Studies in Conservation

ISSN: 0039-3630 (Print) 2047-0584 (Online) Journal homepage: http://www.tandfonline.com/loi/ysic20

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To cite this article: Hsin-Hui Hsu & Dean Sully (2016) Fusing and refreshing the memory: Conserving a Chinese lacquered Buddha sculpture in London, Studies in Conservation, 61:sup3, 124-130, DOI: 10.1080/00393630.2016.1227119

To link to this article: http://dx.doi.org/10.1080/00393630.2016.1227119

Published online: 15 Dec 2016.

Supplementary issue paper

Fusing and refreshing the memory: Conserving a Chinese lacquered Buddha sculpture in London

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This paper examines the conservation treatment of a lacquered Buddha sculpture undertaken by a Buddhist conservator as part of a postgraduate heritage conservation training programme in London. This creative process selects from a mixture of ideas and practices as a specific response to the people, time, and place of the conservation treatment. Rather than seen as a polarized choice between versions of 'Eastern' and 'Western' approaches, the conservation practice is interpreted though a Buddhist understanding of the sculpture in relation to the secular requirements of the current owner. The treatment addressed issues of the physical stability of the object, the reversibility of applied treatments, and the accommodation of Buddhist concepts of 'completeness', 'toplessness', and 'no killing'. The result was a Buddha sculpture made into a 'plausible' conservation object that represents the compromises necessary at the time and place of the conservation intervention.

Keywords: Lacquered Buddha, Conservation treatment, Buddhist concepts, Compromise

Introduction

The discourse of Buddhist heritage conservation is often polarized between monolithic conceptions of East versus West and religious versus secular polemics (Hall, 2002; Malkogeorgou, 2012). This can be seen in the juxtaposition of western conservation principles of minimal intervention and reversibility with the maximizing concept of Buddhist sculptures in Asia, which have traditionally been cared for by repairing all damage and loss in order to maintain the religious significance of the sculpture (Wijesuriya, 2005; Hsu, 2012).

> The primary purpose of sacred images in not to give aesthetic enjoyment, but to serve as focusing points for the spirit. (Boner, 1990)

This juxtaposition is also evident in the selection of materials and techniques used in conservation treatments, as a choice is often made between science-based approaches, including the use of synthetic conservation polymers, and the adaptation of traditional skills and materials used in the original manufacturing processes of the sculpture (Chase, 1985; Minney, 2008; Hsu, 2014). The skills and practices used in traditional restoration work are often considered to be intangible cultural property, since they embody specific cultural memory, practice, and context. The importance of conserving intangible cultural property is generally acknowledged:

> Conservation practice seeks to understand and preserve tangible cultural property, whereas conservation ethics seek to understand and preserve intangible cultural property. (Rivers, 2005)

When considering a specific case study, these divisive categories can be dissolved and the particularities of the conservation moment can be seen to inform conservation decisions that are taken in response to a specific set of time and place circumstances (Sully, 2015). This paper will present the conservation process of a Chinese Buddha sculpture, conserved as part of training at the Institute of Archaeology, University College London (UCL), UK. It can be seen as a selection of western conservation process and practices, Buddhist tradition, and memory of Asian lacquered wood sculpture, from the perspective of the authors, one a Buddhist nun training as a conservator.

The Buddha statue

The conservation object, a lacquered sitting Buddha on a solid wood substrate, was sent to the Buddhist

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Received October 2015; revised paper accepted August 2016
DOI 10.1080/00393630.2016.1227119

Figure 1 The Buddha sculpture before treatment. Image: ©Hsinhui Hsu.

conservator during her training on the MSc Conservation for Archaeology and Museums programme at UCL (Fig. 1). Before fully researching the object, and prior to consulting the owner, the conservation treatment started with the standard process of investigating the object through physical examination.

The style of the Buddha, sitting on a flat pedestal, is similar to Chinese sculptures from the Ming Dynasty (CE 1368–1911) or later. The Buddha's hair is formed

Figure 2 The cavity in the back of the Buddha underneath the removable plug. Image: ©Hsinhui Hsu.

