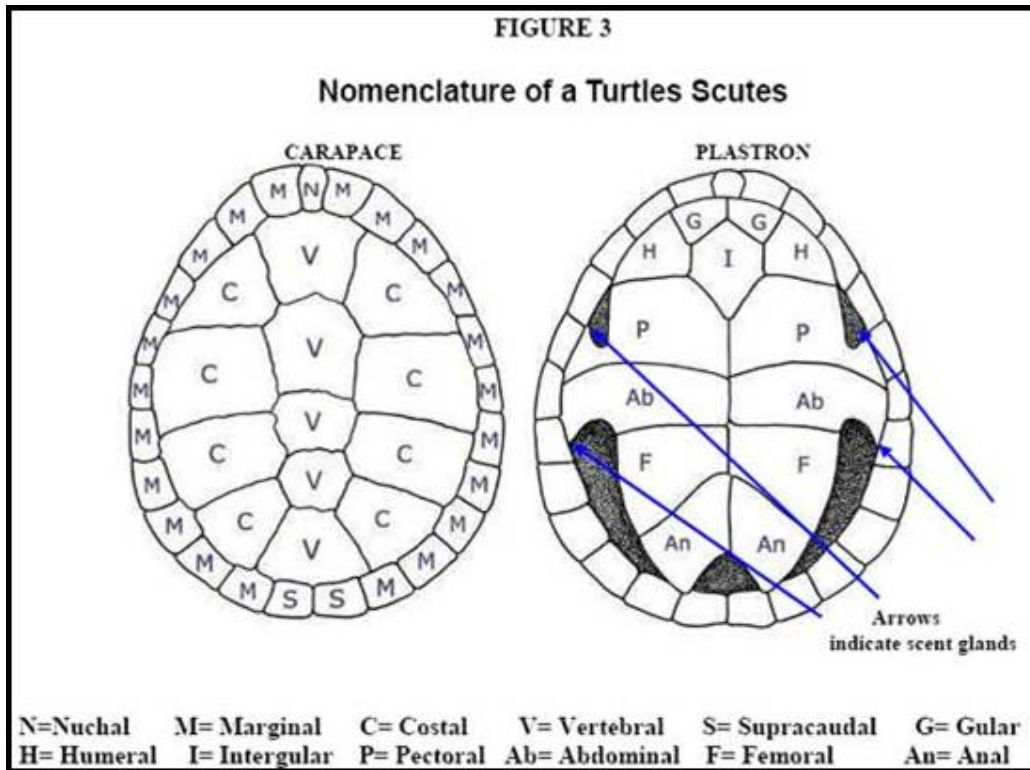


Fig. 3. Diagram of turtle scutes (Amazing Amazon Exotic and Australian Pets 2012)

