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## **Scroll: A journal by the Student Conservators @ Melbourne**

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### **About**

*Scroll* is published by students from the Grimwade Centre for Cultural Materials Conservation at the University of Melbourne.

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### **Attribution**

Submissions in *Scroll* have not undergone formal peer review. Rights and responsibilities to the submissions are retained solely with the authors, whose articles do not necessarily represent the opinions of the editors.

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### **Acknowledgement of Country**

This issue of *Scroll* was assembled on Wurundjeri and Boonwurrung soil. The editors of *Scroll* pay their respects to the Traditional Owners, both past and present. We accept the invitation of the *Uluru Statement from the Heart* and support a First Nations Voice to Parliament enshrined in the Australian Constitution.

<https://ulurustatement.org/>



### **Backed by SC@M**

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## This issue's cover

Our cover artwork is derived from this photograph of Private W.C. Tiley of Victoria, and Troppo the camp cat, in a military base in Darwin, circa 1943. Almost eighty years later, with most of us working from home, it appears our cats' love of typing instruments remains unchanged.

Image from the Argus Newspaper Collection of Photographs, State Library of Victoria.

Learn more at:

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# from the editors



## Right image

Screenshot of a Zoom meeting between your editors (clockwise from left) Rachel, Josh and Emma on 20<sup>th</sup> July 2021, in the middle of Lockdown 5.0 in metropolitan Melbourne

Welcome to **[ scroll ]**, a space for conversations about cultural material, its study and preservation.

We have created *Scroll* as an outlet for students to express their ideas, outside the constraints of assignments. This journal is a platform for critical and creative thinking, where they can communicate their skills and passions, with constructive editorial support. Through *Scroll*, we call on our peers to share what it is that drives them.

The idea to start this publication was shaped by the impact of COVID-19 lockdowns in Melbourne. Devastating not only human lives and livelihoods, the virus also disrupted our studies and dealt a blow to student morale; this became our impetus to forge new forms of connection and collaboration. *Scroll* was developed through the challenges of the pandemic, enabled by digital technology, but driven by the humble desire to make something together.

In this pilot edition of *Scroll*, we are delighted to present ten pieces across a wide range of topics. Many thanks to our contributors for their expertise, enthusiasm and trust. We are confident that you, the readers, will find their work thoughtful and interesting.

Without further ado, we invite you to... scroll on.

Your editors,  
Emma, Rachel and Josh

Writing within the discipline of cultural materials conservation is a challenge. The interdisciplinary nature of conservation magnifies the challenge. Philosophical explorations of identity are a counterpoint to the empiricism of scientific reporting; social constructions are tested by professional frameworks for decision making; the measures of significance are disrupted by the diversity of meanings; and, materiality is both validated and contested at every step. Writing about conservation, therefore, needs to be flexible and creative in order to accommodate this complexity, and rigorous enough to extend and sustain an effective disciplinary discourse. Usually, for students, there is the added pressure that writing also has to be assessed.

Nevertheless, articulating thoughts, capturing excitement, communicating ideas, and creating new ways of developing dialogue are some of the actions that grow a discipline and make it vibrant and relevant. Just as importantly, they are the things that develop confidence as students build their knowledge and seek to be active contributors to the development of the discipline. On so many levels, a well-written piece helps progress the profession and the discipline.

*Scroll* brings a new perspective to the challenge of writing about conservation. It provides the opportunity for creating, sharing and documenting new thinking, consolidating and extending ideas, engaging in debate, and reporting on projects or events. Most importantly, it provides an open forum for next-generation thinking about the preservation of cultural material and cultural identity; arguably one of the great challenges of our time.

*Scroll* continues the extraordinary impact that SC@M (Student Conservators @ Melbourne) has made on a generation of conservators. It demonstrates the value that students at the Grimwade Centre place on supporting each other by identifying and creating pluralistic opportunities for all students, and creating an encouraging and vibrant sense of community.

I congratulate the *Scroll* editorial team on this exciting initiative and look forward to this inaugural issue with great excitement and enthusiasm.

I am sure this is the beginning of great things.

Robyn Sloggett  
Cripps Foundation Chair in Cultural Materials Conservation



### Professor Robyn Sloggett

is the Cripps Foundation Chair of Cultural Materials Conservation and Director of the Grimwade Centre for Cultural Materials Conservation.

Robyn is internationally recognised for transforming the understanding of technical art history, attribution in Australian art, and interdisciplinarity within the conservation profession.

Known for her active partnerships with Indigenous communities and cultural organisations across Australia, Robyn has contributed to advancing the national conservation program as a place of equity and opportunity.

Learn more about Robyn's work at:  
[ <https://findanexpert.unimelb.edu.au/profile/16486-robyn-sloggett#> ]

## The fun of condition reporting in public



by Frances Lojkine  
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Frances is a second-year student in the Master of Cultural Materials Conservation programme at the Grimwade Centre, University of Melbourne. Currently based in New Zealand, she was provided with the opportunity to contribute to Christchurch Cathedral's management of four tukutuku for her minor thesis.



Figure 1: The four tukutuku that are the focus of the author's minor thesis project. Image by Frances Lojkine, 2021.

***“It's so nice to see these again.”***

I have arrived for a day of condition reporting on the objects that are the subject of my minor thesis. I am at Christchurch's Transitional Cathedral — a building designed by Japanese architect Shigeru Ban and made out of giant cardboard tubes and shipping containers — to spend the day doing conservation in the public eye. Nicky Lee, my initial contact from the cathedral staff, is pleased to see the objects that I am here to work on.

The subject of my minor thesis is the preservation and display of four tukutuku (Māori ornamental lattice-work panels) that used to be in the Anglican Cathedral in the centre of Christchurch, before a series of earthquakes in 2010 and 2011 left the building unsafe for occupation and the Transitional Cathedral was built. Tukutuku are used for decorating the inside walls of Māori meeting houses, or whare whakairo, and the tukutuku that were in the original cathedral have been in storage for the last ten years or so. My job today is to see what sort of condition they are in and what sort of treatment they might need before they can be put on display again.

***“Where are these going? They are really lovely.”***

I have four tukutuku and a carving to condition report. The tukutuku are taller than me (not hard, considering I'm only 5ft 2in!) and a little unwieldy to move, but I have them all unpacked and lying on the floor of the cathedral. The cathedral administrator has cordoned off an area for me to work in at the back of the cathedral, adjacent to the main entrance, so I am fully in view of any and all visitors to the building. The first person for the day has stopped beside my yellow cordon to ask me what I am doing.

I explain that I am looking at the condition of the tukutuku as the cathedral is thinking about whether to display them or not. Satisfied, my questioner wanders off to look at the rest of the building.

***[ a sudden crash of piano chords ]***

I am looking at the first of the tukutuku to the accompaniment of practice for a lunchtime recital. As I sit on the floor steadily looking at each stitch of the first panel, a pianist and vocalist are warming up. It's a unique way to condition report...

***“I hope they are going to be looked after in here.”***

I am slowly going cross-eyed trying to inspect each of the leather stitches in the first tukutuku. There are 113 horizontals, each of which have somewhere around 50 stitches on them, so it is a lot of stitches to check, and I keep on having to check that I am still checking the right row. I am quite glad to take a break and explain to the next person who asks what I am doing, what it is that I am actually doing. It is nice that they want to ensure that the tukutuku are well looked after, it speaks to the community that exists between the cathedral and the wider city.

I turn the first tukutuku over and check the back, which thankfully is neither as back-breaking nor as complicated as the front, as the back had been against the wall on the old cathedral and so was less exposed to the elements when the building became open-air after the earthquakes.

***“This next piece by Bax...”***

Lunch has been consumed. I got two of the tukutuku checked, front and back through the morning and then took a break for an hour to try and give my back a rest. At least sitting on the cathedral floor is a pleasant experience, as it has underfloor heating to keep the building comfortable through a Christchurch winter. Moving into the afternoon I am trying very quietly to work on the third and fourth tukutuku. The lunchtime recital that was my accompaniment in the morning is back, this time for the full performance, and there is a small audience in the cathedral. I do not dare turn either of the tukutuku over, as it is a slightly cumbersome job, and I can just see me completely distracting the singer at the point where she is supposed to be sustaining a high note. I therefore check both the fronts of the remaining tukutuku, one of which at least has a slightly less eye-bending pattern, which makes checking the stitches easier.

***“ I don’t want to disturb what you are doing, but would you mind telling me what you are doing? ”***

My next enquiry comes as I am finishing up checking each of the tukutuku (having been able to turn them over once the recital had finished) and getting ready to photograph them. I am doubtfully eyeing a stepladder and wondering how likely I am to fall off it, so I am again grateful for the interruption. This time it is a middle-aged woman and a group of visiting schoolkids, so I explain what I am doing and give them a bit of a history of the tukutuku and the old building. They are interested, but do not ask a lot of questions, so I’m left to approach the stepladder...

***“ Now, if you can put the same energy into the chorus... ”***

I did not fall off the stepladder. I did, however decide not to use it, as the angle was not right for photographs of the tukutuku, and any higher up it I really would have been a health and safety hazard. Instead, I leaned the tukutuku up against the nice white shipping container walls of the cathedral and photographed them, front and back. I am finishing up now, this time with choir practice to keep me company; the girl choristers are in for their practice before service. I am re-wrapping the tukutuku in their protective coverings, and waiting for the choirmaster to glare at me as the screech of packing tape competes with his harmonies. Luckily, I must have been discrete enough with the tape, and I get the panels re-wrapped without incident. For good measure, I label the outside of each one so that we can tell which is which, so if I need to look again at some of the issues I have found, I do not have to unwrap them all again.

And then I am done for the day. I will have to come back to keep on checking the temperature and humidity logger that I have in the building, but it has been a solid day’s work and I have got what I needed. There were fewer questions and queries than I expected, but maybe that is natural New Zealand reticence (or the official-looking nature of the yellow tape that made up my cordon). Conservation in the public eye hasn’t been too bad, and you never know, somebody might remember in time and take up the study themselves.

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## ACKNOWLEDGEMENT

The author wishes to thank Nicky Lee, Chris Oldham and the staff of the Christchurch Cathedral for their permission to be included in this reflective essay.



## Conserving oppression:

### Historical revisionism and the preservation of cultural materials in a post-Marcos Philippines



by Gabriel Garde  
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Gab Garde is a Brisbane-based, Filipino-Australian student conservator. He is currently a conservation volunteer for QAGOMA and has worked as an assistant conservator and archives consultant. His article, 'Navigating cultural identity – One Filipino migrant's personal and overly detailed journey to conservation', was published in the June 2021 AICCM National Newsletter.

#### [ Editors' note ]


The author partially discussed the legacy of Ferdinand Marcos's rule in an essay submitted to University of Melbourne for an assignment. However, this article differs substantially from the original.

This article discusses the ethical considerations involved in the conservation of materials relating to violent conflict and oppression, with a focus on cultural materials linked with Ferdinand Marcos's rule as dictator during the period of martial law in the Philippines, from 1965 to 1986. Totalitarianism in the 20<sup>th</sup> century was characterised by dictatorial rule, powerful cults of personality, and massive losses of life, with ideologies that have survived to the present day through the existence of historical revisionist groups. These devotees have persisted in no small part due to the long-lasting potency of totalitarian imagery and cults of personality. The topic's relevance in contemporary politics brings these issues to the forefront of ethical and moral conundrums in conservation.

A conservator is an advocate for cultural heritage and understands that an object's significance is tied to the people who value it. Cultural materials are, by their nature, saturated with history, and are framed by a community's experiences, beliefs, and traumas. Rowlands (1999, pp. 199–299) observed a focus on the synthesis of 'appropriate memories' to help societies cope with traumatic events, such as war. To illustrate, veterans of the Second World War were once the dominant authority in the representation of that conflict (Gough 1998, pp. 199–214). However, as veterans pass away and generations emerge with no direct experiences of armed conflict, Ferguson (1997, pp. 27–29) predicted that future generations would expect more critical examinations of war and violence in cultural institutions.

#### Nazism, fascism, and historical revisionism

Cultural materials may be interpreted in a multitude of ways by different groups, and a community or individual can take advantage of significant cultural objects to serve their own goals. For example, the material remnants of Nazi oppression are highly polarising in the way they are interpreted and maintained (van der Laarse 2013, pp. 71–92). Many institutions have employed creative methods of displaying Nazi objects, without 're-enacting' the allure of powerful Nazi symbolism and Hitler's cult of personality (Drecoll 2017, pp. 105–122). These have included displaying objects in dark cases, displaying busts on floors instead of on pedestals, and turning objects over to show only the reverse. Institutions



strive to make clear their condemnation rather than valorisation of Nazi materials, and many institutions intentionally forego the care and conservation of Nazi objects (Paver 2018, pp. 100–105). Italy's Benito Mussolini, like Hitler, was also responsible for state-sanctioned racial discrimination and genocide (Armirllei 2016, pp. 502–520; Gillette 2001, pp. 50–103); and yet, these details have largely been forgotten or explained away by the post-war Italian population. Historical revisionism carries a dangerous potential for unacknowledged atrocities to be repeated (Armirllei 2016, pp. 502–520), as seen in the case of Neo-Nazi historical revisionists, who deny the Holocaust, and perpetuate hateful rhetoric inspired by Hitler (Sturdy-Colls 2015, pp. 38–55). Nevertheless, Hökerberg (2017, pp. 759–774) opined that politically divisive cultural materials could still transform into legitimate articles of a culture's modern heritage, through reinterpretation, re-contextualisation, and the passage of enough time to heal from trauma. In contrast, other thinkers have recommended selectively preserving only what is valued by a community (Clavir 1997, pp. 1–5). However, this becomes more complicated when discordant voices clash within communities, and when conservation theory clashes with 'community wisdom' (Sroczyńska 2014, pp. 181–190).

### **Ferdinand Marcos**

Even the most benign objects can take on powerful meanings and may be framed or interpreted in different ways. For instance, a small selection of the notorious shoe collection of Imelda Marcos, widow of the late Filipino dictator and kleptocrat, Ferdinand Marcos, has been on display in the Marikina Shoe Museum since 2001 (Sheehan 2001, p. 68). For many, especially for overseas tourists, this partial collection of 800 pairs is an amusing insight into the eccentricities of a now-elderly socialite, clinging to a bygone era. However, for those familiar with Philippine history and politics, the shoes are a reminder of the Marcos regime's excesses and the Marcos family's powerful cult of personality that continues to glorify the legacy of a totalitarian dictator. After Ferdinand Marcos's ousting, his successor Corazon Aquino displayed Imelda's shoes, numbering over 2,700 pairs, at the Presidential Palace to expose the extravagance of

a regime that governed an impoverished people (Randal 1986, p. 33). In contrast, the celebration of Imelda's collection at the Marikina Shoe Museum serves as a bold exhibition of the family's continued influence and successful evasion of justice. These two interpretations of Imelda's shoes demonstrate the power of context and curatorial authority. The Marcoses also run their own museum; The Marcos Museum and Mausoleum in Ilocos actively seeks to preserve a revisionist vision of Marcos's legacy, and until recently, exhibited what the museum claimed to be the dictator's preserved remains in a glass coffin, in an invocation of Vladimir Lenin, Mao, and Hồ Chí Minh. This museum also sells Marcos propaganda materials in the form of souvenirs (Benedicto 2021, p. 729).

Despite the Philippine People Power Revolution of 1986 being largely non-violent, it was a hard-won resolution to one of the bloodiest chapters of Philippine history. Under martial law, the Marcos dictatorship abused military power to silence political rivals, censor the press, and torture or murder dissident citizens (Forbes 2015, p. 195). However, within the Philippines today, there is a widespread movement of historical revisionism, reframing Marcos as a heroic maverick, whose unconventional approach led to a Philippine 'Golden Age'. The Marcos Museum has played a large part in perpetuating these stories. It does not take much research to refute these hyperbolic and, at times, completely fabricated claims (Weiss 2017). And yet, this movement culminated in the re-burial of the late dictator in the National Cemetery of Heroes. It was subsequently revealed that the 'remains' on display in the Marcos Mausoleum had been a wax figure all along, despite the decades-long claim that the body was genuine (Esmaguél 2016). Ironically, this may be interpreted as symbolic of the Marcoses' false version of history and their well-known penchant for making fraudulent claims. Regardless, Marcos's widow and all their children, are currently, or have been, elected to positions of power since the 1986 revolution. Kadir (2019, pp. 15–17) asserted that the baffling 'forgetfulness' of the Filipino populace stems from anti-intellectualism, unequal access to quality education, and a fixation on personality politics rooted in powerful political dynasties.