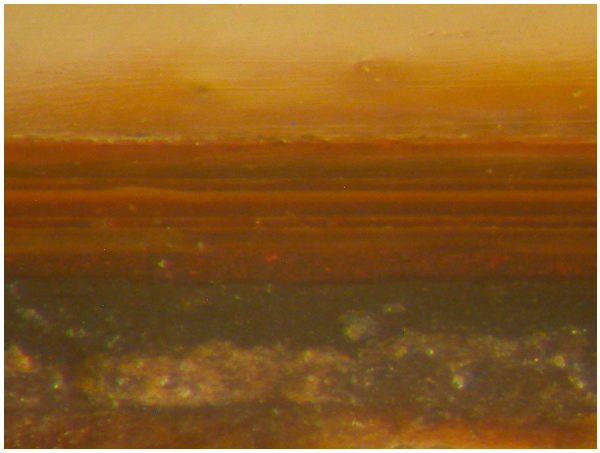

Figure 3 Cross-section of the surface decoration imaged in visible light. Image: ©Hsinhui Hsu.

in round twisted buns, with a gilded area on the top of the head, also known as *ushnisha* in Sanskrit, representing Buddha's 32 marks. The Buddha is clothed in a carved low-collared robe over an inner robe with a knot around his abdomen. He sits in a cross-legged posture, with a Dhyana Mudra gesture, which represents deep meditation. On the back of the sculpture there is a small wooden lacquered plug, which can be removed to reveal an empty round cavity inside the carving. There is evidence of a mud or clay filling around the plug, probably used for sealing it into position (Fig. 2). In some Buddhist traditions, treasures or written wishes are placed inside the back cavity of a solid sculpture, or inside the internal space of a hollow sculpture, to show respect to the Buddha. For example, the conservation of a bronze Tibetan Buddha sculpture at the Victoria and Albert Museum, London, UK, revealed the presence of drawings of Buddha and Buddhist teachers inside the sculpture (Hall, 2002).

An initial investigation of areas of surface damage via cross-sections of the surface layers suggested that multilayered lacquer coatings had been applied onto ground layers over a wood substrate (Fig. 3). The remains of gilding could be seen on the Buddha's skin areas, i.e. the face, crown, hands, feet, etc.

Condition and treatment proposal

As part of the physical examination, the vulnerabilities of the object were identified as:

- the presence of cracks that compromised the structural stability of the sculpture;
- alteration and discolouration of old repairs that adversely affected the stability and aesthetics of the sculpture;
- large areas of unstable surface decoration that were susceptible to further loss;
- lost areas of surface decoration, particularly gilding and broken areas on the hair 'buns';

- cracking and delamination of the decorative surface were evidence of the sensitivity of the sculpture to relative humidity (RH) changes.

A treatment proposal was developed to address concerns for the physical stability of the sculpture (Hsu, 2013). This included the stabilization of structural cracks and surface lacquer layers, and cleaning and removal of the old repairs. The proposal was discussed with the owner of the statue to establish the expectations of the conservation process. This identified the object as a souvenir from the owner's travels that reflected a memory and expression of past experiences. Although largely kept within a domestic and secular context, the conservator was given a degree of freedom to approach the object's treatment from her perspective as a Buddhist nun and a conservation student.

Within this physical evaluation of the context of the conservation treatment in a material-based conservation framework, other concerns of the Buddhist conservator were also considered. The Buddhist concept that images of the Buddha should be venerated in a complete form and in perfect condition were discussed between the owner and the conservation student. The concept of 'completeness' has a long tradition in Buddhist thought and is recorded in many Buddhist scriptures (Taisho, 1932a). The application of this idea can also been seen in ancient Buddhist heritage. One example is the giant standing Buddha sculpture from Northern Zhou Dynasty at the Chung Tai Museum in Taiwan. The scripts around the pedestal of this Buddhist sculpture record that there at least two restoration projects were undertaken after the sculpture was originally manufactured in CE 562 (Chung Tai Museum, 2009).

Conservation

At beginning of the interventive conservation treatment and associated decision-making, the owner's wishes and the context of the object being treated by a conservator/religious practitioner were considered commensurate with each other. This allowed the conservator to consider a range of possibilities in the design of the treatment. This process echoes material-based conservation incorporating 'value-based' and 'people-based' approaches previously described by Sully (2007).

Deteriorated old repairs were removed, as they had become distorted and detached from the cracks that they were intended to fill. The old fill material was mechanically removed using a scalpel and electrical cutting wheel. In some areas where old repairs could not be removed completely due to the risk of damage to the decorative surface and wood substrate of the object, they were reduced as much as possible and left *in situ*.

Figure 4 The severe crack along the waist of the Buddha sculpture. This is the main joint between two sections of wooden blocks, which were joined prior to the figure being carved. Image: ©Hsinhui Hsu.