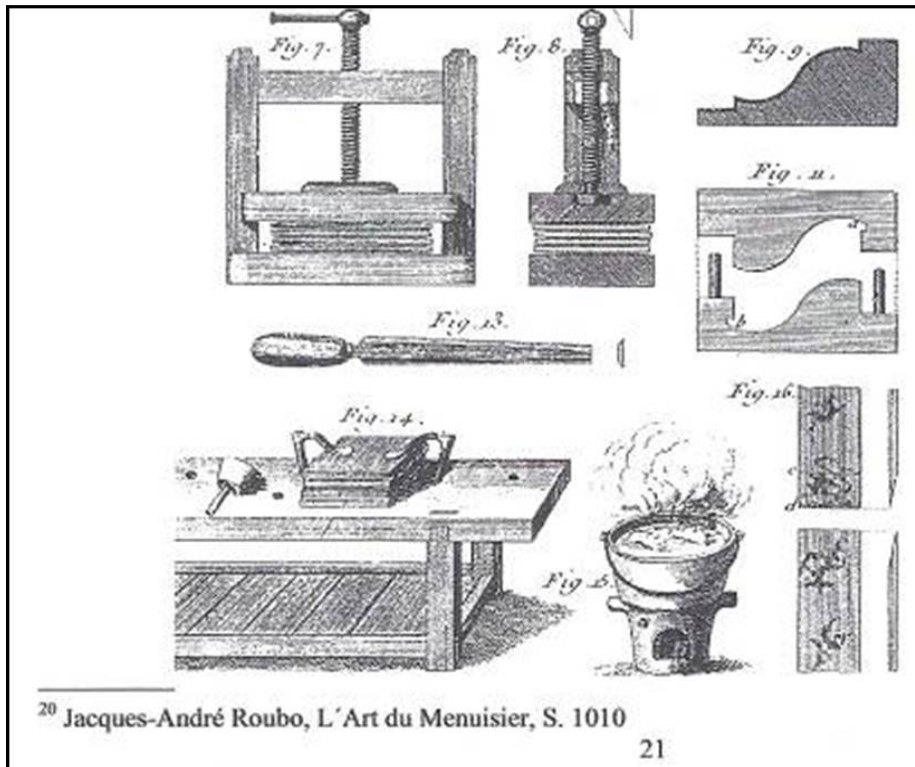


Fig. 4. Historic manufacturing tools (from R. Remetter¹)

3. HISTORIC MANUFACTURE OF TORTOISESHELL

A review of the manufacturing methods and chemical structure of tortoiseshell is integral to the understanding of its deterioration mechanisms as well as treatment options. The hawksbill turtle is the primary source of shell used in decorative art objects; however, the green turtle and loggerhead turtle are also used (Espinoza and Baker 2007). The mottled upper surface is called the carapace and the blonde underside is called the plastron. The shell contains multiple plates, also called scutes (fig. 3). Some accounts of scute retrieval state that an extremely inhumane method was used, with the living creature suspended over a fire until the plates separated from the bone (Webster 1975). A precise amount of heat was required because excessive heat would darken and ruin the appearance of the shell.

Once the plates were removed, heat, pressure, mechanical scraping and filing were used to flatten the panels. Further shaping was achieved by working with hand tools, or by boiling in salted water to make it pliable, or by applying direct heat. To acquire curves or bends, warmed tortoiseshell sheet was placed in a heated wooden or copper mold, the positive and negative sides were screwed tight, and the mold immersed into hot water and tightened progressively (fig. 4). A pigmented coating (fish glue and pigment varying in color from black, green, red and white) was often applied to the back surface of the tortoiseshell prior to gluing to the wooden core; this coating would enhance the beauty of the shell and cover up any irregularities on the substrate. To create a recess for inlay a hot metal tool could be used, or inlay could be physically pressed into the heated tortoiseshell using molds and a press as described above (Holtzapffel 1843, reprinted 2000).

4. CHEMICAL NATURE OF TORTOISESHELL

Tortoiseshell has a structure similar to human nail, cow hoof and bird claw; all of which consist of a broad class of fibrous proteins called keratin (long chain polymer of amino acid). Cysteine is the primary amino acid specific to tortoiseshell and sulfur is critical to its function. Sulfur molecules link together and form disulphide chemical bonds (fig. 5). These bonds are very strong; however, heat can break down or cleave some of the disulfide bonds, making the substance pliable. Upon cooling, the disulphide bonds reform and the structure becomes rigid in its new conformation.

Although the disulphide bonds make keratin insoluble in water, some of the polypeptide chains in keratin are held together by hydrogen bonding, which allows water to penetrate into the keratin structure and causes swelling and dimensional change (Florian 2007). The physical structure of tortoiseshell is created as the keratin is deposited in layers associated with bone growth (Carr and Meylan 1980). With age, tortoiseshell can become desiccated and brittle causing microscopic separations between the layers of keratin and this air gap can cause a loss of translucency (Fenn 1983).

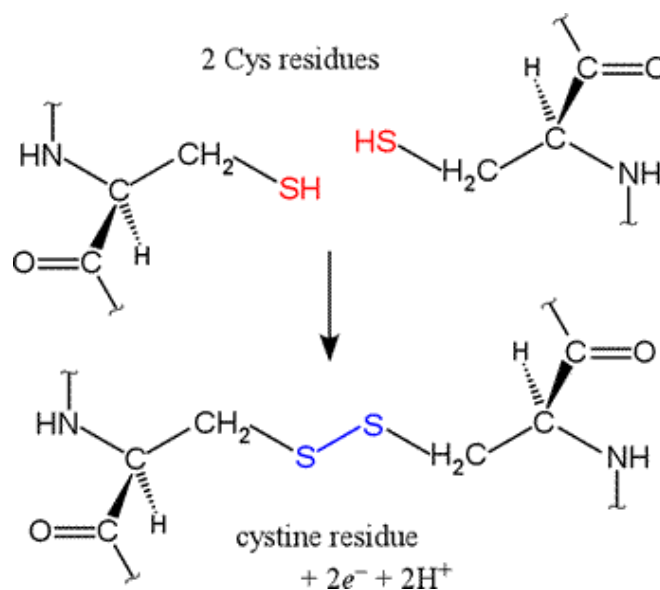


Fig. 5. Disulphide bond formation in cysteine, primary amino acid in tortoiseshell
(Biochemistry Dictionary Online, 2011)