The National Museum of the Philippines, which houses the rest of Imelda's original shoe collection, has attempted to downplay the historical significance of these objects and hesitates to exhibit them due to their political nature, yet in 2012, reiterated the need to conserve them nonetheless (ABS-CBN News 2012). It is argued that a conservator must ask if it is truly ethically or morally acceptable to conserve these materials, knowing that a still-living Imelda Marcos and her children profit from their material legacy. Her indelible image as a shoe-obsessed socialite still affords her a level of notoriety, in a nation where the most familiar, popular candidate wins the vote (Tan 2003, p. 27).

Perhaps it would be appropriate to consult the living victims of Marcos's regime of martial law and gain insight into their preferences for the treatment of the Marcos materials. It should be noted that although Imelda Marcos has been convicted of graft (Tiglaio 1993, p. 22), she has managed to evade justice, while many victims of the Marcos regime remain uncompensated. Today, Marcos's legacy, and the effects of historical revisionism, are felt through the presidency of Rodrigo Duterte, a self-confessed admirer of the late dictator, whose deadly 'war on drugs' has claimed thousands of lives, and whose totalitarianism is enabled by the still-powerful Marcos family and its supporters (Weiss 2017).



**Figure 1:** President Ronald Reagan with President of The Philippines Ferdinand Marcos and Imelda Marcos, during a State Visit Outside The Oval Office (16 September 1982). The Marcoses were known for their ostentatious displays of wealth. Imelda's reputation for extravagance and glamour, particularly in her clothing, overshadowed the brutality of the Marcos regime, which was characterised by corruption, media blackouts, human rights abuses, and government-sanctioned extrajudicial killings. Image from the White House Photographic Collection, accessed from the National Archives Catalog. For details, go to: <https://catalog.archives.gov/id/75852403>



## Ethics and morality in conservation

It is important to discuss the difference between ethics and morality. Conservators in Australia abide by the Code of Ethics laid out by the Australian Institute for the Conservation of Cultural Material (AICCM). Ethics are normally prescribed by an organisation or government, while morality is one's personal sense of right and wrong (Hoffmann 2021). It may well be ethical under the AICCM Code of Ethics for a conservator to treat Nazi memorabilia, provided there is provenance to prove an object was legally acquired, is genuine, and otherwise conforms with heritage legislation. However, whether or not this treatment would be *moral* depends on context and the conservator's own judgment. A conservator must be aware of how a decision to conserve politically charged materials may be perceived as an endorsement of political ideology. As of the writing of this article, Ferdinand Marcos's son, Ferdinand 'Bongbong' Marcos Jr., is running for President of the Philippines, and continues to rely on misinformation about his late father's regime to gain support. Many fear that another Marcos presidency could result in further human rights violations and plunder, in a nation with an already tumultuous political and socio-economic climate (Beltran 2021).

Conserving Imelda Marcos's shoes may risk enabling the perpetuation of pro-Marcos myths, and facilitate historical revisionism. When faced with such complex materials, conservators must keep in mind their right to refuse to treat an artefact. A conservator must not forgo the exercise of agency in the pursuit of rigid objectivity. As an advocate for cultural heritage and communities, it is a conservator's duty to act both ethically and morally. However, it is not always possible to act on one's own principles. Hoffmann (2021) opined that formal codes of ethics could unjustly penalise individuals who are restricted by a lack of decision-making power within their institutions. Hoffmann further argued that prescribed ethics could hinder meaningful moral deliberation, thus limiting one's ability to engage in moral issues. Ideally, one would strike a healthy balance between a reliance on codes of ethics and one's moral judgment.

Collective first-hand memories of trauma, over time, transform into distant, intangible echoes of violence that post-trauma generations can only hope never to repeat, as they grow more estranged from these events. However, the tangible remnants of oppression still firmly ground these traumas in our present reality. These cultural materials will continue to be reinterpreted and recontextualised. A conservator's role is not only to preserve these objects' physical integrity, but also the integrity of the stories they communicate, and the lessons one gains from a critical examination of the past. When dealing with materials relating to totalitarian regimes, care should be taken to not sensationalise the perpetrators of violence, but instead shift the focus onto the groups on which these regimes inflicted physical and emotional suffering. Emphasis is placed on a conservator's need to listen, observe, adapt, and exercise autonomy where possible. As an advocate for cultural heritage and for people, a conservator should facilitate collective healing, not amplify or re-enact collective trauma, or perpetuate historical revisionism.

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## Shifting perspectives in conservation:

### Interview with time-based art conservator Asti Sherring



by Emma Ward

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Emma is a second-year master's student at the Grimwade Centre for Cultural Materials Conservation. She is passionate about textile conservation as well as advocating for sustainable conservation practices in a decolonised GLAM sector. In her spare time, she loves reading, running her business (Trikl candles) and volunteering at the Museum of Chinese Australian History.

**A**sti Sherring is a leading Australian time-based art (TBA) conservator who previously held the position of Senior Time-Based Art Conservator at the Art Gallery of New South Wales (AGNSW). This role was the first of its kind in Australia and helped define the specialisation of TBA conservation across Australasia. Asti is also a doctoral research candidate at the University of Canberra.


I met Asti in 2016 when she took me on a tour of the AGNSW archives and conservation labs, because I had expressed interest in pursuing conservation as a profession. Over the years Asti has really encouraged me to follow those interests and has spent a lot of time sharing wisdom with me over cups of coffee, food and Instagram messenger chats. I thought it would be beneficial to hear from a person who forged their own path in conservation, who pushed the boundaries of traditional approaches and helped shift perspectives in the Australian conservation scene. The following transcribed interview was conducted between Emma Ward and Asti Sherring on 11<sup>th</sup> May 2021 via Zoom. It has been edited for clarity.

**EW** How long have you been a practising conservator and what drew you to Time Based Art (TBA)?

**AS** I graduated from the program in April 2012, and have been working in the industry for almost 10 years now. When I started the conservation masters course at the University of Melbourne, I had no idea that TBA existed as a specialisation. I had originally enrolled in the course with the aim to specialise in photograph conservation because I had come from an undergraduate degree in media arts.

However, from the age of fourteen, I had worked in part-time technology roles, that little did I know at the time, set me up for a deep understanding of technical knowledge that is applicable to the role of TBA conservation. Throughout the early/late 2000s, I worked in Kodak labs, when everything went from analog printing technology (chromogenic) to digital technologies (inkjet). I sold TVs at David Jones when CRTs (cathode ray tubes) were replaced with plasma and LCD screens; and I worked for Apple Retail — the year the iPhone was released in Australia — as a technician and trainer. I realise retrospectively that I had experienced the digital revolution first-hand and had absorbed so much material knowledge of analogue and digital technologies.

These experiences culminated in a fortuitous moment at the end of my first year of the conservation program, when the start-up disk on Professor Marcelle Scott's laptop failed, and I offered to fix it. It was then that Marcelle made me aware of TBA as a specialisation within conservation and explained that this was an area that was not being addressed in Australia. This conversation marked the beginning of my research journey into TBA conservation, and I ended up writing my minor thesis on contemporary ethics surrounding TBA, specifically software-based artworks.



**EW** Oh wonderful! Can you remember what spurred your approach for your thesis, seeing that this was a relatively unexplored area in Australian conservation? What led you to discuss ethics over collection management or documentation for example? Personally, I am feeling quite daunted about selecting a topic and am not sure where I should begin.

**AS** At the time of undertaking my minor thesis in early 2011, I recall feeling overwhelmed by the idea of researching and writing such a large body of text — interestingly, I feel the same way about writing my PhD — so I think this is a perfectly natural response.

The aim of any academic output is to identify a gap in the research, which in the case of TBA at the time, was expansive. To put it simply, in 2011 there was no consensus on what this specialisation was even called within the sector, with some referring to it as new media, variable media, time-based media, et cetera. There were no intensive modules or subjects that discussed TBA conservation as a part of the program and there were limited conferences and publications on contemporary art conservation that focused on technological works — neither nationally nor internationally.

With this in mind, I felt quite isolated in my subject matter and without an expert available to me, I wanted to address the subject from a foundational level, which is what led to an ethical enquiry, over a more practical or material-based approach.

**“ I believe that collections exist for audiences and as audience expectations are evolving, especially around immersive experiences, digital technology and user participation, I am really wanting to explore how conservation can facilitate this engagement.”**

**EW** I had of course studied contemporary art but had never considered the conservation requirements of those works prior to meeting you; you really opened my eyes to the conservation of technological works. Can you tell me how you think your approach to conservation has developed since you've graduated and have been working in the field?

**AS** That's a great question. When I re-read my minor thesis, I am almost embarrassed by it and can see how early it was in my thinking on this topic. That said, you don't know what you don't know. My current thinking and approaches to this area of conservation has progressively developed through my institutional experiences and engaging with international networks and individuals at the centre of the conversations surrounding contemporary art conservation.

I recall that when I first graduated from the program — like most of us — I just wanted to undertake hands-on work. As time has gone by, I've become more and more interested in the conceptual, theoretical and ethical side of TBA conservation; so, perhaps I am still attempting to resolve my minor thesis question to this day?

I am continuously driven to be an active participant in the conversation of how conservation, as a specialist field, needs to shift to match the changes in the wider GLAM (galleries, libraries, archives and museums) sector. I believe that collections exist for audiences and as audience expectations are evolving, especially around immersive experiences, digital technology and user participation, I am really wanting to explore how conservation can facilitate this engagement.




**Figure 1:** Electro-static discharge treatment on time-based media artwork. Photo credit: Asti Sherring 2019.

**EW** I am also really interested in this shift that is occurring, I think it is very pertinent for contemporary conservation practice. We are told in class to advocate for job creation within the industry, as jobs can be hard to come by. Was this your experience?

**AS** In my experience, the role that I wanted — TBA conservator — did not exist in Australia and so, yes, an extraordinary amount of advocacy and persistence was required from both myself and many stakeholders to support the creation of the role. I also had to prove myself and the essential nature of the work for years — to individuals and the sector — before it was recognised as such. It is my hope that the success of my experience has paved the way for other institutions to create TBA conservation roles within their organisations.

Advocacy for job creation in the cultural heritage/arts sector is essential, as not only are permanent conservation roles hard to come by and always have been, but as we just discussed, within a broader museological shift, the current notion of the bench conservator does not necessarily meet the requirements of a 21<sup>st</sup> century museum. If you have spent time looking up sector jobs, two obvious areas of growth are in philanthropy and corporate benefaction to build new revenue streams as public funding has decreased, and digitisation and digital engagement/communication to support wide user access and audience interaction. I do believe that conservators need to diversify, upskill in digital capabilities, and be open to taking on leadership roles in other areas of the GLAM sector.





**EW** The more I consider conservation work day-to-day, the more I realise I need to adjust my notions of what skills a conservator needs and in what areas those skills can be applied. So, thank you for providing that insight. Can you talk to me a bit about the work you were engaged in when I met you in 2016? At the time, I was interning in the objects department at the AGNSW but you were in your own section alongside the paper labs. There didn't seem much overlap between you and the objects department.


**AS** My role at AGNSW began in August 2015, as a six-month contract to undertake a survey of the TBA collection. In 2016, I was still not undertaking 'business as usual', but had a focused project role developing TBA collection management strategies. I was working quite independently of other conservation disciplines within the department and so, as a department, we had not yet figured out where TBA conservation was placed and how it could complement more traditional conservation specialisations. This did change over time.

I think it is important to note that there is a lot of cross-over between objects conservation and TBA conservation. If you think about an artwork like *TV cello* (Nam June Paik, 1976) for example, it is comprised of plastics, wood, metals, along with multimedia and technology components; so, it is very much within the remit of objects conservation as well as TBA. Moreover, as I trained in paper and photographs conservation, I also see overlaps in skills — particularly in audio-visual and contemporary digital photography practices.

**“ Advocacy for job creation in the cultural heritage/arts sector is essential as not only are permanent conservation roles hard to come by and always have been, but as we just discussed, within a broader museological shift, the current notion of the bench conservator does not necessarily meet the requirements of a 21<sup>st</sup> century museum.”**

**EW** That must have been very challenging at times. How did you find the transition from university into professional practice?

**AS** I approached the first five years of my conservation career as 'still in training'. I undertook a wide range of contract work in paper, photography, audiovisual and installation artworks across archives, galleries, festivals and private studios. My goal was to listen and learn everything I could from a variety of professionals across the GLAM sector. This was very handy when I was later tasked with the TBA project, which required a holistic understanding of many areas of collections — not just conservation. My recommendation to any emerging conservator would be to observe the practices of all areas within an organisation, not just the ones that directly relate to your work, AND listen to your installers. These people are incredibly skilled experts who have been working in the industry for a long time, and while they may have a 1970s rockstar attitude, they know their stuff and deserve your respect.



**EW** Developing a strategy for the TBA collection must have been a huge undertaking. When did your role move from being primarily project based into a core business position?

**AS** My role moved into core business work in 2017, but was not made permanent until July 2018, as it took several years to build a case for the necessity of the role. When the role was made ongoing it was advertised as a senior position, which I think demonstrated the progression and institutional understanding of the requirements of the position. There is a real need to get an institution to come along on a journey of establishing TBA conservation; in order to do this, you need to expand the scope of the work progressively, support and educate colleagues, and get more advocates on board at each step.


**“ We like to think that we treat everything with equal respect but TBA collections are a perfect example of a medium not being treated equally – in many institutions and in many conservators’ opinions, it is still seen to not be equal to a painting or a sculpture.”**

**EW** Throughout this progression, how did you develop your own documentation strategy and frameworks?

**AS** The AGNSW TBA project team began doing this from day one. Every procedure, workflow, policy and agreement had to be reviewed, edited and altered to fit the scope of TBA works. One of the first things we did was rewrite our copyright agreement because there was no language around holding, transferring and maintaining digital files. We also rewrote legal agreements and purchase agreements because there were no standards around what constituted a master file, no clauses for installation instructions, or specifications for maintaining authenticity. That was one main takeaway from the 2015 collection survey — the lack of consistency across the collection. For a medium like digital media art that’s infinitely reproducible and comes in a variety of resolutions and formats, we need standards so we can classify a preservation version of the work.

**EW** Did you collaborate with other institutions who are already successfully managing larger collections?

**AS** Initially, a large majority of the approach came from independent research, because locally, I was asking questions that no one had asked/answered before. I did have additional knowledge from previously working in a digital preservation environment, and also relied on colleagues from the State Library of New South Wales and the National Archives in Australia, who are more advanced than Australian galleries and museums in this sphere. In 2017, I received an ISSI fellowship, that allowed me to travel to the States and the UK, where I was able to connect with experts at MoMA, the Tate, the Met and the Guggenheim. So, from there, I could build a network of colleagues who also worked in this space. That really changed everything for me. Instead of feeling isolated at the bottom of the world, figuring things out on my own, I established a network of people that I can reach out to whenever I have questions.



**EW** I know that the concept of ‘specialities’ can be contentious and many people are moving away from this approach, but TBA is very unique within the conservation discipline, so the same practice strategies cannot really be applied. So, considering your advocacy for the speciality, did you feel an interest from other institutions for knowledge-sharing within the region?

**AS** In my experience within institutions, conservators often fight hard for their speciality, at times to the detriment of others. The urge to function within such a defined scope of specialisation is becoming more and more of a challenge, as artworks are becoming so multidisciplinary.

Regarding regional interest, to share the knowledge we were building on TBA conservation, we had a lot. That said, many conservation professionals were concerned with TBA before I came along; there was Amanda Pagliarino at QAGOMA, and Mary Jo Lelyveld at the NGV, and Carolyn Murphy at the AGNSW, to name a few early advocates. They’d all been building awareness around the sector for many years, and so I was focused on building momentum and sharing AGNSW approaches across Australia and New Zealand.

The biggest knowledge sharing output was the *Towards a flexible future* TBA workshop, held at the AGNSW in 2019, with collaborators from the Tate, UK. It ran for four days: with 18 sessions and 36 participants from 13 different institutions in Asia, Australia and New Zealand. Personally, the workshop was a way to get dedicated professionals together to learn and share, as I didn’t want people to feel isolated and like they had no support within the sector.