The structural cracks represented a severe risk to the stability of the object. Most of these cracks were associated with the boundaries between the jointed sections of the wooden substrate (Fig. 4). Infilling these cracks was therefore a significant part of the practical intervention required to stabilize the object. The properties of minimal shrinkage and a balance between strength and flexibility were required when selecting suitable filling materials: the higher the strength, the lower the flexibility (Down *et al*., 1996). Preliminary testing of some polymers used in fill materials was undertaken (Tables 1 and 2). These suggested that in relation to bending resistance, Mowilith® 50 (polyvinyl acetate) was the best choice. Mowital® B30H (polyvinyl butyral) was one of the better-performing polymers for shrinkage resistance. Paraloid® B 72 (ethyl methacrylate co-polymer), commonly used in conservation, did not offer significantly better properties of shrinkage and stress resistance than Mowital® B30H and Mowilith® 50. The Mowilith® 50 and Hxtal® NYL-1 (2-component

Table 1 Comparative strength and shrinkage of adhesives

Test adhesives	Comparative strength (1 is high)	Comparative shrinkage (1 is high)
3% Klucel G in deionized water	4	1
15% Mowital B30H in IMS	3	3
40% Paraloid B-72 in 50:50 acetone/IMS	3	2
30% Mowilith 50 in IMS	1	3
Hxtal NYL-1	2	None/negligible

Polymers were applied to two partly overlapped wooden spatulas and tested by upward bending with both hands from both ends, and results compared empirically. Shrinkage was compared by visual inspection from and wet and dried samples.

Table 2 Results of the hand bending test on potential adhesives

Test adhesives	Hand bending (times)	Note
3% Klucel G w/v in deionized water	<1	Broke before applying bending force
15% Mowital B30H w/v in IMS	1	
40% Paraloid B-72 w/v in 50:50 acetone/IMS	2	
30% Mowilith 50 w/v in IMS	40	Wood spatula fractured
Hxtal NYL-1	19	Wood spatula permanently deformed

epoxy adhesive) samples were much stronger than that of Mowital® B30H — when force was applied to the spatulas, the adhesives were sufficiently strong that the spatulas themselves began to deform, rather than the adhesive. Thus, they were considered too strong to be used as a filling material on this object. Mowital® B30H was selected as the binder for the fills used on this object.

Once the areas of old deteriorated repairs had been removed, the cracks were filled with pigmented filler composed of 20% w/v Mowital® B30H in industrial methylated spirit (IMS) bulked with calcium carbonate, glass microballoons, and fumed silica. The proportion was approximately 1:1:0.5:0.5 Mowital® solution: calcium carbonate: glass microballoons: fumed silica. This was intended to provide structural support and fill the cracks.

The three different particulate materials used in the Mowital® B30H filler — hollow microballoons, solid calcium carbonate, and fumed silica, were added to provide different properties in the fill. The hollow and solid structures provide different resistance to external force and, therefore, the response of the fill to movement in the surrounding wood. In a series of practical experiments, the fillers with microballoons provided better flexibility under tensile testing than fills containing calcium carbonate or fumed silica, while the fillers with calcium carbonate or fumed silica tolerated greater compression stress than those with microballoons (Hsu, 2014).

During the treatment, the experience of using the Mowital® B30H solution in IMS for the fill suggested that it dried too quickly during application. Where extraction is available and polar solvents are unsuitable, Mowital® B30HH (polyvinyl butyral) in xylene would be a suitable alternative (McSharry *et al.*, 2011).

Although the Mowital® B30H filler was chosen for the fills, the crack between the two separate sections of

Figure 5 Detail of the area where the old repairs that attached the sculpture to the pedestal had failed. Image: ©Hsinhui Hsu.

body of the Buddha and the base pedestal (Fig. 5) was filled using Araldite® 2020 (dibutyl phthalate, bisphenol-A-epichlorhydrin epoxy) to which calcium carbonate, glass microballoons, and fumed silica were added. The selection of this fill material arose after a discussion between the conservator and the owner, in which effective adhesion between the pedestal and the figure was a principal concern in the stability of the sculpture. Ideally, epoxy used as a filler in this way would be isolated from the original surface with a resoluble adhesive (Podmaniczky, 1998; Ellis & Heginbotham, 2002). However, in this case, as it was not possible to apply an isolating layer into the narrow gaps and cracks, the adhesives were injected directly into the target spaces.