5. EXAMINATION OF THE PALAIS ROYAL BOX

The box has a hinged lid that opens to show a fitted tray for sewing accoutrements; the tray has silver handles on the sides that allow its removal to reveal a silk-lined storage compartment. There is a slide out drawer at the bottom with an ivory knob. The lid interior has a mirror framed by four silk-covered panels. The box sits upon four round silver feet. The back corners of the slide out drawer display slot mortise and tenon joinery. The surface was decorated with flat and curved tortoiseshell veneer overall. The tortoiseshell panels are separated by silver metal edging that conforms to the shape of the panel and the perimeter of the central top panel on the lid is surrounded by strips of ivory. The panels were adhered to the gesso ground, most likely using animal glue. The top tortoiseshell panel is decorated with mother-of-pearl inlay in a floral motif. Decorative detail lines were carved or etched into the mother-of-pearl inlay and a bituminous looking substance was applied into the recesses. Examination of the lid at various areas of damage show a very thin tortoise layer below the mother-of-pearl inlay, indicating that the floral inlay was embedded into the tortoiseshell layer as opposed to the inlay inserted into a void carved in the tortoiseshell. As described in the ‘Historic Manufacture’ section above, the lid inlay appears to have been made by the method where incised mother-of-pearl decoration and tortoiseshell were clamped together in a mold; the mold was placed into press and submerged in hot water and after sufficient heating, it was finally dipped into cold water. This method created a top panel consisting of a singular piece of tortoiseshell with inlay physically pressed into the tortoiseshell panel without adhesive, mechanically locked into place by the thermoplastic quality of tortoiseshell (fig. 6).

6. CONDITION

Many of the condition problems are the result of the box’s various organic components expanding and contracting at different rates. Fluctuations in the environment (cycling temperature and relative humidity combined with direct sunlight) and improper handling by

young children are contributing factors to the box's current condition. The problems include: lifting, warped and missing veneer (tortoiseshell and mother-of-pearl), and missing ivory inlay. The greatest visual distraction was the large area of loss in the central tortoiseshell and mother-of-pearl panel at top. Furthermore, the extant tortoiseshell around the loss has cracked, split open, and warped so that one side of a break overlaps the adjacent surface. In addition to the physical deformation of the tortoiseshell, the wooden substrate has also undergone dimensional shrinkage making it almost impossible to flatten and set down the tortoiseshell veneer without carving back some of its perimeter edges (figs. 7–9). Some of the extant mother-of-pearl inlay was also cracked due to the movement of tortoiseshell veneer. At the time of the initial client meeting, the issues of loose and lifting veneer and loss compensation were deemed high priority to prevent subsequent loss of veneer and to bring the object closer to its original appearance.

7. TREATMENT

Initial treatment involved stabilizing areas of lifting veneer. The white ground, used as an adhesive and gap-filler between the wooden substrate and veneer, is highly water soluble and estimated to be animal glue and a white pigment as described in the Holtzapffel text. Paraloid B-72 in acetone was injected below any areas of lifting tortoiseshell; this adhesive was chosen for its long-term stability and because the solvent would not dissolve the white ground.

To address the large missing area of veneer on the top panel, three options were considered: 1) Remove the top panel, humidify and flatten it, cast a fill in the corner, replace on box. 2) Remove and save the top panel, and create a replacement panel that attaches to top of box. 3) Humidify and flatten the panel in place, and add a detachable fill.