**EW** It must have been so hard for you at first, feeling so isolated in your work. I think it’s very inspirational, how much you have accomplished in the amount of time you’ve been in the industry. I am curious about your thoughts on the future of conservation within a decolonised sector. Particularly issues of access and interaction, I am curious how this shift could help the decolonisation process. Participants of the arts and heritage sector are talking all around the world about this move forward with a lot of people fearing the idea of the ‘empty’ museum or gallery, as objects and artworks are repatriated and our access changes. I think TBA could have a really important place in the future, as an interactive method of engagement with culture and art. What do you see the future institutional space looking like?

**AS** I also really want that process to happen, and I know one of the challenges as it stands; the perceived hierarchies of art — what people consider to be ‘real art’ versus ‘for the masses digital crap’. I have been toying around with these notions of authority within my writing. Contemplating what those ‘authorities’ say against what I see to be happening around the world, the shift that is occurring. Audiences want a more immersive participatory experience.

Take the van Gogh immersive touring exhibition<sup>1</sup>, for example. I think it is showing that audiences don’t necessarily need to see the authentic *Sunflowers* [Vincent van Gogh, 1888] to feel connected to the artwork, they can also step into a digital, immersive space and experience the aura of the work — the feelings, culture and society built up around it, through a completely different means of viewing. Now, the art elite may consider this to be a complete bastardisation of van Gogh, and disrespectful of the authentic original, but this show is travelling the world and selling out tickets — which is telling us that this is also what the modern audience wants to experience. I tend to think that by holding onto this need for the authentic original, we are only upholding notions of value and money. It doesn’t have to be the original or nothing — one does not transcend the other — there is space for both.

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<sup>1</sup> See <https://grande-experiences.com/van-gogh-alive/>



**EW** I agree; it enforces the notion that the institutional space should be reserved for those with the elite understanding of a work's constructed or prescribed 'value'. This is of course a space which excludes a lot of people. While TBA — specifically digital and immersive experiences — create this welcoming atmosphere for people. People don't feel like they have to have studied visual arts or art history to really understand it or gain value from it.

**AS** That divide really is a big part of the decolonisation argument; one side wants art and culture to be for all, while the other wants to keep it for the social elite. Where does conservation exist in this debate? As custodians of objects, we have a commitment to preserving the authentic, original experience — but we are also ethically mandated to preserve the intangible experience too. We like to think that we treat everything with equal respect but TBA collections are a perfect example of a medium not being treated equally — in many institutions, and in many conservators' opinions, it is still seen to not be equal to a painting or a sculpture. To quote art historian Boris Groys, 'the museum has ceased to be a space for contemplating non-moving things. Instead, the museum has become a place where things happen' (Groys 2013). To me, this quote perfectly summarises the moment we are in.

**EW** Thank you so much for your time, Asti. I really enjoyed hearing you speak about TBA conservation and your journey within the profession. It has been great to be able to hear your perspectives on potential approaches and developments within the sector. I am very much looking forward to reading what you produce next.

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## Manufacturing a karibari board:

### A project report



by Sandra Song

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Sandra Song (orcid ID: 0000-0003-1129-481X) is an emerging conservator who graduated with a Master of Cultural Materials Conservation from the University of Melbourne in 2020. She is specialising in paper conservation and East Asian painting conservation, and currently interested in investigating the Japanese karibari board manufacturing process, alternative drying boards, and the different materials used in their surface coatings. She is a volunteer at the State Library of Victoria.

This report is about a karibari board manufacturing project I undertook from January to March 2021, after completing my minor thesis as part of a Master of Cultural Materials Conservation at the University of Melbourne. It was a three-month-long project supported by a matched mentor, Jennifer Loubser, who is a specialist conservator of East Asian paintings and paper conservation, as part of the AICCM Mentorship Program (AICCM 2020).

A karibari board is a lightweight wooden lattice covered by many layers of traditional Japanese kozo paper. It is a brown colour with a waterproof exterior, which is made by applying several coats of fermented persimmon juice (Webber & Huxtable 1985, p. 60). In traditional Japanese mounting, several different methods are used for drying, following processes that use water, such as pasting and lining. The karibari technique is a method of drying with restraint and adjusting objects to flatten them while holding them in a stable condition (Kato & Kimishima 2015, p. 91).

In 2020, I undertook the minor thesis topic of *Investigating karibari, the drying boards and their materials used* (Song 2020), which was a preliminary investigation of theoretical research about the karibari board. For the thesis, I surveyed sixteen conservators and found 75% of them have experience in building their own drying boards in workshops (Song 2020, p. 45). They believed drying boards were good tools when used in their conservation treatment projects but had different opinions on various types of traditional and innovative drying boards (Song 2020, pp. 57–60). I wanted to extend my research after completion of the minor thesis, to continue investigating the karibari board via practical exploration of manufacturing processes.

There are several academic journal articles (Webber & Huxtable 1985; Fraser 1988), recent practical workshops (Freeman 2011; Poirier 2015; Studio 204 2018), and recent research publications (Kato & Kimishima 2015; AIC's 45th Annual Meeting 2017; Hsiao 2017) that discuss karibari board manufacture, exploration of karibari, experience in workshops, the function and characteristics of karibari boards, and comparison of innovative and traditional surface coatings. These resources informed my method of manufacture.

## PROJECT

### *Project method*

This karibari board manufacturing project aimed to construct a sample-sized (600 x 600 mm) karibari board by following the instructions from Webber and Huxtable (1985), and Fraser (1988). The project process can be divided into four phases: wooden lattice construction; pasting paper layers; a coating layer application; and a lining test. Due to an unsatisfactory first-attempt at woodworking, I constructed two 600 x 600 mm drying boards, pasted with Taiwanese mulberry paper. Different coating materials were applied to these two boards for comparison; one was coated in kakishibu (fermented persimmon juice) and the other was coated with an alum solution (as used in Chinese ganzaoban drying boards). A comparison between the two drying boards was conducted with lining tests to see the qualities of function and safety for conservation treatments.

### *Project planning*

When project planning, I used a Gantt chart as a project management tool to monitor progress and track timelines to ensure tasks were not delayed (Figure 1). Time management in a project is very important, even for just a small-scale project. Due to COVID-19, there was a risk of some unexpected situations that would need to be dealt with. For instance, sourcing materials from suppliers was difficult and the availability of resources influenced the decision-making for the final coating layers. International shipping delays and temporary postponements, as well as governmental restrictions, created many unpredictable hurdles. Health and safety concerns also factored into decision-making.

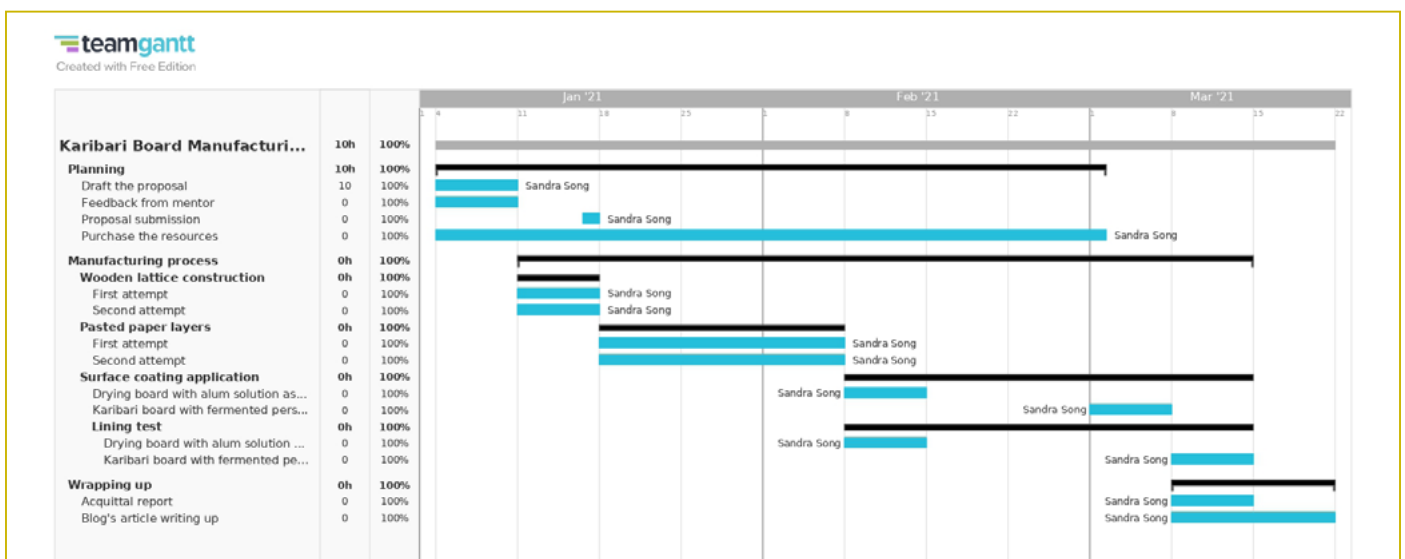


Figure 1: Gantt chart with task list and timeline for the karibari manufacturing project.



**Figure 2:** A wooden lattice, pine wood 600 x 600 x 18 mm with wooden dowel pin joints. Image by the author.



**Figure 3:** Paper prepared for the third layer. Image by the author.



**Figure 4:** The pasted paper layers complete. Image by the author.

## *Project process*

The manufacturing process included: wooden lattice construction; pasted paper layers; and coating layer application.

### *Phase 1: Wooden lattice construction*

In this phase, the tools and resources were prepared, such as a hand saw, drill, clamps, rulers, sandpaper, weights, and pine wood strips. I chose pine wood instead of cedar wood because of budget limitations. Two sample-sized (600 x 600 mm) wooden lattices were constructed because the first attempt had issues that needed to be improved; the lattice could not align and the joints had gaps. The second attempt solved the prior issues (Figure 2) and the first attempt was mended by filling the gaps.

### *Phase 2: Pasted paper layers*

Kozo paper was sourced from Taiwan (also called ‘mulberry paper’), where it is typically thinner<sup>1</sup> than Japanese kozo. This is because Chinese ink painting normally uses thinner paper than Japanese traditional paintings; paper manufacturers in each region produce paper to meet artists’ needs. Three types of thickness of the mulberry paper were applied to the wooden lattice by following the manufacturing process researched for my thesis<sup>2</sup> (Song 2020, pp. 81–87). In this phase, I also sourced a pasting brush and a smoothing brush, made wheat starch paste, and trimmed paper (Figure 3). Figure 4 shows the image taken when paper pasting was completed.

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<sup>1</sup> Mulberry paper was sourced in 15gsm, 20gsm, and 30gsm as thicknesses of thin, medium, and thick.

<sup>2</sup> Please feel free to contact me for a copy of my thesis, which includes: Appendix 2: Diagram summary of the karibari manufacturing process for each layer, pp. 81–87.



*Phase 3: Coating layer application (Figure 5 & Figure 6)*

During this phase, tools such as brushes and containers for coating materials were prepared. For coating materials, I sourced alum solution<sup>3</sup> (potassium aluminium sulphate ( $KAl(SO_4)_2 \cdot 12H_2O$ )) and fermented persimmon juice. They were commercial products that I could not determine the ingredient ratio, so the only way to ensure the waterproof effect was to apply water drop testing.

Three brushed layers were applied to each board; one board with alum solution, the other with persimmon juice:

- Layer 1 — 1:1 alum solution to water / 1:1 persimmon juice to water.
- Layers 2 and 3 — 100% alum solution / 100% persimmon juice.

The ratios for the layers above were aimed at achieving a 70% waterproof level (as opposed to 100%) required for drying boards (Song 2020, p. 63). Commercial products containing different ratios of ingredients may affect these ratios of applications. Conservators who want to conduct this application should adjust this phase depending on their own resources and test how waterproof it is by using a fine brush to apply a water drop to note its penetration speed and if it meets the 70% waterproof requirement.

Once finished with the coating layer applications, I left the boards for one week to dry, stabilise, and off-gas, and after that, wiped them using a damp cloth. Usually, a finished karibari board should be left for two or three months then rinsed with water before first use (Webber & Huxtable 1985, p. 60). As I had a time limitation, the first use of these two boards was only one week after the final coating application, so a damp cloth was used to wipe them because there was a bit of a concern regarding rinsing out the coating materials if the prescribed rinsing method was used.



**Figure 5:** The finished coating layer with alum solution. Image by the author.



**Figure 6:** The finished coating layer with fermented persimmon juice. Image by the author.

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<sup>3</sup> Important to note: some conservators might have concerns regarding alum and it may be unsuitable in some applications.





#### Phase 4: Lining test

After a water drop penetration test, a lining test was conducted to make sure the function of flattening and drying met requirements. The lining test was done to check the lining paper would not drop off during the drying, and once dry, when peeling off the lining paper, the coating material would not peel off. As mentioned by Kato and Kimishima (2015, p. 91), this technique is a method in paper conservation of drying with restraint and adjusting objects to flatten them while holding them in a stable condition. For this lining test, I used two pieces of xuan paper (mounting use; different ratio of ingredients and paper thickness). The application technique is the same as lining an object with kozo paper, which is a foundational skill in paper conservation and East Asian paintings conservation treatments.

The result (see *Project outcome*) of this lining test proved that the boards can be used in conservation treatment applications like lining, drying, and flattening.



Figure 7: Applying the lining test to the board. Image by the author.

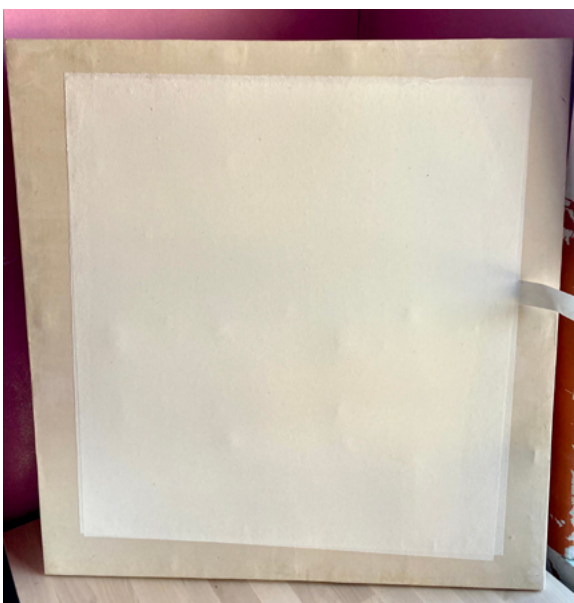


Figure 8: Lining test on alum board. Image by the author.

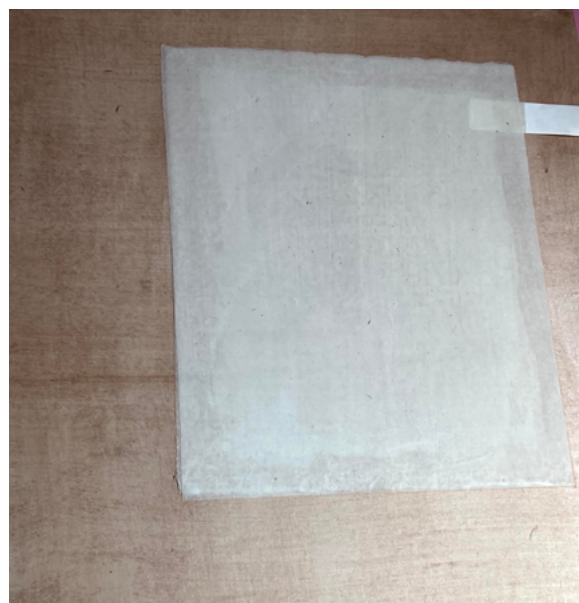


Figure 9: Lining test on karibari board. Image by the author.

## Project outcome

To make sure the drying boards worked as intended, a waterproof test and lining test were applied, as described above. Table 1 summarises and compares the results. The project outcome was satisfactory; both drying boards had waterproof properties and could be used for drying and flattening in conservation treatment, though limited in size. The Japanese karibari board with persimmon juice left paper edges on the board after the lining test, and the Chinese ganzaoban drying board with alum coating had an issue with the coating material peeling off after the lining test. This issue might have occurred because the first use was one week after completion. I decided to monitor this issue with monthly lining tests.