Areas of delaminating lacquer surface were consolidated with 5– 10% w/v Paraloid® B-72 in xylene, with pressure applied to the surface using the *shimbari* method (Fig. 6) (Bainbridge *et al.*, 2015). Xylene was selected as the solvent used for consolidation as it is an efficient solvent for Paraloid® B-72 and is less likely to swell or blanch the lacquer surface (McSharry *et al.*, 2011). It has a slower evaporation

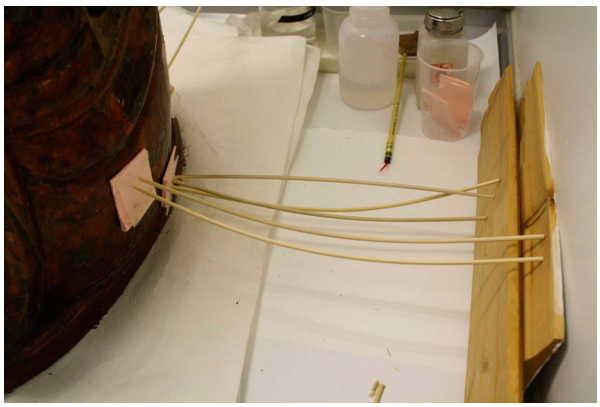

Figure 6 The use of the *shimbari* technique to support areas of lifting surface decoration during consolidation. Image: ©Hsinhui Hsu.

rate than acetone or IMS, which allowed sufficient time to set up the *shimbari* sticks during the application process. After the consolidant had been applied to areas of delaminating surface (identified as unsupported and flexing when probed with a wooden tool) a silicone rubber separating layer was applied to prevent the softening block from adhering to the lacquer surface, with sufficient sticks added to apply pressure to the area (Fig. 6). Excess consolidant was removed afterwards with xylene.

Refreshing Buddhist memory

The treatment process to this stage — physical examination, condition assessment, treatment proposal, comparative testing of potential conservation materials, and the selection of modern conservation polymers — reflected a materials-based conservation process using western approaches/materials.

The Buddhist conservator, however, standing before lacquered Buddha sculpture, wished to introduce Asian materials into this treatment process as a key aspect of this particular treatment was to incorporate both Western and Asian conservation principles. The owner and the conservator discussed the value of regilding, recoating with lacquer, and polishing the surface of the Buddha sculpture.

Asian lacquer (primarily containing urushiol from sap collected from *Toxicodendron vernicifluum*) has a long history of use as a coating for wooden Buddhist sculptures and was considered suitable for use with this lacquer object (Shimaguchi, 2002; Rivers, 2005; Heginbotham *et al*., 2008). The use of lacquer in consolidation or recoating lacquer surfaces can strengthen a light-damaged lacquer surface and these processes are known as *urushi-gatame* and *suri-urushi*, respectively, in Japan. The *urushi-gatame* process involves the application of a layer of diluted Asian lacquer onto light-damaged lacquer followed by removal of excess lacquer from the surface. The net result of *urushi-gatame* is to consolidate and stabilize the surface with minimal change to gloss and the appearance of age (Yamashita & Rivers, 2011). *Suri- urushi* involves the application of lacquer to the surface and increases gloss. Since lacquer is a cross-linking polymer the treatment is irreversible, whichever process is used. As the main intent of the lacquer treatment for this sculpture was to improve appearance, *suri-urushi* was selected for the treatment.

The addition of an irreversible material, such as lacquer, to an historic surface rather than using resoluble photochemically stable conservation polymers (such as Paraloid® B-72 or Laropal® A81 — an aldehyde resin) was considered carefully. In the case of historic lacquer with a light-damaged surface, it is unlikely that any polymer (resoluble or not) applied to consolidate the very fragile surface could be removed at a later date without damaging the original surface (Yamashita & Rivers, 2011).

Buddha's gilded skin

Gilded decoration on the Buddha's skin is a common feature of Buddhist sculptures, which can be attributed to Buddhist scriptures that refer to the Buddha's body as being as shiny as gold (Taisho, 1932a). This continuing tradition can be seen in the practice of Buddhists in many Asia countries, where gold leaf offerings are a means of venerating Buddha sculptures when visiting Buddhist temples (Taisho, 1932b).

On this sculpture, the gilding had largely been lost as a result of purposeful disfiguring abrasion, rather than gradual erosion due to long term wear. Regilding was considered by the conservator to restore the lost gilded areas of skin, to reflect the Buddhist desire for Buddha's body to be as shiny as gold. However, with limited time and resources available, it was agreed with the owner to regild only the Buddha's topknot and to recoat the skin areas with lacquer, rather than regild them. The topknot was given priority because it also symbolizes another virtue of the Buddha, 'toplessness', which reflects the Buddhist practice of showing respect toward all sentient beings (Taisho, 1932b). Regilding work was carried out by firstly applying the gilding lacquer to the target area then gently laying gold leaf onto it with a very soft brush when the gilding lacquer was about 80–90% cured.