The first treatment option would require that the tortoiseshell veneer be faced to minimize damage to all the cracked areas, then the panel would be removed as a whole unit by separating it from the white ground either by injecting water or applying laponite water gel (5% in distilled water) below the veneer to soften the ground allowing removal of the panel. Warped and overlapping sections of tortoiseshell would probably need to be sanded or shaved in order to fit back together and the perimeter edge of tortoiseshell may need to be cut back in order for it to fit within the shrunken wooden substrate. Humidity and heat would be required to flatten the panel. All of these steps require significant intervention. While this first option was initially considered, it was not certain that the aesthetic improvement would be ethical or contribute to the long-term preservation of the material. The second treatment option would require the same steps as above to remove the top panel, but a replacement panel would be fabricated using modern materials. This treatment option was considered to be unethical and unwarranted given the extent of original material left. The third treatment option would allow for the top panel to remain in situ, which would be the least invasive and best choice to attain long-term preservation goals while achieving a visually integrated object.

In this case, the proximity of the large loss adjacent to the severely warped tortoiseshell made the issue of structural repair directly linked to loss compensation. Sorting through the above treatment options was aided by a review of the AIC *Code of Ethics*, especially *Guideline 23, Compensation for Loss* and its commentary. Relevant portions of this guideline include:



Fig. 6. Sewing box, detail of top panel, before treatment (Photograph by Lori Trusheim)



Fig. 7. Sewing box top panel, detail of cracking, splitting and dimension change (Photograph by Lori Trusheim)



Figs. 8, 9. Sewing box top panel, details of cracking, splitting and dimension change
(Photographs by Lori Trusheim)

Any intervention to compensate for loss should be documented in treatment records and reports and should be detectable by common examination methods. Such compensation should be reversible and should not falsely modify the known aesthetic, conceptual, and physical characteristics of the cultural property, especially by removing or obscuring original material. (AIC 2010, 50)

The commentary section of this guideline adds:

This guideline refers to physical loss to the material of a cultural property or loss of original appearance through chemical change. Loss may have a structural and/or visual effect. The baseline for determining the nature and extent of loss is the point at which the cultural property was generally accepted as completed, although compensation need not return the cultural property to this state. The original completed state (what the artist/maker actually did) takes precedence over the artist's/maker original intent in guiding the nature and extent of compensation for loss. (AIC 2010, 50)

Consideration of *Guideline 23* contributed to the conservator choosing the third option which involved keeping the panel in place; however, this choice would minimize the extent of veneer flattening that could be carried out. The words “less is more” and “do no harm” very much influenced the treatment approach.

8. TORTOISESHELL LOSS COMPENSATION OPTIONS

The box's owner was savvy to current laws that protect endangered species, but he was interested to know the extent to which authentic materials could be used in the restoration. Here again, Guidelines for Practice mandate that conservators remain aware of laws affecting our professional activity as described in *Guideline 3—Laws and Regulations*:

The conservation professional should be cognizant of laws and regulations that may have a bearing on professional activity. Among these laws and regulations are those concerning the rights of artists and their estates, occupational health and safety, sacred and religious material, excavated objects, endangered species, human remains, and stolen property. (AIC 2010, 28)

The hawksbill turtle and other sea turtles found in U.S waters have been listed under the Endangered Species Act since 1970. The most comprehensive international treaty protecting sea turtles is the 1973 Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES). Of the seven sea turtles (hawksbill, green, loggerhead, leatherback, flatback, lamp's ridley, olive ridley) recognized by CITES regulation, the hawksbill, green and loggerhead turtles are the ones most extensively used for tortoiseshell trade. Since this act, no protected species has become extinct. However, sea turtles are consumed, legally and illegally in many parts of the developing world. Other international organizations and conventions protecting these animals include: Marine Turtle Specialist Group; World Conservation Union (lists hawksbill, leatherback and Kemp's ridley as critically endangered; green, loggerhead and olive ridley as endangered; and flatbacks as data deficient), and Inter-American Convention for the Protection and Conservation of Sea Turtles (May 2001) whose mission is to “promote the protection, conservation and recovery of sea turtle populations and of the habitats on which they depend, based on the best available scientific evidence, taking into account the environmental, socioeconomic and cultural characteristics of the Parties” (Campbell 2007, 324).

The issue of sea turtle conservation is not a static one – ongoing research and reinterpretation of law is continually assessed to protect sea turtles while addressing rights of local people, scientists, tourists and governments. In 1980, prominent researchers Carr and Meylan (58) wrote, “Existing conservation laws are ineffectively enforced and as long as there is a ready market for tortoiseshell the numbers of this turtles will continue to dwindle.” Even the eBay website (<http://pages.ebay.com/help/policies/wildlife.html>) has an extensive description of restricted materials for sale and items made from endangered turtles or tortoises are clearly not allowed; however ‘vintage tortoiseshell’ was sold as fragments on other websites. Given these concerns, even if tortoiseshell could be acquired, the conservator did not want to contribute to the demand for the product, even in a minute way. The owner accepted this approach without hesitation.