Table 1: The comparisons of the karibari board and alum board in their intended functions and waterproof properties.

	Karibari board with fermented persimmon juice as a surface coating	Drying board with alum solution as a surface coating
Drying speed	Very slow drying speed and water drop penetrated the board	Very slow drying speed and water drop penetrated the board
Lining test	Satisfied (dry with flattening) but left paper edges on the board	Satisfied (dry with flattening) but peeled off coating material

## SUMMARY

This project was a simple practical project of manufacturing karibari boards by following instructions from literature and research. The project involved many steps from the construction of a wooden lattice, pasting paper layers, to coating layer application, and then testing of their waterproof properties and conducting a lining test to see how the boards function and if there were any issues. Many challenges were overcome — there was a possibility that the boards may have ended up without coatings, until the problem was finally solved and alum solution and fermented persimmon juice were purchased. Due to the limited timeframe, the first use could not wait for two to three months; further lining tests will continue monthly for observation.

At least, I was satisfied with the project management, progress, and results. For this project, I planned and consulted with mentor Jennifer Loubser and other friends from East Asian paintings conservation. The use of timelines and breaking down tasks helped to manage priorities

and hurdles, such as resource access and delivery. I also learned and improved basic woodwork skills while constructing the wooden lattice. Additionally, my lining skills were exercised a lot when pasting the paper layers. My home-based workstation and limited budget scaled down the project, but, so far, I am satisfied with these attempts.

### Further research

Other coating materials could be applied to the surface of the drying board – I have not had a chance to apply conservation-grade products such as Paraloid® B72 and Rhoplex™ emulsion, or commercial products like floor finish, varnish, and Tung oil, or natural adhesive like shellac. Many adhesive materials have the same characteristics and they might have potential as surface coatings if they do not contain a harmful substance that could transfer to the object while on the drying board.

## ACKNOWLEDGEMENT

I appreciate my mentor, Jennifer Loubser, and the AICCM Mentorship Program who supported this karibari board manufacturing project. I would also like to thank friends from East Asian painting conservation who gave their support and followed with interest in this project.

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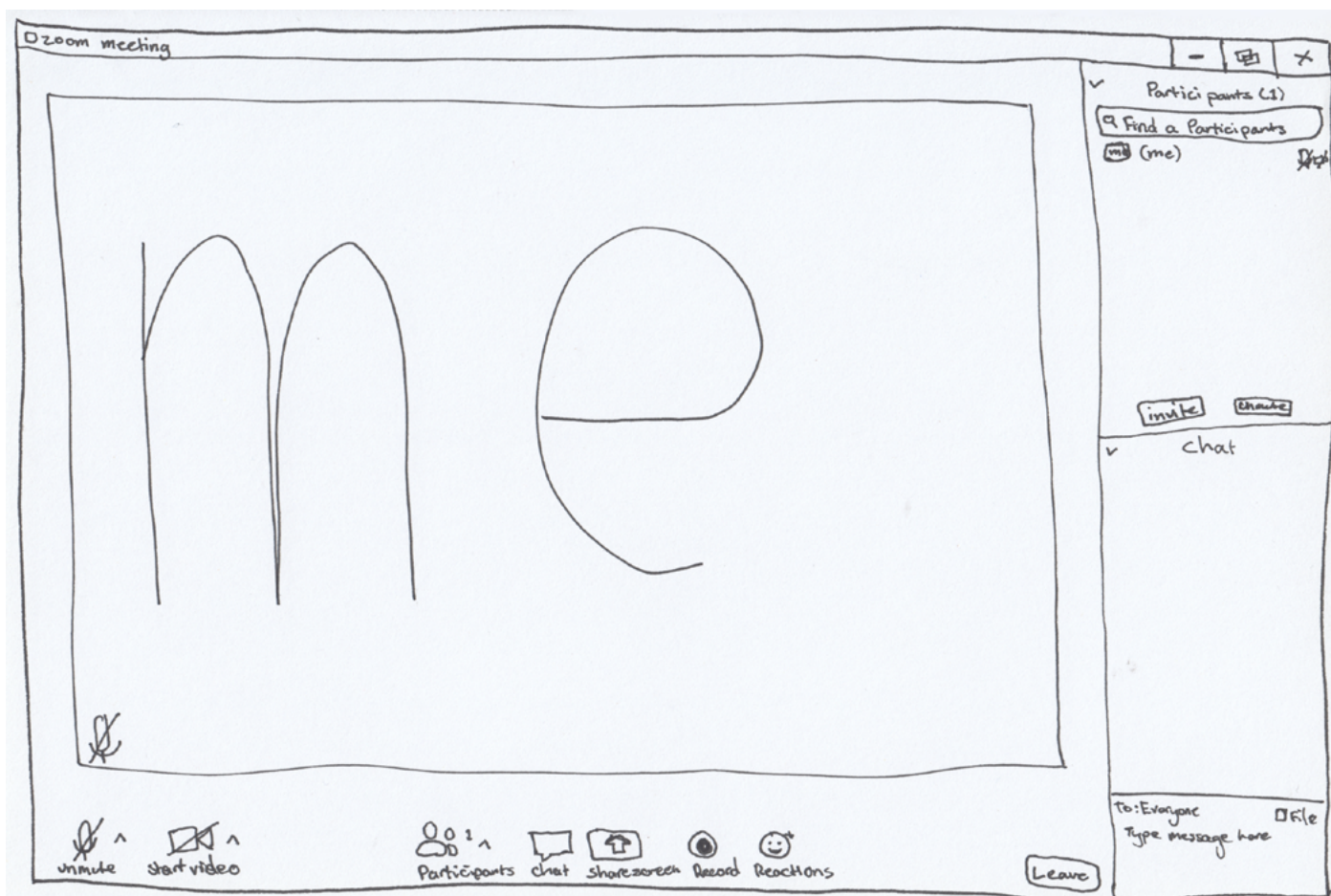
## SUPPLIERS OF MATERIALS

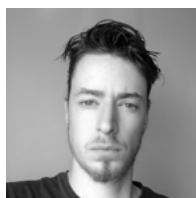
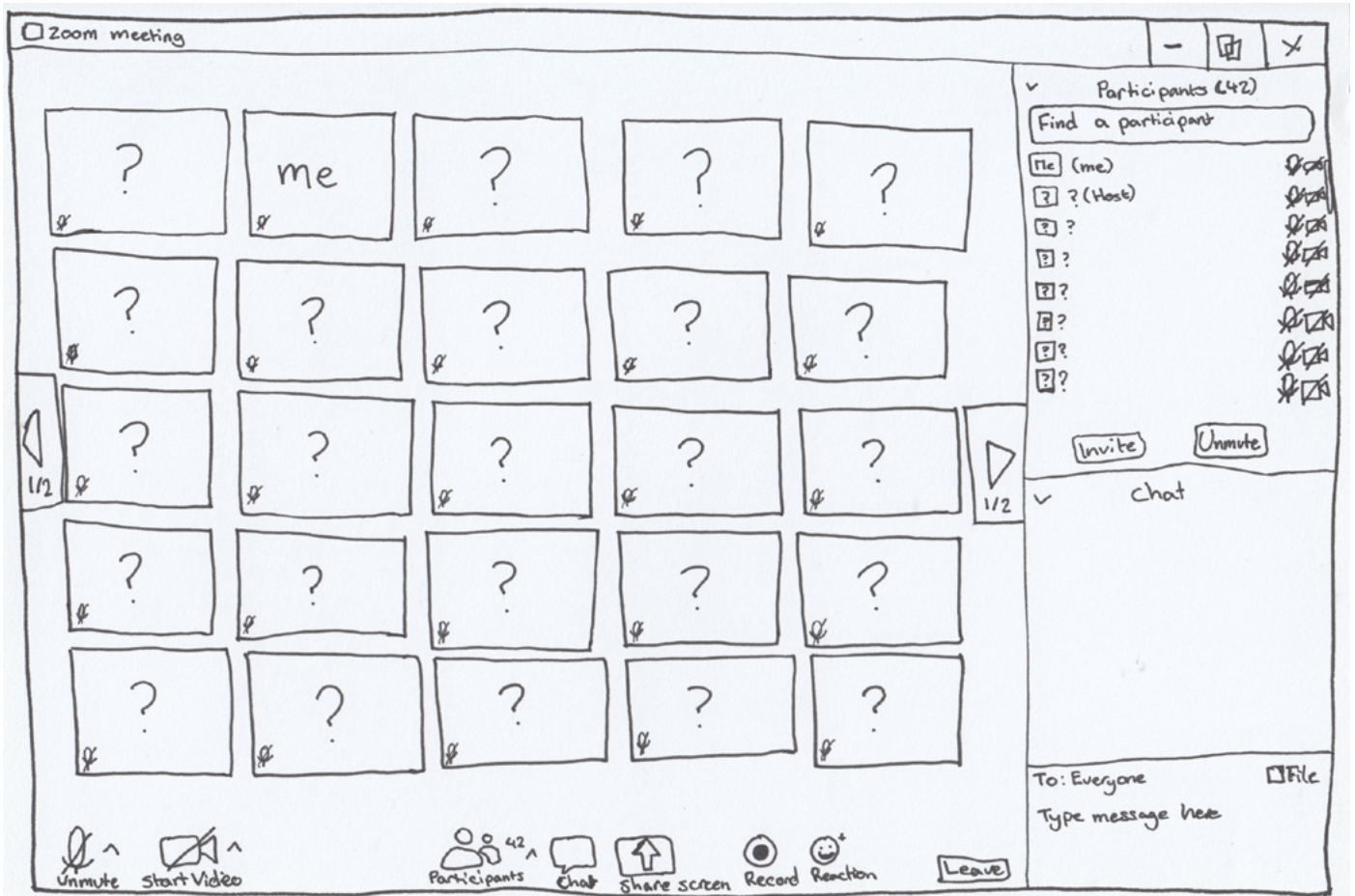
Pine wood timber strips (18 x 18 mm)/ Red cedar — a good option but more expensive	Bunnings Warehouse
Wooden dowels	Bunnings Warehouse
PVA wood glue	Bunnings Warehouse
Wheat paste starch (Foo Yuen Loong, produced in Hong Kong)	Asian grocery shop
Chinese mulberry paper (Fu Lung Cotton Paper Co. Ltd, handmade from Taiwan)	Fu Lung Cotton Paper Co. Ltd < <a href="http://www.calligraphy.url.tw/content.php?cn=item&amp;cid=52">http://www.calligraphy.url.tw/content.php?cn=item&amp;cid=52</a> >. OR Leosand Art Studio < <a href="https://stpolkama.wixsite.com/leosandartstudio">https://stpolkama.wixsite.com/leosandartstudio</a> >.
Alum solution (Milky white mixing solution, cannot clarify the ingredients because it is a commercial product; if in a lab, potassium alum and water tests with different ratios would be more scientific.)	Fu Lung Cotton Paper Co. Ltd < <a href="http://www.calligraphy.url.tw/content.php?cn=item&amp;cid=52">http://www.calligraphy.url.tw/content.php?cn=item&amp;cid=52</a> >. OR Leosand Art Studio, Home, <i>Leosand Art Studio</i> , < <a href="https://stpolkama.wixsite.com/leosandartstudio">https://stpolkama.wixsite.com/leosandartstudio</a> >.
Fermented persimmon juice (commercial product, unsure of exact ratio of ingredients)	Fu Lung Cotton Paper Co. Ltd < <a href="http://www.calligraphy.url.tw/content.php?cn=item&amp;cid=52">http://www.calligraphy.url.tw/content.php?cn=item&amp;cid=52</a> >. OR Leosand Art Studio, < <a href="https://stpolkama.wixsite.com/leosandartstudio">https://stpolkama.wixsite.com/leosandartstudio</a> >.
Tools – a mounting brush, a bamboo spatula	Fu Lung Cotton Paper Co. Ltd < <a href="http://www.calligraphy.url.tw/content.php?cn=item&amp;cid=52">http://www.calligraphy.url.tw/content.php?cn=item&amp;cid=52</a> >. OR Leosand Art Studio < <a href="https://stpolkama.wixsite.com/leosandartstudio">https://stpolkama.wixsite.com/leosandartstudio</a> >.
Tools – a pasting brush, a smoothing brush	Daiso (a Japanese \$2 shop)

## GLOSSARY OF TERMS

ENGLISH	JAPANESE, ROMANISED	JAPANESE, KANJI	CHINESE, ROMANISED	CHINESE, TRADITIONAL	CHINESE, SIMPLIFIED
Alum solution: a mixing solution with alum and water.	-	-	fanshui	礬水	矾水
Chinese drying board: Chinese style drying board for using drying paper when papermaking and Chinese paintings mounting.	-	-	ganzaoban	乾燥板	干燥板
Fermented persimmon juice: green persimmon with rich tannin which is produced into a fermented solution with water.	Kaki no hakko jusu	柿の発酵ジュース	faxiao de shizi shui	發酵的柿子水	发酵柿子汁
Persimmon tannin	kakishibu	柿渋	-	-	-
Japanese drying board: Japanese style drying board for temporary pasting.	karibari	仮張り	-	-	-
Mulberry paper: The fibrous inner bark of the paper mulberry tree to manufacture into handmade or machine made paper.	kozo shi	楮紙	chupi zhi	楮皮紙	楮皮紙

## A masters online





by Michael Iles  
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A country-born artist interested in exploring the landscape, city and country and the contemporary modern world and all of its online facets, most often through photography and illustrations, as well as exploring these ideas through less familiar mediums.

## Lessons from Haeinsa:

### What a Korean Buddhist temple can teach us about preventive conservation



by Elizabeth Galton

Elizabeth is currently completing a Master of Cultural Materials Conservation degree at the University of Melbourne. During her studies, she has specialised in paper conservation, and is writing a minor thesis on the use of chelators for treating paper-based objects. She holds a BA and a PhD in French history from the University of Western Australia — her dissertation explored attitudes towards the Paris Universal Exhibitions of the 19<sup>th</sup> century.

#### [ Editors' note ]

The author discussed Haeinsa woodblock storage as part of an essay submitted to University of Melbourne for an assignment. However, this article differs substantially from the original.

In my early twenties, while I was living in South Korea, I joined a hiking club on a walk up Mt Gaya in the country's south. My motivation to join the hike was primarily about escaping urban life for a day or so, and had very little to do with visiting the Buddhist temple of Haeinsa, located on the mountain's slopes. I had visited several Korean temples already, and had found them interesting, but had no particular inkling that this one would be anything more than a pleasant site to visit along the way. As it turns out, I have retained almost no memory of that hike except the remarkable story of the centuries-long conservation of the temple's vast collection of wooden printing blocks.

Haeinsa Temple is home to more than 80,000 woodblocks, which are known as the *Tripitaka Koreana*. Carved between 1237 and 1248 CE, the *Tripitaka Koreana* is recognised by UNESCO as the most complete and accurate collection of Buddhist texts in existence. While the quality and artistry of the woodblocks' construction contribute to their renowned status, it was not those features that caught my attention on the day of my visit. What fascinated me was the fact that the design of the storage halls, built in the 15<sup>th</sup> century to house the *Tripitaka*, had successfully protected, and was continuing to protect, the woodblocks from deterioration. No air conditioning, no mechanised climate control, just clever building design.

It seems so obvious now that my interest in the preservation of the woodblocks was indicative of a broader interest in cultural materials conservation. If only I had registered this at the time and enrolled straight away in conservation studies, I might have saved myself quite a bit of time and anguish. But when I did find myself, more than a decade later, writing an essay for my preventive conservation class, the memory of Haeinsa Temple and its well-preserved woodblocks resurfaced in my mind. What better example of the ways in which a collection's environment can be managed without the use of unsustainable, energy-hungry climate control systems?

Haeinsa Temple, the *Tripitaka Koreana* and its storage halls, the Janggyeong Panjeon, are collectively designated as a UNESCO World Heritage Site 'for the remarkably effective solutions developed in the 15<sup>th</sup> century to address the problem of storing and conserving

the 80,000 woodblocks [...] against deterioration' (UNESCO World Heritage Centre n.d.). Because of this status, I assumed that the conservation literature would reveal plenty of references to the famous woodblocks and their ingenious storage halls, and that research for the essay would be easy. I was wrong.