The application of a surface lacquer coating was an attempt to improve the appearance of the Buddha's skin in areas where the surface had been disrupted by abrasion. The surface was brushed with a single application of 50% w/v raw (unprocessed) lacquer in IMS.

The lacquer-coated sculpture was then enclosed in a temporary chamber with a reservoir of moisture to raise the relative humidity to about 60– 70% RH, as elevated RH is required for the lacquer to cure. If this treatment were to be repeated, Shellsol® A150, an aromatic hydrocarbon, would be chosen as the lacquer diluent (Coueignoux & Rivers, 2015). Note that Asian lacquer is an allergen and that a risk assessment should be undertaken and a safe system of work used.

The sculpture was enclosed at this elevated RH for four days, until the surface reached a touch-dry condition. As the intention of the treatment was not to produce a very glossy surface, the touch-dry *suri-urushi* surface was wiped with a cotton swab dampened with white spirits. White spirits was chosen in preference to the traditional oil polishing process to avoid leaving non-volatile oil residues on the object's surface. This process resulted in a surface with a softened sheen, rather than high gloss, which was

Figure 7 Detail showing the placing of a Buddhist wish inscription inside the rear cavity of the Buddha sculpture by the conservator. Image: ©Hsinhui Hsu.

considered by the conservator to be more visually compatible with the condition of the rest of the lacquer surface.

When the conservation intervention was nearly complete, with the consent of the owner, a Buddhist blessing was written and placed inside the cavity in the back of the sculpture by the conservator (Fig. 7). The note was written on a Chinese Hsuan paper, which is specially dyed yellow with *huang-bo* (derived from *Cortex phellodendri*), a Chinese medicine with insect repellent properties (World Health Organization, 2009). The selection of this dye material stemmed from one of the most important Buddhist disciplines, the 'no killing' principle (Taisho, 1932c). A Buddhist would prefer to encourage insects to leave infested Buddhist sculptures, and allow time for them to do so, rather than kill them. This action sought to address the context of the object as a Buddha sculpture. The blessing inscription referred to the wish that the conservation work would benefit all sentient beings. The wood plug that covered the cavity was sealed with a traditional adhesive known as *mugi urushi* in Japan, which is a paste made from raw (unprocessed) lacquer and flour.

Conclusion: the plausible object

At the completion of the conservation treatment, the Buddha sculpture had a relatively complete appearance (Fig. 8). The old discoloured repairs had largely been removed, or were less evident, the large open cracks have been filled and disguised, and the loose areas of detaching surface had been stabilized. These changes ensured the suitability of the sculpture for the owner's intended use. More significantly, the conservation treatment had aimed to fuse ideas and materials from both western and eastern conservation/restoration practice. The treatment has accommodated both materials and methods that are

Figure 8 The Buddha sculpture after treatment. Image: ©Hsinhui Hsu.

commonly seen in science-based conservation and those encountered in traditional practice in Asia.

This conservation treatment developed from a training process that framed the theoretical expectations of the conservation approach. This was challenged in relation to the realities of the conservation object, various demands from the object's owner, and the conservator's specific cultural insight into the Buddhist context in which the object is valued and understood.

The outcomes of the conservation process can be justified as a balance between time and place of the conservation treatment and the participants. In this sense, the secular nature of conservation practice, materials, and techniques were balanced with the religious nature of keeping sculptures complete, and with some key Buddhist principles, i.e. 'no killing', showing respect to others, and making offerings and wishes for others, not for oneself. This process has made the Buddha sculpture into a plausible conservation object that represents the compromises necessary at the time and place of the conservation moment. Rather than conforming to a reified search for immutable truth and authenticity guided by rigid theoretical constructs, we can conceive of the product of conservation as residing in an object that is a merely plausible. The processes need to be justified to ensure that they remain relevant to the prevailing cultural

context that arises each time that an object is conserved. In this process, the diverse significances of this Buddha sculpture were investigated and made visible, in order for a selection of significances to be retained, maintained, and enhanced. This has furthermore refreshed and regained aspects of the cultural memory of Buddha sculptures: to recollect the virtue of the Buddha and fulfil everyone's needs, including that of the conservator who treated the object.

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