As tortoiseshell was not to be used as a fill material, other options were considered. Although horn and modern plastics like celluloid are not included in this list, they are materials that can be found in historic repairs of decorative art objects and proper identification of these materials can be aided by the use of ultraviolet light.²

Below is a summary of potential materials to fill the large area of loss:

1. Pigmented Epoxy (Davison 1998)
2. Faux Tortoiseshell – Turtleworks, see figure 10 (Braun 2002)
3. Tordonshell, patent pending, see figures 11, 12 (Williams, 2007)
4. Painted acetate (Lochhead 1989)

The author chose a pigmented epoxy fill because of the workability of the material in relation to the configuration of the loss.³ Further discussion of this choice is covered in the following section.

9. TREATMENT DECISIONS

Aside from technical challenges of choosing a fill material, the extent of restoration was also considered. The American Institute for Conservation defines conservation to include treatment and “treatment may consist of stabilization and/or restoration” (AIC 2010, 18). ICOM defines conservation as embracing preventive conservation, remedial conservation, and restoration.⁴ In the author’s experience, concepts of conservation and restoration are frequently explained to clients and in general, most private clients prefer and expect a higher degree of restoration than might be necessary or accepted within a museum environment. For the sewing box treatment, the extent of loss compensation was guided by the intended final use for the box as a cherished object to be displayed and enjoyed by the client.

The treatment utilized a pigmented epoxy fill to compensate the main loss. The floral design was cut from shell and the placement of the design was based on the impression remaining in the original gesso ground combined with the extant placement of floral elements (fig. 13). The use of actual shell was deemed appropriate for three reasons: it would be located in epoxy fill and readily identifiable as a restoration; the black detail lines would be painted on the shell surface as opposed to being recessed as observed in the original; and the shell could be legally obtained from a variety of sources.

After the individual shell details were cut, they were secured to Mylar and pigmented Epo-tek 301epoxy was cast around the shell. The detail lines on the shell floral design were added using Golden fluid acrylic paint. The fill was glued in place with Paraloid B-72 in acetone.



Fig. 10. Faux tortoiseshell available from Turtleworks (Photograph by Lori Trusheim)



Fig. 11, 12. Tordonshell, patent pending (Photographs by Donald Williams)

Smaller losses were filled with Flügger acrylic spackle, toned with Golden fluid acrylics and Golden gloss medium. A few of the high points were humidified and gently relaxed with low heat, but most of the planar distortion was assumed to be irreversible at this point. The goal of loss compensation was to visually unify the surface while ensuring a clear distinction between original and restoration (figs. 15–18). The large step between original surface and epoxy replacement detachable fill was initially filled with pigmented wax in an attempt to prevent snags from a dusting cloth; however, when critiquing this step, it was concluded that gap-filling alone would not sufficient to prevent a dust cloth from catching along the jagged surface. While the overall appearance was improved, the dimensional changes to the top surface still posed a threat to the long-term preservation of the object.

After the treatment was completed, the owner wanted to know if more could be done to improve the appearance of the warped top panel. Could more be done to bring the object closer to its original appearance? Theoretically, yes, but would it be safe and ethical? Should further structural veneer work be carried out by an objects conservator or by a furniture conservator experienced in marquetry repair? Once again, the AIC's *Code of Ethics* was used to consider what would be best for the object.



Fig. 13. Sewing box, top panel during treatment, fill without detail lines painted
(Photograph by Lori Trusheim)

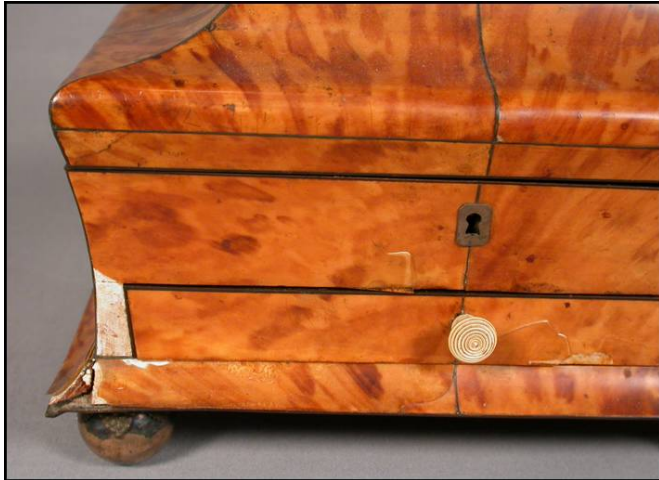


Fig. 15. Sewing box, before treatment
(Photograph by Lori Trusheim)