In fact, none of the information I found about the characteristics of the Haeinsa storage halls was from conservation studies publications. Instead, I found myself reading from journals such as *International Journal of Air-conditioning and Refrigeration* and *Mycobiology*. Sadly, my Korean reading comprehension does not extend much beyond navigating a restaurant menu. A lot more information about Haeinsa and the woodblocks is accessible to Korean readers.<sup>1</sup> As it was, I had to rely more heavily than I would have liked on a single text, *Under the microscope: The secrets of the Tripitaka Koreana woodblocks* by wood expert Park Sang-jin (2013), which, while extremely thorough, lacks references to back up its claims and arguments.

What I expected (or perhaps hoped) to find in my exploration of the Haeinsa woodblocks, was an uncomplicated tale about the triumph of ancient wisdom over modern technology. While this trope certainly, and understandably, dominates the Haeinsa narrative, the story of the woodblocks' conservation is complicated by politics, the changing cultural use of the woodblocks themselves, and, inevitably, climate change.

**What better example of the ways in which a collection's environment can be managed without the use of unsustainable, energy-hungry climate control systems?**

## 1. Ancient wisdom

But let's start with the ancient wisdom. Wood is a material that is particularly susceptible to decay, deformation, fire and insect damage, and yet the Haeinsa woodblocks have remained in good condition for over 600 years. The characters forming the text that is engraved on the surface of the blocks have remained intact and legible. This preservation is due in part to the custodianship of the monks who, over the centuries, saved them from fire and invading enemies, and who rinsed the blocks after use and carefully dried them in the shade (Park 2013, p. 115).

Equally important to the conservation of the woodblocks is the location and design of their storage halls. Wood, long after it has ceased to be a living tree, retains some moisture content which increases and decreases depending on the relative humidity of its environment. Most damage that occurs to wood (cracking and decay) is related to moisture content (Park 2013, pp. 137–183). The principal characteristic of the storage halls, therefore, is their capacity to regulate humidity. The temple is set on the slopes of Mt Gaya at an altitude of approximately 655m. By the time that the air rising from the valleys below has reached this height, much of its moisture content has evaporated. The position of the storage halls themselves is determined by the prevailing wind directions, with their orientation preventing direct entry of moisture-laden breezes. The storage halls are situated so that no section is in permanent shadow and the surrounding ground can be exposed to sunlight at all times of the year (Lee 2000, pp. 10–11).

The layout and construction of the storage halls also contributes to humidity regulation. There are no floorboards—the shelving housing the woodblocks stands on legs over a dirt floor. This arrangement allows direct exchange of moisture between the ground and the woodblocks; when the air is too dry, the ground becomes a source of moisture and vice versa (Park 2013, pp. 117–118).

1 For readers of Korean, Kim et al. (2021) point to an extensive list of scientific articles published in Korean relating to Haeinsa temple.

2 For a more technical and comprehensive overview of ventilation in the storage halls, see Hur, Lee & Yang (2011).



The window configuration in the halls also helps to control moisture content in the air. The southern orientation of the buildings means that at the back of the halls, the temperature is lower and the relative humidity higher. The back walls have two windows each, a large one on top, and a small one below. As air entering from the back of the halls is weighed down with moisture, the window configuration allows more of the higher, drier air into the storage space and less of the heavier, moist air. At the front of the hall, the window configuration is reversed. The top window is smaller, trapping more of the warm, dry air inside and allowing the moist, heavier air to sink and escape out of the larger bottom window (Park 2013, p. 199; Kim et al. 2021, pp. 2–3, 6).<sup>2</sup>

Air circulation in the halls is facilitated by the configuration of the shelving, which runs parallel to the long axis of the building. Each shelf contains two rows of woodblocks, stacked vertically on top of each other. The end pieces of each woodblock, which serve as handles, are thicker than the body of the tablet containing the text. When sitting next to each other on the shelves, only these end pieces are in contact with the adjacent woodblocks; the engraved areas are separated by spaces which act as vents, allowing air to flow between the individual woodblocks (Lee 2000, p. 11; Park 2013, p. 136).

So far, the story of the *Tripitaka Koreana* seems to be an inspiring tale of the potential for clever design to naturally preserve valuable cultural assets for centuries without the aid of modern air conditioning systems. The humidity regulation resulting from the clever manipulation of airflow throughout the halls has successfully protected the woodblocks from the warping and splitting that can result from fluctuating moisture content in wood. The constant air flow throughout the area lowers the water activity on the surface of the blocks, and thereby hampers microbial growth that can cause wood decay (Kim et al. 2021, p. 6). However, while ancient wisdom might have served the woodblocks well for centuries, it cannot alone safeguard them against shifting political, social and environmental landscapes.


## 2. Adapting to changing circumstances

Since the Korean War of the 1950s, the relationship between South and North Korea has been volatile, and the prospect of renewed hostilities has been an ever-present backdrop to life in South Korea. In the 1970s, authoritarian South Korean president, Park Chung-hee, apparently nervous about the risk of damage to the *Tripitaka Koreana* in the event of an attack from the North, initiated construction of a new building to house the woodblocks and protect them from potential bombing. In spite of opposition from the Haeinsa priests, a decision was made to build a one-storey, reinforced building and basement with mechanised temperature and humidity control to house the woodblocks.

When the building was completed in 1974, several woodblocks were installed for initial trials but, in this suddenly and drastically changed environment, they quickly developed signs of cracking and distortion. The new storage facility had been designed primarily in terms of preparedness against war and other disasters, but requirements for air circulation had not been taken into sufficient consideration, and condensation build-up was also a problem. The trial blocks were returned to the original storage halls and the new building was never used for its intended purpose (Park 2013, pp. 130–131; Hur, Lee & Yang 2011, p. 240).

**However, while ancient wisdom might have served the woodblocks well for centuries, it cannot alone safeguard them against shifting political, social and environmental landscapes.**

Park Sang-jin argues that the failure of the new storage facility had two key outcomes. The first was a heightened awareness of the effect of drastic environmental changes on the woodblocks. The second, less welcome, consequence was a deep-rooted suspicion towards any scientific research that attempted to improve conditions for the woodblocks. Haeinsa priests and cultural authorities



recruited the story of the failed new building to reinforce the mythology of the infallible wisdom and technical expertise of ancient Koreans and to bolster the argument that no improvements to the existing storage conditions were necessary (Park 2013, p. 132).

And yet, we could hardly expect the 15<sup>th</sup> century designers of the storage halls to have accounted for 20<sup>th</sup> and 21<sup>st</sup> century realities. Whereas Haeinsa was once a place of solitude and contemplation for monks and pilgrims, it is now a major tourist destination, attracting thousands of visitors. Surrounding forest has been cleared to make way for shops and restaurants. These developments have led to an increase in dust levels in the storage halls. Dust presents a conservation risk to the woodblocks because it traps moisture on the surface of the blocks, creating an environment in which fungi can thrive and cause wood to stain or rot. This effect is amplified in the grooves separating the individual strokes of the inscriptions, thereby endangering the legibility of the script (Park 2013, pp. 139–140).

This changing environment was accompanied by the changing cultural function of the *Tripitaka*. In 1968, use of the woodblocks for printing was discontinued as a damage-prevention measure. But when printing ceased, so too did the accompanying cleaning regime. This is an example of how changes to the use of an object, even if those changes are designed to protect it, can have unintended ill effects. A vacuuming protocol has since been instigated in the storage halls, but this is a delicate and time-consuming procedure requiring special brushes and low-level suction to ensure that the characters do not come loose and get sucked away (Park 2013, pp. 139–140).

Studies from the past decade confirm that the woodblocks are indeed at risk of microbial attack triggered by climate change. Evidence shows that the average annual temperature in the local area has been increasing. Meanwhile, microbiological research has identified the strains of fungi present on the surface of woodblocks and in the surrounding air. These studies established that the timber used to make the blocks would be susceptible to the damaging effects of these microorganisms under optimal conditions for their

growth (Kim et al. 2021, pp. 4–7; Lee, Jeong & Chung 2018, pp. 35–36; Hong et al. 2011, p. 306).

The spectre of insect infestation also haunts the woodblocks. The forest around Haeinsa, and the timber of the buildings themselves, are susceptible to termite infestation. Studies have located termite colonies close to the storage halls, and some termite damage to pillars (Kim et al. 2021, p. 3; Park 2013, p. 144). Park argues that termites are not native to Korea, and they have hitched a ride into the country on timber imported from overseas (2013, p. 144). Fortunately, the low moisture content in the woodblocks themselves makes them unattractive to termites, but a variety of beetles and wood-boring insects do present a risk, should they find their way into the halls. So far, few wood-damaging insects have been found inside, but recent monitoring revealed many other insect species. While these insects might not damage wood themselves, they could potentially be a food source for other wood-damaging organisms (Kim et al. 2021, p. 4).

**In an era where conservators and heritage professionals are increasingly aware of the need to find more sustainable solutions to climate regulation for collections, surely Haeinsa could be providing design insights and cautionary tales to the cultural heritage sector outside of Korea.**

As our climate changes, biological threats to the *Tripitaka Koreana* become an increasing cause for concern. Higher temperatures will lead to greater mobility, activity and reproductive potential of species that had not previously posed a problem for the printing blocks (Kim et al. 2021, p. 6). So far, it seems that ancient design wisdom has protected the woodblocks from biological and structural damage associated with humidity, but the challenges of the 21<sup>st</sup> century will require an adaptive approach to conservation at Haeinsa.

### 3. A wider audience for the Haeinsa story?

I remain surprised that the Haeinsa storage halls are not more widely referenced in conservation literature. In an era where conservators and heritage professionals are increasingly aware of the need to find more sustainable solutions to climate regulation for collections, surely Haeinsa could be providing design insights and cautionary tales to the cultural heritage sector outside of Korea. I suspect that a language barrier might be contributing to this lack of visibility, and I am frustrated that I myself do not have the language skills to do more in-depth research.

But there are some promising signs. Since writing the essay for my preventive conservation class in 2017, another paper on environmental monitoring of the *Tripitaka Koreana* has been published in English by Korean cultural heritage researchers (Kim et al. 2021). The authors point out that, historically, long-term monitoring of environmental conditions in the Haeinsa storage halls has been challenging. The issues they point to — problematic administration of the cultural heritage sector, budget limitations and maintenance of equipment — are familiar to conservators and cultural heritage professionals from all parts of the globe. The researchers note, however, that increased awareness of the importance of wooden cultural heritage in Korea is opening doors to more opportunities to conduct monitoring studies at Haeinsa (Kim et al. 2021, p. 2). Like me, they believe that the Haeinsa storage halls provide an important case study for the broader cultural heritage sector as it grapples with the impact of climate change on cultural materials across the planet (Kim et al. 2021, p. 6). I can only hope that, at some point in the future, collaboration between Korean and non-Korean conservation professionals can bring the Haeinsa story to a wider audience.

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## Digitisation as conservation:

### A discussion of the Hellenic Museum Digitisation Project



by Thomas J. Keep  
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Tom Keep is an archaeologist, photogrammetrist and PhD candidate at the University of Melbourne, researching the applications of digital representation and virtual reality for fostering engagement with material heritage.

Between February and July 2021, I worked with the Hellenic Museum to create 3D digital surrogates of their material collections and make them freely available online. Using structure-from-motion photogrammetric modelling, over 70 digital surrogates of ancient objects from the collection were constructed, currently available on the online platform SketchFab.<sup>1</sup> These represent part of a wider global initiative in heritage digitisation, spurred on in recent years by the pressing issues of accessibility brought clearly into view by the COVID-19 pandemic. The Hellenic Museum Digitisation Project is a collaborative initiative between myself, the University of Melbourne, and the Hellenic Museum, funded by the federal government and facilitated by the Australian Postgraduate Research Intern program.

The Hellenic Museum is a relatively small Melbourne institution, part of the alliance of five museums that form Multicultural Museums Victoria. The Hellenic Museum hosts a small but diverse collection of Hellenic materials, ranging from Bronze Age Cypriot pottery through to Greco-Roman architectural sculpture – including the almost obligatory red-figure ware ceramics so associated with classical Athens.<sup>2</sup> In addition, the museum engages with contemporary art inspired by Hellenic culture and history, and exhibits collections from collaborating international museums. Since becoming CEO in 2020, Sarah Craig has made engagement with contemporary culture and modernisation a priority for the museum's direction.



**Figure 1:** A white-figure Magna Graecian hydria dating to the 4<sup>th</sup> century BCE, attributed to the CA Painter of Cumae. 3D model courtesy of the Hellenic Museum, available at: <https://skfb.ly/o6MQT>

The displays of the museum are made up largely of collections generously on loan from private collectors. The Cypriot pottery collection includes 48 pieces from the collection of Peter Mitrakas and Mary Ann Savas, featuring well-preserved bowls, dishes, cups, jugs, juglets, and large-scale amphorae. The collection dates from the Bronze Age through to the Cypriot Archaic period. The beloved red- and white-figure ware ceramics so renowned in the present day form an integral component of the museum's collection, featuring Magna-Graecia wares from South Italy dating to the Classical period. This collection is on loan from the Koumantatakis family and features a series of beautiful and mysterious pieces that appear to depict some form of ritual, possibly associated with the Eleusinian Mysteries (Figure 1).<sup>3</sup> The Greco-Roman collection features a number of architectural relief sculptures and there is a collection of replica and original bronze helmets, arrowheads, and spear points.

<sup>1</sup> [sketchfab.com/hellenic\\_museum](https://sketchfab.com/hellenic_museum)

<sup>2</sup> See Figure 1 for an example.

<sup>3</sup> The subject of an upcoming collaborative paper between Goran Đurđević and myself, submitted to *Amphora*.

## Photogrammetry

Photogrammetry is a means of quantified measurement from photographs: ‘the science of measuring photos’ (Linder 2016, p. 1). By taking repeated measurements of multiple two-dimensional representations from different angles around a three-dimensional space, one is able to replicate the principle of stereoscopic viewing that allows us to perceive three dimensionality in our everyday vision (Linder 2016, p. 2). These calculations can be undertaken manually and the field of study is often regarded as developing from the use of terrestrial photography for mapping in 1859 (Wolf, Dewitt & Wilkinson 2014, *History of photogrammetry* section). In the modern age, the capability of computers to calculate many millions of such measurements at tremendous speed and accuracy has facilitated the development known as structure-from-motion (SfM) photogrammetry.

SfM photogrammetry allows for the creation of 3D models from photographs and has quickly become the most cost-effective and fast means of obtaining accurate 3D recordings. SfM photogrammetry is used in contemporary archaeology to develop 3D models representing the terrain and architectural features of interest.<sup>4</sup> The method facilitates

recording of the three-dimensionality of the excavated space, in effect preserving a digital surrogate of the excavated remains; useful where conservation of the real site is not possible. Similar reconstructions are also used for extant remains that may be under threat of deterioration, in effect creating a time-specific replica of the site for posterity (Figure 2).

However, photogrammetry modelling is not restricted to landscapes. The same techniques may be applied to individual objects to construct 3D models that replicate the dimensions and appearance of a real-world object. The British Museum hosts a collection of material available through a Creative Commons license, including over 250 3D-modelled objects from their collection (Stojićević 2020, p. 14), freely available on their SketchFab page.<sup>5</sup> During the COVID-19 pandemic, a number of major institutions adapted to the need for access to material collections where physical engagement is simply not feasible, and established virtual reality (VR) tours or other digital representations available online.<sup>6</sup> Although access is certainly a pressing concern, photogrammetry modelling of collections also provides opportunities for conservation.



Figure 2: Kantharodai Stupas, southern sections. 3D model courtesy of Madeline G.P. Robinson, available at <https://skfb.ly/6xxGS>

<sup>4</sup> See Howland et al. 2014; Patias et al. 2009; and Kemp et al. 2020 for examples.

<sup>5</sup> <https://sketchfab.com/britishmuseum>

<sup>6</sup> See Stojićević 2020.

## Photogrammetry and conservation

Photogrammetry provides opportunities to monitor heritage materials and develop targeted conservation strategies. Photogrammetry provides highly realistic 3D representations of diagnostic data for use in assessing the state and needs of conservation for a site or artefact (Georgopoulos & Stathopoulo 2017, p. 1). Such representations are becoming invaluable for the assessment of inaccessible sites or fragile objects, which restrict opportunities for manual handling (Georgopoulos & Stathopoulo 2017, p. 11).