Fig. 16. Sewing box, after treatment
(Photograph by Lori Trusheim)



Fig. 17. Sewing box, before treatment
(Photograph by Lori Trusheim)



Fig. 18. Sewing box, after treatment
(Photograph by Lori Trusheim)

9.1 AIC CODE OF ETHICS

The first principle within AIC's *Code of Ethics* states that "the conservation professional shall strive to attain the highest possible standards in all aspects of conservation including, but not limited to, preventive conservation, examination, documentation, treatment, research, and education" (AIC 2010, 21). Therefore it was considered due diligence for the author to investigate further treatment options.

Furthermore, the second principle within the Code notes that "all actions of the conservation professional must be governed by an informed respect for the cultural property, its unique character and significance, and the people or person who created it" (AIC 2010, 21). The author was also humbled by the following 2003 quote from the writer, editor and bobbin researcher Brian Lemin (6) that "Antique tortoiseshell items should be cherished both for their beauty and the pain that went into them." These words speak to the intrinsic value of the object, not only in terms of its value to the owner, but also its value as a historic object made by highly skilled craftsmen utilizing precious materials. Further treatment to correct the dimensional changes within the tortoiseshell could be considered as an act of respect for the cultural property.

Introspection is encouraged by the Code of Ethics's fourth principle, "the conservation professional shall practice within the limits of personal competence and education as well as within the limits of the available facilities" and the ninth principle, "the conservation professional shall act with honesty and respect in all professional relationships, seek to ensure the rights and opportunities of all individuals in the profession, and recognize the specialized knowledge of others" (AIC 2010, 21). Though one of the conservator's assets is the ability to research materials, there is nothing that can replace the hours spent on working with an actual material. This concept is further examined in the AIC Guidelines for Practice, *Guideline 10, Consultation*:

Since no individual can be expert in every aspect of conservation, it may be appropriate to consult with colleagues or, in some instances, to refer the owner, custodian, or authorized agent to a professional who is more experienced or better equipped to accomplish the required work. If the owner requests a second opinion, this request must be respected. (AIC 2010, 23)

The commentary section of this guideline adds:

The conservation professional should view consultations or requests for second opinions as opportunities to ensure the appropriate level of care for the cultural property and to increase the knowledge of the owner, custodian or authorized agent. Such input should also be considered as opportunities for professional development. (AIC 2010, 37)

The conservator and owner of the box were fortunate to receive consultation from Donald Williams, Senior Furniture Conservator from Museum Conservation Institute, who provided invaluable assistance regarding further treatment options including the extent to which the tortoiseshell could safely be re-manipulated. Ethical considerations in the treatment of objects that are decorative as well as utilitarian were also discussed. The exchange between owner, conservator and consulting conservator was in keeping with the above mentioned guideline in that it truly provided an opportunity for the author's professional development, and helped define a revised approach to the conservation treatment.

Principle XIII in the AIC *Code of Ethics* states: "Each conservation professional has an obligation to promote understanding of and adherence to this *Code of Ethics*" (AIC 2010, 22). While the AIC *Code of Ethics* is broadly written to address the varied specialties within our field, the insight within the text can help conservators to define and prioritize issues related to

treatment and other modes of conduct. Clearly the conservator must make judgment calls within this framework, but it would be unimaginable to navigate a complicated treatment without this ethics resource for our profession.

9.2 SUBJECTIVITY IN CONSERVATION

In retrospect, the initial non-invasive treatment approach falls within the trend described in the 2009 article “The Basis of Conservation Ethics” by Jonathon Ashley-Smith (6). He wrote, “The changes in conservator behavior that I have observed over the last thirty years can be summarized as increasing involvement with management of collections and projects, and decreasing physical interaction with individual objects.” Further explanation can be found in the work of Barbara Appelbaum (2010, xvii) where she describes how conservators “shy away from any treatment that might affect the object adversely, even if on a microscopic scale and even if changes would not be apparent for a century or more.”

Another contributing factor for the non-invasive treatment approach is the role of subjectivity that develops within each conservator based on their training and experience. The author’s past involvement with the treatment of ancient art collections may have influenced the sewing box treatment by applying more of an archaeological treatment approach than a decorative arts one. In the author’s judgment, the warping and planar distortion was seen as part of the object’s history not to be changed. The box was viewed by the author as an artifact when it could actually have been viewed as a miniature piece of furniture as the condition issues are frequently experienced by furniture conservators. Wooden artifact conservation articles describe the physical manipulation of inlay or marquetry in order to make it fit into surfaces that have undergone dimensional change and these interventions are necessary and warranted to return the object to its original condition.⁵ While it is reasonable that a conservator’s approach to treatment is greatly influenced by training and former experiences, the caretaker’s wishes and expectations must be thoroughly understood and addressed as specifically as possible when devising the treatment plan.

9.3 VALUE OF COMMUNICATION

The gap between the final treatment outcome and the owner’s expectations would have been improved if there had been better communication from the beginning of the project. This realization on the author’s part serves to stress the importance of initial client meetings and on-going conversations as issues arise. Conservators, especially those considering a career in private practice, can benefit from the language used in the Guideline for Practice 5- Communication, where part of the commentary and minimum accepted practice for this guideline states:

The conservation professional must endeavor to be fully informed about the responsible party’s expectations concerning the results of a proposed treatment. The conservation professional must communicate with the responsible party to assure that the relevant interests, rights and expectations of others are considered. These may include the artist’s/maker’s rights and wishes, cultural beliefs that may affect treatment considerations, and the end use of the cultural property in question. (AIC 2010, 33)

When carrying out the treatment of an object with a variety of condition problems, it is often observed that once the most visually distracting damages are resolved, the smaller damages emerge and raise a new set of issues to consider. With the sewing box treatment, the author began the treatment without full comprehension of the owner’s expectations regarding the veneer

distortion on the top panel with inlaid mother-of-pearl. From this the author learned that it is absolutely vital to plot out all of the treatment steps and to clearly describe the final appearance as close as possible for the owner or curator so as to manage the expectations of all parties.

9.4 SUITABILITY

Ultimately, the ethics review and professional consultation culminated in the final question of whether or not further, more invasive treatment would be suitable for the sewing box. AIC Treatment Guideline 21 – Suitability reminds conservators that:

The conservation professional performs within a continuum of care and will rarely be the last entrusted with the conservation of a cultural property. The conservation professional should only recommend or undertake treatment that is judged suitable to the preservation of the aesthetic, conceptual and physical characteristics of the cultural property. When nonintervention best serves to promote the preservation of the cultural property, it may be appropriate to recommend that no treatment be performed. (AIC 2010, 47)

The commentary section for Guideline 21 encourages a responsible approach to treatment by addressing the need to: “promote an open-minded, flexible approach on the part of the conservator”; “encourage consideration of a broad spectrum of possible actions, ranging from no treatment to extensive intervention”, and “encourage consideration of other factors that may have a bearing on the choice of treatment, including limits of personal competence, available resources, owner/custodial/institutional priorities, exhibit or loan requirements, and cost.” Furthermore, a review of the concepts outlined in the minimum accepted practice for the Suitability Guideline require that a conservator consider “the physical environment in which the cultural property will be located and the likelihood of continuing care”; “the immediate and long-term consequences of treatment, including the effect on possible future examination, treatment, research and use”, and “the potential risks of treatment to the cultural property weighed against the anticipated benefits” (AIC 2010, 47).

Following these suitability guidelines, in the case of the Palais Royal box, it was necessary to consider the following:

- What is the function of the object?
- How will the object be handled?
- Have long-term preservation needs been met?
- Can it be justified to remove original material in order to preserve and restore object closer to its original appearance?

How does the risk of loss of translucency or darkening of tortoiseshell compare to the benefit of bringing the object closer to its original appearance? How does the risk of potential cracking of mother-of-pearl inlay compare to the benefit of minimizing damage caused by a dusting cloth as it snags on a warped surface? The tortoiseshell has already withstood a variety of degradation mechanisms (heating during scute removal from turtle and during manufacture, dessication as part of aging process, environmental fluctuations during display, stress from handling), but how much more dimensional change could it withstand?