3D modelling of heritage materials provides data that can be used in the production of storage media and replicas. Additive manufacturing, commonly known as 3D printing, allows for custom designs to be produced at will and low cost. Printed replicas allow for tactile experiences with heritage materials by visitors, without risk of damaging the original.<sup>7</sup> SfM photogrammetry can facilitate printing custom frames and brackets fitted to the specific object to minimise the need for adhesives.

Select heritage sites are deemed sufficiently exciting, informative, and culturally significant that they are preserved and made publicly accessible, but as a result incur ongoing damage caused by visitors. Attempts to preserve sites by the addition of structural supports can cause irreparable damage. Most archaeological sites, however, are either destroyed post-excavation to make way for modern building works or are reburied to preserve them for future scholarship. While reburial is an important means of conserving archaeological material, it cuts off opportunities for public engagement. Consequently, this restricts the knowledge to academic field reports, often unintelligible or inaccessible to general audiences.

As a result, many spaces of tremendous intellectual, emotional and cultural value are preserved, but access is restricted in the interest of conservation. The palaeolithic caves of France and the tombs

of Upper Egypt are of immeasurable significance in our understanding of humanity but are hyper-sensitive to the impacts of moisture caused by human breath, and as such must be closed to the public in the interests of conservation (Spennemann 2001). There is a double bind here: the purpose of heritage is to facilitate a greater understanding of our past and humanity, yet to preserve these sites, they are removed from view. But what is the purpose of heritage only experienced by a select few? Heritage has a complex relationship to class, status, erudition, and education, and any method of conservation that prevents public engagement should raise alarms.

SfM photogrammetry can provide some form of experiential access when physical interaction is deemed too risky. In the interests of preserving the tombs of Egypt from visitation damage, digital surrogates were created — notably the burial chambers in the Qubbet el-Hawa site of Aswan (Luis et al. 2019). The recent expeditions of the University of Jaén in the Qubbet el-Hawa burial site made photogrammetric recording an integral goal of the multidisciplinary project (Luis et al. 2019, p. 2). Similar projects have been undertaken and made publicly available over SketchFab: the Tomb of Nebenmaat from Deir el-Medina,<sup>8</sup> the Tomb of Menna in Thebes,<sup>9</sup> and the extensive complex of the tomb of Nefertari,<sup>10</sup> among many others. The Nefertari tomb was developed into a virtual reality tour for an exhibition at the Egyptian Museum of Turin, alongside tours of the Tomb of Kha and the Chapel of Maia (Gabellone et al. 2017). Such reconstructions have also been applied to great effect for the paleolithic Chauvet Cave in France,<sup>11</sup> the Etruscan tomb of the Villa Giulia,<sup>12</sup> and others.

While the most immediate benefit here is access where it is otherwise impractical, the benefit of such content also spills over into conservation. SfM photogrammetry provides a means of engagement that detaches the experience of heritage from the literal, physical material itself.<sup>13</sup> The option of creating and displaying digital surrogates of heritage

<sup>7</sup> See, for instance, the 3D Printing of Cuneiform Tablets project of Cornell University; Neumüller et al. 2014, p. 123.

<sup>8</sup> <https://skfb.ly/onWAG>

<sup>9</sup> <https://skfb.ly/6RROB>

<sup>10</sup> <https://skfb.ly/6spnS>

<sup>11</sup> The subject of the excellent Werner Herzog film, *Cave of Forgotten Dreams*; <https://skfb.ly/S79C>; Jaillet et al. 2017, p. 822.

<sup>12</sup> <https://skfb.ly/GXJF>

<sup>13</sup> The degree to which this can stand-in for direct experience itself is open to debate, however, it is perhaps the most engaging experiential option available when access is restricted — this is a wider area of study beyond the scope of this article but is worth bearing in mind.

materials can reduce the pressure on conservators to balance the needs of the public and the needs of conservation: it facilitates a form of engagement while reserving the space and security required by the material for optimal conservation strategies.

SfM photogrammetry can sidestep contentious issues of authenticity in conservation. At the Minoan site of Knossos, the decision of Arthur Evans to speculatively ‘reconstruct’ portions of the site in the early 20<sup>th</sup> century has remained to this day the subject of contentious discussion. Reconstructions or restorations are a powerful means of facilitating public access and interpretation and Evans’s work may be a factor in how popular Knossos is as a tourist destination.<sup>14</sup> However, Evans has been rightly criticised not only for the irreparable damage his reconstructions caused to the authentic remains of the site, but also for the intractable imposition of his own interpretations onto the remains. While the reconstructions may facilitate interpretation for non-specialist visitors, the troubling reality is that these interpretations belong to Evans (Karetsou 2004, p. 547), and present a particular perspective that can be difficult to circumvent even after one has learnt of alternative interpretations. The physicality of the reconstructions lends them undue authority. There can, after all, be only one physical reconstruction built onto the original. 3D modelled reconstructions, however, do not face this same concern.

Digital 3D representations of heritage provide an opportunity for easy reproducibility and variability to create a range of alternative reproductions, without causing any damage to an original or imposing one singular interpretation. Digital simulation has been at times referred to as a ‘hypothetical machine’, wherein a variety of alternative reconstructions may be presented for consideration (Chandler et al. 2017, p. 182). Once a base model asset is created, variations in form and colour may be easily and quickly created, displayed, and distributed for consideration. For conservators, the creation of such reproductions may restrict the need to restore original objects and risk causing damage in the process. In ceramics, for instance, the use of adhesives that can be easily removed is stipulated widely as a common standard of practice while recognising that such reversibility is not always possible, leaving the conservator to make a professional judgement of the potential damage caused by restoration and weigh this risk against the benefits of the process (Buys & Oakley 2011, p. 71).

SfM photogrammetry facilitates development of ‘restorations’ extrapolated from digitised fragments, which can be tempered to allow for uncertainty. For instance, a late Bronze Age or Early Iron Age vessel excavated from northern Poland has been reconstructed from a single diagnostic fragment of the lip and side of the original.<sup>15</sup> The researcher was able to estimate how the original would have looked from this fragment and extract the geometry and texture from the potsherd to produce a digital reconstruction (Figure 3). However, the researcher did not feel sufficiently confident to reconstruct the base from the available evidence, and so the base is simply left absent. It may have been an option for the producer to hypothesise alternative bases and quickly produce a variety of possible reproductions of the original for consideration.

Should physical reconstruction be preferred or required, SfM photogrammetry or laser scanning can also serve as the basis to produce near-perfect reproductions. In 2016, following the wide scale of destruction of the Roman imperial city of Palmyra, a reproduction of the lost triumphal arch was erected in London’s Trafalgar Square



**Figure 3:** Partial reconstruction of pottery vessel from feature 588 (late Bronze/Early Iron Age) archaeological site: Bożepole Małe 14, Pomerania, northern Poland. Excavation by Archeobaltica. 3D model courtesy of Piotr Lezanski, available at <https://skfb.ly/6VDAU>

<sup>14</sup> See Solomon 2006 for a discussion of the heritage significance of the restorations themselves, distinct from the real Minoan material.

<sup>15</sup> This reconstruction is featured on Piotr Lezanski’s SketchFab page, available at <https://skfb.ly/6VDAU>

(Turner 2016). The reproduction was carved from stone by machines programmed to reproduce the geometry of photogrammetry models derived from the original structure (Turner 2016). While there are sufficient original remains left as debris to facilitate in-situ reconstruction of the original by anastylosis (Hackman 2016), in instances where this is not possible such reconstructions can provide a form whereby, in some sense, an ‘original’ may be conserved in tangible form for posterity. The data can be used repeatedly to produce a number of identical reproductions across the world and the digital surrogates can be made available for anyone to view online (Figure 4).<sup>16</sup> While of course the use of ‘original’ should be heavily qualified, it may be argued that the level of accurate detail reproduced in such projects is the nearest that can be hoped for under the tragic circumstances that continue to plague the heritage of the Near East.



Figure 4: Low definition photo scan of the replica Arch of Triumph created by the Insititue of Digital Archaeology. 3D model courtesy of Thomas Flynn, available at <https://skfb.ly/NsOT>

## The Hellenic Museum Digitisation Project

### *The process*

#### Photography

The objects from the collection were photographed inside a lightbox to provide even, white light and minimise shadows, as SfM photogrammetry software is unable to distinguish between colour caused by light and shadows and the true colour of the object itself.<sup>17</sup> In addition, uneven lighting that casts shadows will cast them irregularly as the camera moves around the object, or the object rotates before the camera, and this irregularity creates errors in calculations. To ensure colour fidelity, an X-rite colour checker card was photographed alongside the object. This card is sold with a software package that corrects the colour profile of images in Adobe Lightroom. Although not strictly necessary with white lighting, it is best to account for the possible influence of coloured ambient lighting in the room — particularly important in instances where low lighting is used.

Images could be adjusted in Lightroom for minor changes to contrast, exposure, and clarity, but the changes were kept to a minimum to prevent digital noise from compromising the images.

As the Metashape photogrammetry software has difficulty accounting for changes in focal length and perspective, photos were shot in manual settings, which provide the highest degree of control. Noise in images can cause distress for Metashape and for this reason the lowest ISO settings possible were generally used. For objects with rough or matte surfaces, low ISO can be compensated by strong lighting. However, objects with shiny and glossy surfaces can produce glare, and require low lighting which is then compensated with a higher ISO. As much as possible, ISO was restricted to a range of 100–400. Interacting with this balancing act was

<sup>16</sup> SfM photogrammetry models of the wider site can be seen at <https://skfb.ly/6ZH7O>

<sup>17</sup> Although a recent software package from Agisoft allows for the removal of patches of light and shadows, it can produce adverse effects and is best reserved for circumstances where evenly lit images are not feasible.





Figure 5: The camera, lightbox and turntable set-up.

the impact of aperture settings. To reduce wasted computing time in modelling, it was best to restrict the frame to the object as much as possible, but also to have every part of the object in focus. As such, the camera was placed near to the object, requiring a narrow aperture to keep everything in focus, which reduces the light that reaches the camera's sensor. As much as possible, images were shot at an aperture of  $f/16$ , however with objects that must be shot in low light, this value was reduced to allow more light to reach the camera sensor, and the camera moved further from the object to maintain focus.

SfM photogrammetry does not require a huge number of images to produce geometry, but fine details in colour respond well to a larger image set. To ensure that every portion of the object has coverage from several angles, it is best to shoot from as many angles as possible. Of the 79 objects modelled, the image sets ranged between 75 and 1,379 images, relative to the complexity of the object and the level of detail desired in the final model. On average, 450 images are taken for each object. The camera was fixed on a tripod, and the object placed on a rotating turntable (Figure 5). The turntable used, Foldio360, is sold with an app that connects the turntable to a phone and a DSLR via Bluetooth, which allows for a semi-automated workflow where the camera is set to shoot a photo with each shift of the turntable.

In order to create a complete 3D model featuring every part of the object, it was necessary to photograph the underside. This was usually achieved, where possible, by inverting the object and resting it on its top. For objects with irregular, angled, or spouted tops, museum wax was used sparingly to fix the object to the turntable, and at times I fashioned makeshift stands from polystyrene to hold smaller objects in place and fixed these to the turntable. For objects too delicate, large, or heavy to be manoeuvred in this way,<sup>18</sup> models have simply been left incomplete.

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<sup>18</sup> For instance, the Greco-Roman marble architectural elements, which were much too heavy to be rotated on a turntable.

## Photogrammetry processing

Combing these two photo sets can be a delicate process. While in theory Metashape should be able to compensate, in practice I've found that the simplest method is to create two separate models of the upper and lower halves and combine these into one single model afterwards. This is part of the reason why even lighting is so important: if the light is brighter higher in the lightbox, each half will end up with a slightly different colour.

To reduce processing time, 'masks' were applied to the images to remove the background from consideration. Images were imported into Microsoft Paint 3D and the 'magic select' function used to delete the object from the image, leaving only the background. Anything within this background was

deleted from all other images in the set once applied as a mask. Masked images were checked within Metashape, and manually adjusted.

Modelling in Metashape followed a four-stage process (Figure 6), with adjustments made at each stage to reduce errors. The first stage, 'align photos', identifies matching points between images, and creates a 'point cloud' outlining the geometry of the object. From here, a 'dense cloud' was created, where points are further populated. This is the stage where the majority of editing took place, with errant points manually deleted. From here, the 'build mesh' stage creates the geometry of the object, producing a model representing the geometry. The final stage, 'build texture', added fine visual details on the surface.

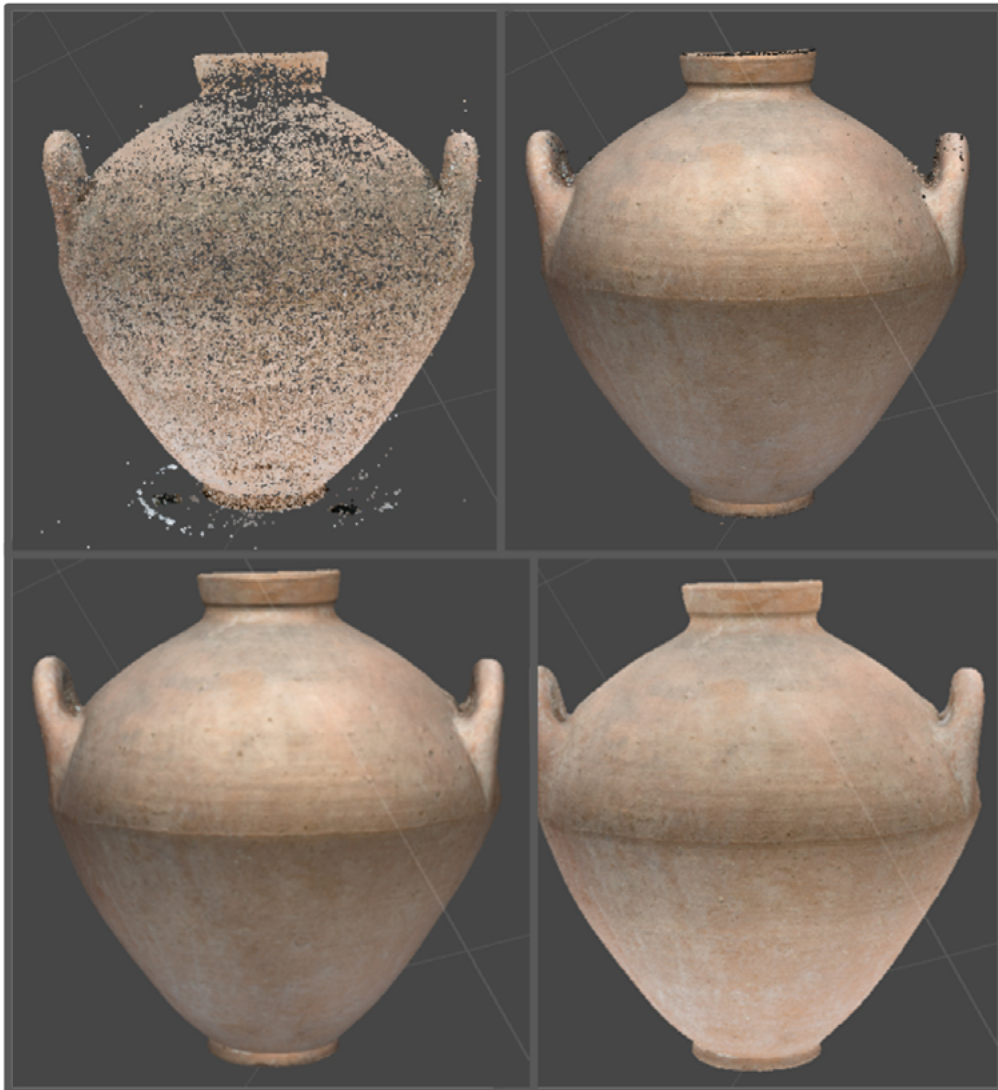


Figure 6: The four stages of photogrammetric modelling.