These questions can be approached by recognizing that more invasive treatment requires a risk vs. benefit analysis. From extant research, loss of translucency is associated with excessive heat which would not be utilized as part of the treatment. Humidification and gentle heating would be employed to flatten the tortoiseshell, however it was not certain if the veneer in its current condition could even withstand this treatment without a loss of translucency.

Consultation with Donald Williams helped resolve this question as he shared his experience with

tortoiseshell repair and offered his opinion that it is possible to manipulate this type of veneer without causing damage. The alternative, to not attempt veneer structural repair, would diminish the aesthetic appreciation of the sewing box. Furthermore, it could actually pose a larger risk to the long-term preservation if the jagged edges on the top panel were to snag on a dusting cloth. Ultimately, the sewing box will be displayed in a home environment. Recommendations on handling and proper methods of care can be made, but objects will likely be handled more when they are not secured under a vitrine. A trusted and competent housecleaner may not always be equipped to properly handle artifacts; damages caused by dusting and handling are significant threats when considering the long-term preservation of objects displayed within a home. Having considered the possible risks and benefits, it was determined that the benefit of structural veneer outweighed the associated risks and that in the very least, further investigation was warranted.

10. CONCLUSION

To date, the large detachable fill on the top panel has been removed. A tacking iron was used to apply sufficient heat to soften the Paraloid B-72 that held the fill in place. There was no adverse effect to the substrate and reversibility was achieved. In the next steps of the treatment, a facing will be applied over the top panel prior to removal. Once the panel is detached, a small section will be tested for humidification and flattening. Treatment will proceed with caution, and consultation will be sought as necessary. It is the hope of the author that the lessons learned in the treatment of this object will be of assistance to conservators, especially those starting in private practice. When extensive structural repair is deemed necessary, thorough consideration of the ethics, risks and benefits must be assessed before any treatment is carried out. The *AIC Code of Ethics and Guidelines for Practice* create a framework for making ethical conservation decisions. Extensive intervention may be an acceptable treatment approach as long as all the implications of treatment are considered and that that preservation needs of the object are not compromised.

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NOTES

1. Image acquired from article by Ruth Remetter. 2002. *Schildpatt, Das Material Und Möglichkeiten Seiner Verarbeitung* viewed at: <http://www.moebel-holzobjekte.de/documents/schildpatt.pdf?KID=2>. Original source of this

image dates to *L'Art du Menuisier* by André Jacob Roubo, 1769-1774); digital images from this text also available at NYPL digital gallery (<http://digitalgallery.nypl.org>).

2. For a description of ultraviolet characterization and helpful photographs see: Hainschwang, T. and L. Leggio. 2006. The characterization of tortoise shell and its imitations. *Gems & Gemology* 42 (1):36–52.

3. A recent AIC Poster Presentation (Pouliot and Promise, 2011) describes the use of Melinex 516 to reproduce lantern slides, which could be adapted for use in tortoiseshell repair as well. A full description of The International Council of Museums discussion of terms can be found at <http://www.icom-cc.org/242/about-icom-cc/what-is-conservation/#.UFiar7JIS7w>.

4. See, for example, furniture conservation treatments described by Considine (1990) and Edwards (1997) where the restoration of marquetry surfaces are described.

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SOURCES OF MATERIALS

Epo-tek 301

Epoxy Technology, Inc.
14 Fortune Drive
Billerica, MA 01821-3972
(800) 227-2201

Flugger Acryl, acrylic spackle

Flugger A/S
Denmark
Available from Conservation Resources International, LLC
www.conservationresources.com

Golden acrylic emulsion paint (acrylic polymer emulsion, pigments)

Golden acrylic polymer varnish with UVLS (gloss)
Golden Artists Colors, Inc.
188 Bell Road
New Berlin, NY 13411
(607) 847-6154
www.goldenartistcolors.com
Available from conservation suppliers as well as art supply stores

Mylar polyester film

Talas
330 Morgan Avenue
Brooklyn, NY, 11211
(212) 219-0770
www.talasonline.com

Orasol Dyes

Conservators Emporium
100 Standing Rock Circle
Reno, NV, 89511
(702) 852-0404.

Paraloid B-72

Rohm & Haas Co
Available from conservation suppliers

Mother of pearl shell

Rescue Pearl Company
1551 Duck Hollow Court
Rescue, CA, 95672
(532) 676-2770
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