## Future directions

Several applications are being considered by the Hellenic Museum for this library of digital surrogates. They are being used to foster engagement with visitors, providing them with a new way to access and interact with the heritage material of the collection. Feedback to date has been uniformly positive. Due in part to restrictions of space, the process of photography was undertaken within the gallery in open sight for visitors. Many expressed interest in the process, excited to see heritage material outside of the confines of the glass and to feel they witnessed the ongoing work of conservation and study too often restricted to closed spaces and expensive, jargon-filled academic publications. For International Museum Day, we set up a display and spoke with visitors on the process and value of photogrammetry. Children enjoyed the opportunity to play around with the models, spinning the objects and moving them about the screen. While this kind of engagement is perhaps of limited educational value, it did provide a spark of enjoyment for humble and unassuming artefacts which otherwise may not attract a second glance from the very young.

Also on display for International Museum Day was a virtual reality tour produced and managed by Melbourne-based Lithodomos VR, where visitors could don virtual reality headsets and 'tour' reconstructions of Roman period Athens. Combining the photogrammetry displays with these more immersive virtual displays established a conceptual connection between the physical collections of the Hellenic Museum and the virtual worlds of Lithodomos. The combination of these displays, I believe, not only provided a sense of the relationship between physical, digital, and virtual, but also provided a sense of where artefacts would have once populated the ancient world. Museum spaces provide a very particular context of appreciation, where historical artefacts are displayed as works of art, and at times their existence as quotidian objects of the past can be difficult to comprehend. We are considering using these objects in the development of new virtual reality displays where the objects of the collection can be shown placed in reconstructed historical contexts.

3D printing of the objects is also being considered, with the hopes that they will offer visitors the opportunity to select their favourite objects from the collection, and have a replica printed to order. The museum hosts educational workshops for students, including object-based learning classes where students can engage with replicas. The ability to print replicas of the collection may facilitate the easy creation of moulds, which can be used to quickly produce plaster copies made available to students to paint or consider in-depth.

## Conclusion

SfM photogrammetry is an affordable, fast, and accurate means of creating digital surrogates that can be used for a variety of applications. In relation to the interests of conservation, these digital surrogates can be used for monitoring and the development of conservation strategies without the need for excessive handling of the original. They can provide an alternative hands-on means of engagement through the production of 3D printed replicas or interactive online models, reducing the pressure on conservators to make fragile sites or artefacts available to the general public. In dire circumstances, they can be used to recreate real-world physical replicas to an almost imperceptible level of verisimilitude, where conservation of the original is no longer possible due to tragic destruction. SfM photogrammetry can be learned relatively quickly by speaking with those who have practiced the method or following online tutorials and it requires minimal monetary investment in software and equipment in order to produce high quality replicas on demand. It is well worth consideration for conservators as a means of protecting heritage materials, while making them freely available and globally distributable.

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## ***The Care and ID of Photographs* workshop:**

### A review



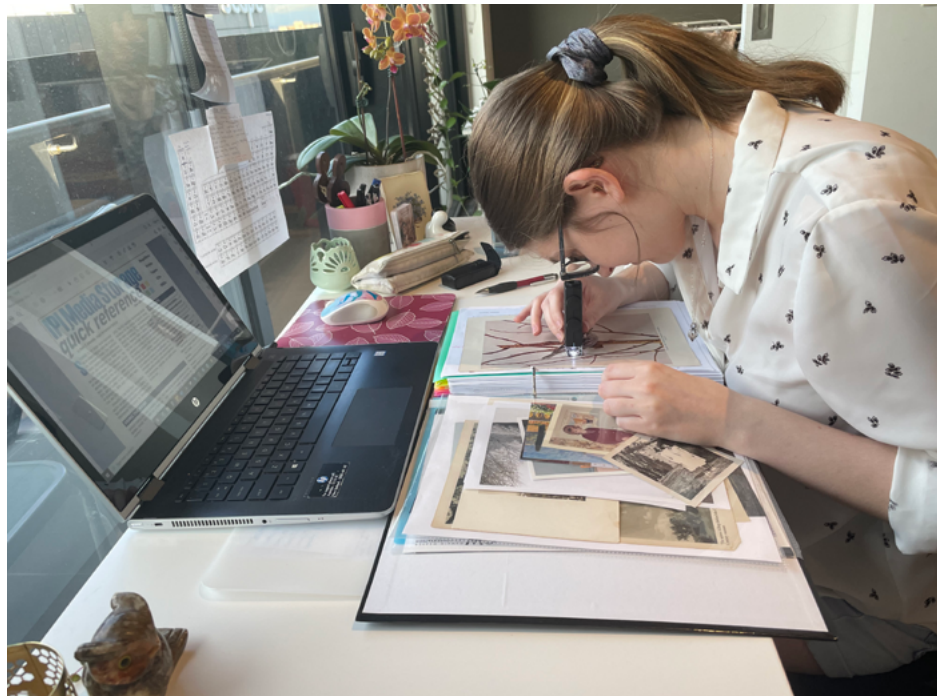
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Sophie is a first-year Master of Cultural Materials Conservation student, who came to Melbourne in 2019. She has a Bachelor of Arts majoring in Archaeology and Classics and Ancient History, as well as a general love of history and old things. Currently, Sophie is hoping to specialise in the conservation of paper-based and photographic materials.

From 7<sup>th</sup> June to 25<sup>th</sup> July 2021, I participated in an online workshop run by Gawain Weaver, head conservator at Gawain Weaver Art Conservation, based in San Francisco. *The Care and ID of Photographs*<sup>1</sup> workshop was an introduction to the identification of photographic processes and prints and the care of photographic materials.

Starting a specialised workshop with no prior knowledge was somewhat overwhelming, however, I was eager to develop an understanding of what professional conservation entails. Other participants mostly included established paper and photograph conservators keen to develop their knowledge and skills. Weaver was an excellent teacher who provided highly informative lectures as well as weekly online chats, which were very engaging and cemented that week's teaching.



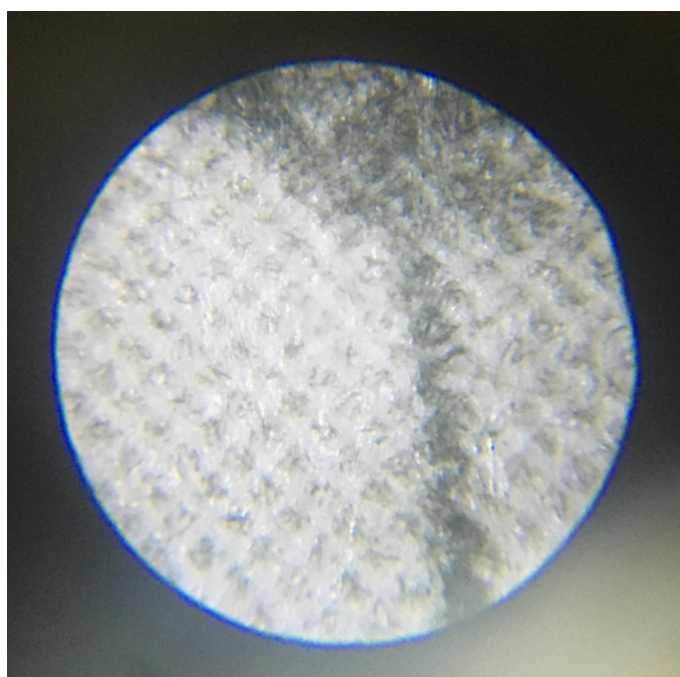
**Figure 1:** Using my handheld microscope to examine photographs in the sample set. Image by the author, 2021.

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<sup>1</sup> See: <https://gawainweaver.com/workshops>

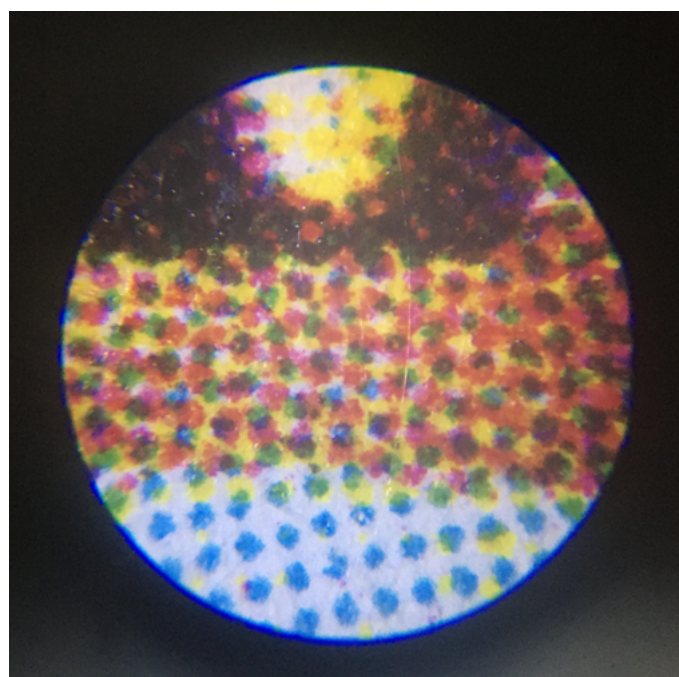
I was a self-funded participant. The workshop cost just under \$750 AUD and included a basic photographic sample set, a 60x magnification LED handheld microscope and hard copies of Weaver's process ID charts, lecture slides and various photograph conservation resources.

In the introductory week we learnt about the history and technology of photographic processes. Weeks 2 and 3 focused on negatives and silver-based image processes and prints. During this period, we began to practice identification using the sample set, ID charts and our microscopes (Figure 1). Differentiating between samples of silver-based photographs was challenging at first, but Weaver answered many questions during the weekly chat and clarified how best to follow the ID chart and judge the colour tone of photographs.

Week 4 looked at non-silver processes like carbon prints and cyanotypes, as well as photomechanical processes like rotogravure and offset lithography. Further identification practice followed, during which I found I was better able to identify the photomechanical prints compared to the silver prints the week before. The distinctive microscopic patterns created by these methods of printing act almost like fingerprints with unique features that help with identification (Figure 2 & Figure 3).



**Figure 2:** Microscopic view (60x magnification) of a rotogravure provided by Gawain Weaver. Image by the author, 2021.



**Figure 3:** Microscopic view (60x magnification) of an offset lithograph provided by Gawain Weaver. Image by the author, 2021.

Week 5 focused on colour photography and digital prints; quite an extensive topic that covered processes developed for capturing and printing photographs from the late 19<sup>th</sup> century up to the present day. Identification of digital prints was more difficult for me, so I was thankful to have the online chat to help explain what we were seeing under the microscope. Weaver's ID charts were also invaluable and are freely available on his website for download.



Week 6 highlighted the various deterioration mechanisms that affect photographic materials including, importantly, the preservation environment and management of temperature and relative humidity in collection spaces. The *Image Permanence Institute (IPI) Media Storage Quick Reference* by Peter Adelstein (2009) is an excellent resource that provides clear and concise information on how to best manage storage spaces containing photographic materials. Learning about the instability of cellulose nitrate and cellulose acetate film was particularly eye-opening, as this is an issue that still affects photographic collections today.

Finally, Week 7 concluded with a look at best practice handling techniques, enclosures and storage strategies for photographic collections. This included discussion of the various methods for mounting photographs (Weaver advocates for non-adhesive mounting) and which enclosure materials are considered sufficient for safe long-term storage; the ultimate standard is that materials should pass the Photographic Activity Test (PAT).

The opportunity to participate in online discussion boards as part of the course was invaluable as many conservators from all over the world shared their thoughts and opinions on the various topics. I thoroughly enjoyed this workshop and would encourage any student keen to develop their knowledge in the conservation of photographs to consider attending in the future. Identification of photographic materials can not only assist with documentation and cataloguing of collections but ensures a thorough understanding of what is required to ensure their preservation.

I am intending to utilise the skills I developed during the workshop to practice cataloguing and reorganising a personal collection of early 20<sup>th</sup> century postcards I acquired earlier this year. The binder I now possess contains incredibly insightful and informative resources that will help me to navigate the future as a prospective photographs conservator.

Photographic materials are present in numerous public and private collections around the world, creating records of historical people, places and events. I was drawn to conservation of photographs when I considered the legacy that they embody and their importance in our lives. Having gained an understanding of the history of photography, the composition of prints and negatives, how to successfully identify them, and what is involved in their care has given me further appreciation for the work of conservators protecting our photographic heritage.

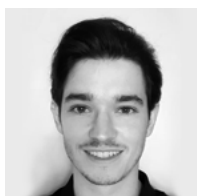
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# The changing approach to relining canvas paintings:

A review of the methods and materials applied to painting relining in Europe from the 17<sup>th</sup> to 20<sup>th</sup> century



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## [ Editors' note ]

The author discussed methods and materials used in painting relining for an assignment submitted to the University of Melbourne. However, this article differs substantially from the original.

From the 17<sup>th</sup> to late 20<sup>th</sup> century, common practice for the treatment of damaged canvas paintings in European regions was the addition of a secondary lining canvas (Scharff 2012, pp. 438–439). Four centuries of art restorers and conservators developed the process of relining, progressing alongside the technology of the time and the changing opinion of conservation practice, with each iteration intended to better serve the preservation of the artwork. Varied processes based on glue-paste formulas were applied until the early 19<sup>th</sup> century, when they were replaced by wax-resin adhesives and modernised techniques. Further change was then directed by the professional standards of conservation in the late 20<sup>th</sup> century, introducing a potential 'ideal state' of an artwork as being closest to its original state (Appelbaum 2007, p. 177). This interpretation of artworks resulted in a reconsideration of the entire relining process and an era of conservation practice defined by a priority of minimal intervention and complete reversibility of treatment methods rather than total structural stability (Appelbaum 2007, pp. 175–176).

## Glue-paste production

'Glue-paste', which refers to a binding agent based on animal glue and cereal flours, was first formulated in Europe in the early 15<sup>th</sup> century. However, it is not until the 17<sup>th</sup> century that records from the Louvre's painting inventory document the use of glue-paste specifically for the purpose of relining a canvas painting (Reifsnyder 2012, p. 416). Standardised application of glue-paste recipes applied to relining are later noted in Pellegrini Antonio Orlandi's *'Abecedario Pittorico'* (*ABC of painting*) in 1704, describing the use of animal glue, cereal-based flour and water combined with heat and pressure to reline canvas paintings for added structural stability (Reifsnyder 2012, pp. 416–417).

The general formula for glue-paste relining involved the preparation of these materials along with a variety of additives according to region and experience of the individuals performing the relining. The primary source of collagen, acting as the adhesive glue base for the glue-paste recipe, was derived from bovine materials: hooves, bone, tendons,



cartilage and leather hide (Luybavskaya 1990, p. 47; Schellmann 2007, pp. 55–56). These materials were soaked in water, softening the organic matter and releasing ‘sol’, a raw form of collagen and other proteins. Evaporation turned this aqueous material into a film layer of collagen protein molecules that could be reconstituted through heat and water for further combination into a glue-paste recipe (Reifsnnyder 2012, pp. 418–419). Termed ‘glues’, the raw mix of collagen with varied organic impurities allowed for a film-like layer to form with strong binding properties and an easily adjusted viscosity according to water volume during the soaking process (Gettens & Stout 1966, pp. 25–26). A cereal-based flour acted as the thickening ‘paste’ agent, adding viscosity to the solution and by nature of its gluten and starch composition, and retained water to allow for a slower evaporation rate (Reifsnnyder 2012, pp. 418–419). This addition to the ‘glue’ solution provided greater molecular integrity and minor elasticity to the mixture as well as added water retention to stabilise the collagen film, reducing rigidity and brittleness once set (Mills & White 1994, pp. 75–80).

These primary components were followed by varied additives, depending on the practice of the conservator and relative accessibility. Natural resins, honey and molasses are each known to be components of glue-paste recipes used both in combination and individually to add certain properties to the glue-paste (Reifsnnyder 2012, pp. 418–420). Natural resin served the purpose of additional adhesive properties and viscosity as well as providing insoluble properties to the water-soluble formula (Reifsnnyder 2012, pp. 420–421). Honey and molasses were used as water retaining additives, termed ‘humectants’, interchangeably and without notable regard for their purity or source, for example, the plant matter from which the honey was produced (Labuza 1985, pp. 421–422; Timar-Balazsy & Eastop 1998, pp. 122–124). Humectants were combined into many recipes as a method of stabilising relative moisture within the glue-paste by use of electrophilic functional groups within the sugar’s molecular complex, drawing in atmospheric water (Zum Dahl & Zum Dahl 2014, pp. 1062–1063).

## The Florentine method

In early relining processes where a thick glue-paste mixture was used, the solution would be applied on both the new lining canvas and the back of the original work then spread using toothed spatulas. The adhesive channels formed provided an even coating of both surfaces without material saturation resulting in a slurry of adhesive and great difficulty bonding the two surfaces together. Known as the ‘Florentine method’, this relining process was used in combination with a variety of heat and pressure applications, such as hand irons and wooden rollers to ensure an even curing of adhesive and successful canvas bonding (Scharff 2012, p. 439). Glue-paste recipes using thinner adhesive formulas followed a similar application method, but without the need for channelled adhesive application. The newly lined canvas was then treated with heavy rollers, boards or sand, providing weight and pressure in order to force the adhesive into the canvas weave, impregnating both canvases and bonding the two surfaces through an interconnected adhesive layer within the woven structure of both supports (Reifsnnyder 2012, pp. 421–422). These processes remained relatively consistent throughout the conservation field due to the requirements of heat and pressure application by methods that could be successfully monitored and adjusted (Gettens & Stout 1966, p. 230).



**Figure 1:** 21<sup>st</sup> century toothed spatula customised to imitate the design of those used for the Florentine method. Photograph taken by the author.

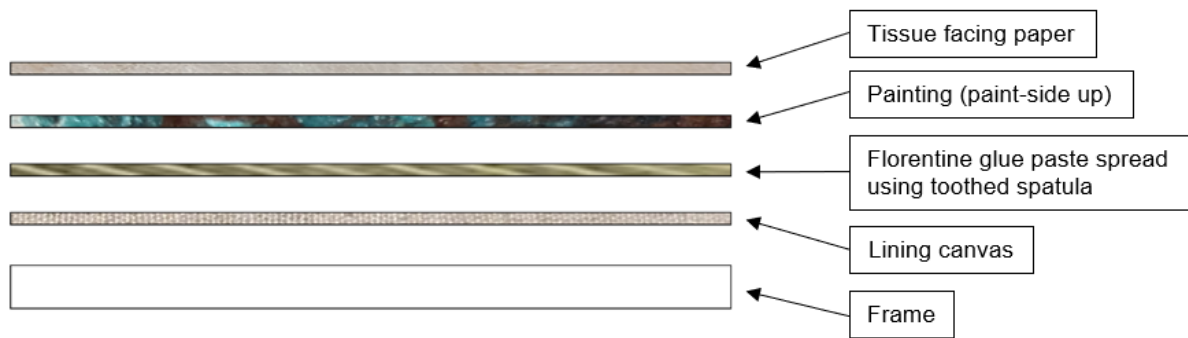


Figure 2: Diagram of the layered materials used in the Florentine method of canvas relining.

### Problems associated with glue-paste relining

The glue-paste relining processes remained the primary method for relining canvas paintings with varied success up until the 19<sup>th</sup> century, at which point the absence of standard materials and unreliable characteristics of glue-paste relining put the method into question. Discrepancies in animal components used in the collagen extraction process often resulted in variance to the adhesive properties of the glue, and therefore the glue-paste used during the relining process (Luybavskaya 1990, p. 49; Schellmann 2007, p. 55). The attention to water volumes was also of great effect to the stability and adhesive nature of the glue portion of glue-paste recipes. Rapid evaporation of water from the collagen-water matrix resulted in over-crystallisation of the collagen protein molecules and brittleness to the structure of the glue film (Reifsnyder 2012, pp. 417–418; Schellmann 2007, pp. 55–56). These inadequate characteristics both greatly contributed to the ineffectiveness of glue-paste linings, eventually resulting in discontinuation of all glue based relining methods.

### The Hopman lining method

In the early 19<sup>th</sup> century, wax-resin relining was introduced by artist and conservator Nicolaas Hopman as a means of addressing the problems associated with glue-paste relining and the effects of the damp European climate on many canvas paintings (Marvelde 2001, p. 143; Marvelde 2012, p. 424). Beeswax was chosen as the base for this new relining adhesive as a result of its chemical inactivity over long periods of time and strong penetrating capabilities when in liquid form. However, the poor adhesive properties of beeswax required the

addition of a bonding agent, resin, to make the process viable. The resulting procedure, defined at the time as the ‘Dutch method’ and later as ‘Hopman lining’, addressed the issues of structural stability, ground and surface paint consolidation and climate in one treatment method (Hackney 2012a, p. 424; Heydenreich 1994, p. 23).

The Hopman lining method was the first canvas relining method to follow strict application techniques. These resulted from in-depth consideration for the effect of the treatment as well as preserving the visual aesthetic of the artwork. A finely woven twill weave canvas was specially produced as the relining material, lending strength and rigidity without a coarse weave pattern that may influence the texture of the painted surface during the relining process (Marvelde 2012, pp. 425–427). The process was conducted in two stages, beginning with a facing of the painted surface with silk paper and starch paste, followed by gentle stretching of the canvas face down over a frame in order to remove any planar distortions (Keck 1977, pp. 47–48; Marvelde 2012, pp. 425–427). The back side of the canvas was then sanded to a smooth texture using pumice stone to ensure a uniform surface. This also served the purpose of removing any contaminants clogging the canvas weave and preventing adhesive penetration. The adhesive solution made using Hopman’s formula — four parts beeswax, three parts colophonium and two parts Venetian turpentine — was then spread across the surface and manipulated using a hand iron before all excess solution was removed. The relining canvas, pre-stretched with the original canvas, was then aligned with the wax-resin impregnated original canvas backing and bonded following the same process (Marvelde 2012, pp. 425–427).

## Hot table relining

The 20<sup>th</sup> century brought forth a method of standardising the general principles of heat and pressure in the process of canvas relining with the invention of the hot-table. Acting predominantly as a replacement for the hand iron and weighting systems, the hot-table was designed to provide pressure using a vacuum seal, and heat using an electrical element, as a means of relining canvas paintings in a better-controlled environment than the standard Hopman lining or any glue-paste relining method. Further use of buffering cushion layers and multidirectional pressure allowed for canvas relining to be performed at a far more precise level than with methods used in early years of painting restoration (Hackney 2012b, p. 433).

## Relining methods and the changing standard of conservation

Evaluation of canvas relining methods at the *Conference on comparative lining techniques* held in Greenwich 1974, sought to analyse and compare the variety of relining methods being used in conservation and determine a treatment method suitable for conservation practice (Coddington & Young 2018, pp. 6–9; Hackney 2004, pp. 2–4). The research done following this conference resulted in a far greater understanding of the chemical impact of canvas relining methods, as well as a re-evaluation of the role of a conservator and the ethical boundaries to which conservation should be held (Hackney 2004, pp. 2–4). The initial consensus from this conference was an approach using specially designed fine weave canvas and new synthetic adhesives. These were chosen as a method of continuing the relining practice with minimal interference to the chemical integrity of both the original canvas and the paint layering (Coddington & Young 2018, pp. 6–9; Hackney 2012b, p. 433). The synthetic adhesive BEVA 371 became a replacement for both wax-resin and glue-paste adhesives, developed and used for its chemical stability and reversibility (Ackroyd 2002, pp. 3–4; Berger 1972, p. 616).

Discussions within the conservation field developed further to include consideration of an artwork as a whole, and not solely based on the aesthetic image painted on the front side. Beyond the chemical effect to materials of a canvas painting, canvas relining also greatly influenced the state of the object on a historical and artistically interpretable level. The attachment of a completely new canvas to the original work was often accompanied by a new or altered stretcher and, by intention or coincidence, also resized the original work. This intervention not only affects the physicality of the artwork but also creates interference with interpretation of the work as determined by the artist (Appelbaum 2007, pp. 156–160). As the art world developed and formed alongside institutional learning, higher value has been placed on the less tangible aspects of items in accordance with the history and context in which they originated. Alterations to a painting's support and the potential of covering of signatures, practised brush strokes, or any other original work by the artist, is now considered unethical and unfit as a conservation practice. This interpretation has developed in order to preserve not only the actual work of art, but also to maintain and preserve the intent of the artist and their personal definition of what was considered their finished product (Appelbaum 2007, pp. 5–7).

## Conclusion

Research following the 1974 conference has largely been directed at developing methods of stabilising canvas paintings by less-intrusive means rather than attempting to perfect the method of relining and achieve complete structural stability. Early relining methods were predominantly based on apprenticeship-learned skills, rather than the formal academic education as has been prevalent throughout the 20<sup>th</sup> and 21<sup>st</sup> centuries. While apprenticeship learning was suited to its time, and has certainly led into the modern field of conservation, such methods of teaching enforced common or preferred techniques, rather than techniques developed comprehensively to take into consideration not only structural integrity but also chemical stability, historical significance and intangible identity (Hackney 2012b, pp. 437–438).

Relining techniques were developed to directly address the problems of canvas paintings at the time and were suitable to their contemporary conservation practices and artistic interpretations. However, with changes to culture and technology in the art world, the opinion of what is considered an effective conservation treatment has also changed. Developments in chemical analysis have shown the negative impact of these old adhesive relining methods on the molecular structure of painting canvases and paint layers (Hackney 2004, pp. 16–17). Similarly, the deeper consideration of artistic value and an object's given

'state' demonstrate the negative impact of relining methods on the artwork as a historical object with an intended meaning. Within the context of the 21<sup>st</sup> century, the field of conservation now often regards minimal intervention as an ideal approach to the conservation of works of art. Therefore, the processes and techniques of canvas relining, while innovative for the day, are now mostly substituted for less invasive methods, except in circumstances where no other method can appropriately maintain the canvas painting without the occurrence of unacceptable damage.

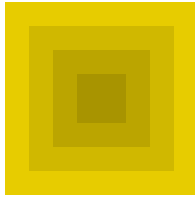
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## Effluence and affluence

by Michael Davies



Michael Davies (orcid ID: 0000-0002-5580-6293), BA, MA, studied cultural materials conservation at the Grimwade Centre (University of Melbourne). He works as a paper conservator and is interested on the political nexus of conservation. Michael has been accepted into the Teach For Australia 2022 cohort. He lives in Melbourne.

The Institute of Postcolonial Studies (IPCS), North Melbourne, hosts a regular reading group on postcolonial theory. IPCS is a hub where members and friends of the institute interrogate colonial relations in Australia (and around the globe) and imagine an alternative world. It is an independent, public, educational project; if you are interested, enquire with IPCS. Before the pandemic, I attended a couple of these meetings, which took place in a fine reading room decked with the poetry archive of Australian poet, scholar and broadcaster, the late Martin Harrison (1949–2014).

More of Martin Harrison's belongings, books, manuscripts, photographs and correspondence, are also housed at IPCS. But, depending on your tastes, you might appreciate the reading material in a more ideal state than it was when introduced to me.

When I came to them they were laid out in a hall to air-dry, the writing of Martin's letters appeared like exploded fountains of blue ink, while rows of wet stacks of paper, interleaved with paper towels, were spread on blue towels across the floor. Due to the actions of the IPCS Executive Officer, recovery started on a good foot. Members and friends of the institute were called up.

The night before, a man-hole had malfunctioned and spilled its effluence into the institute's basement repository. As a paper conservator, I reserved my superlatives for this windfall of cultural materials soaked with shit. The mess was a biohazard, so everyone wore face-masks and gloves. Floaters, slime, or really any foul stuff, had not spoiled anything... fortunately.

The initial stage consisted of separating and interleaving further collection items. Next, we all sat together over lunch, coffee and pastries, and discussed the next steps in light of each other's experience of the cultural material, the housing at IPCS, and of conservation. These plans continue to be formulated, with storage currently in mind.



**Figure 1:** Dirty items in the IPCS meeting hall. Image provided by the author.

Unfortunately, the August lockdown promptly came into effect. After a second visit, where the paper towels were replaced, stacks shortened and separated, no more could be done. But after the 44-hour mark from the initial recovery, at the time of this second and last visit, there was no indication of mould, a major concern.

Being part of this recovery process was an important experience: personally, because I was helping a community I respect and where I shall continue to be part of the process, and professionally, because I could practice my conservation know-how.

What opportunities may come for conservation graduates, there is always work in shit.

# participate in scroll

## SUBMIT TO [ scroll ]

We welcome all students interested in cultural materials conservation to submit to *Scroll*. This includes recent alumni of the Grimwade Centre, as well as Art Curatorship, and Arts and Cultural Management graduates. You do not need to be a student at the University of Melbourne either; we are interested to hear from a wide range of heritage and GLAM sector graduates as well.

We are looking for content to fit in the below categories:

### [ essays ]

This could be an opinion piece, critique, research, or random musing. Maybe something could be pulled together by re-working an assignment, or fleshing out an idea that was outside the scope of an assignment.

### [ reviews ]

Books, articles, journals, workshops, exhibitions, webinars, conferences — anything that's caught your attention as inspiring or important, or in desperate need of critique.

### [ interviews ]

Conducted for the purpose of publication, for instance directing questions at a conservator or artist in order to understand and record their processes and techniques.

### [ reports ]

Formalise the ideas and results of a personal project or treatment with a report. Or create a report or summary of a conference or webinar.

### [ creative ]

Creative writing, illustrations and images, satire... all forms considered.

All writing should be referenced per the *AICCM Bulletin* reference guide, which can be downloaded [ [HERE](#) ].

Please direct all queries, proposals or submissions to the *Scroll* Editorial Team at: [scrollpublication@gmail.com](mailto:scrollpublication@gmail.com).

Submissions for the next edition of *Scroll* are due 30 June 2022.

## BECOME AN EDITOR!

We are always on the lookout to expand the *Scroll* Editorial Team! All current students of the Grimwade Centre are encouraged to apply.

If you have skills in copy-editing, collation, graphic design or administration, we want to hear from you!

Tell us a bit about yourself, your abilities and why you are interested in contributing, via e-mail with the subject line 'Editorial Team EOI' to: [scrollpublication@gmail.com](mailto:scrollpublication@gmail.com)

*Scroll* was established as an avenue for students to write outside of the context and pressures of assignments. The editors work directly with contributors to provide feedback, in the spirit of open collaboration.

As such, submissions to *Scroll* do not undergo a formal double-blind peer-review process. By removing this requirement, we hope to encourage students of all abilities to participate. However, all articles are reviewed based on an editorial framework, the gist of which includes the following:

## CONTENT QUALITY

- Is the content relevant to conservation or cultural materials?
- Does the writing present a clear argument and aim?
- Is the work engaging to a knowledgeable but casual audience?
- Are the author's claims verifiable?

## REUSING UNIVERSITY SUBMISSIONS

- Is the submission substantially revised such that it will not create an unfair advantage for future students?
- Have comments from the assessment been incorporated?

## PLAGIARISM

- Has the author understood the requirement and declared that the submission is original and contains appropriate references and attributions?

## COMMUNITY STANDARDS

- Are there inflammatory discussions with the potential to cause harm?
- If the writing contains overt political or social agendas, are they adequately contextualised?
- Does the text allege or accuse any individual or institution of misconduct, or breach anyone's right to privacy?

## THE LITTLE THINGS

- Spelling and grammar.
- Are figures appropriate to the text and captioned?

## INDEMNITY

- Is the author prepared to accept all liabilities arising from their submission, when pertaining to issues of copyright infringement, misattribution, academic misconduct, or defamation?

We hope that the above demonstrates *Scroll's* commitment to treating your work with care and discretion. Submissions are typically reviewed between 2–3 times prior to publication.

## ON ITALICISATION

In putting together this issue of *Scroll*, the editors considered the conventions of italicising words that are not represented in Australian English dictionaries. Style guides often advise checking if a word is available in a nominated dictionary (for example *Macquarie dictionary* or *Australian Oxford dictionary*), to determine if the word is 'foreign'. Although this method can, in some instances, aid with clarity, it can also fall short of the cross-cultural literacy that conservation and heritage professionals necessarily inhabit.

As such, we have made the editorial decision to only italicise when it is likely that not doing so will confuse the reader. Terms that may be unfamiliar to a reader will be explained with context or italicised in only the first instance. We hope that this decision respectfully allows readers to encounter and negotiate cultural diversity and encourages contributions from multilingual writers.

We will continue to follow the italicisation guidelines for scientific names and titles of art or other creative works.

Do you have any thoughts about this policy? Let us know via an e-mail, with the subject line, 'On Italicisation', at: [scrollpublication@gmail.com](mailto:scrollpublication@gmail.com)