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AICCM
NATIONAL
CONFERENCE
CANBERRA
2023

50 +/- 50

AICCM 2023 National Conference

National Gallery of Australia, Canberra

15 – 17 November 2023

We acknowledge the Ngunnawal people who are the traditional custodians of the land on which we meet and pay respect to the Elders of the Ngunnawal Nation both past and present.

Organising committee

Celia Cramer, Convener
Alice Cannon
Alana Treasure
Doug Rogan
Colin Macgregor
Belinda Muir
Daniel Bornstein
Lucilla Ronai
Maria Genetzakis

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James Gethyn Evans, JAG Design

Edited and formatted by
Daniel Bornstein, Alana Treasure, Colin Macgregor and Maria Genetzakis

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President's welcome

It's my great pleasure to welcome you all to the 2023 AICCM National Conference, 50 +/- 50. Over these three days we will reflect on the achievements and challenges of the past fifty years of conservation in Australia, discuss the issues of our present, and explore how we can best realise the potential of our profession over the next fifty.

It's no easy thing to organise a professional event. I'd like to thank our organising committee for their gift of time and for the extraordinary work they've done on our behalf. The committee is chaired by Celia Cramer and includes Alana Treasure, Doug Rogan, Colin Macgregor, Belinda Muir, Daniel Bornstein, Lucilla Ronai and Maria Genetzakis. Ian Batterham has also gone above and beyond, composing us our very own 50th anniversary song. If you find yourself in conversation with any of them during the conference, make sure you pass on your thanks too.

I'd also like to express my gratitude to our secretariat officer Michelle Berry, our website editor Paul Coleman, communications officer Cheralyn Lim and our bookkeeper Hilary Milsome, without whom all the registrations, invoices, member emails, and online communications needed to pull off an event like this would not happen.

And, of course, many thanks to our conference partners for your generous support, our presenters, for sharing your expertise and experience, and to everyone for your enthusiastic response to our first in-person National Conference since 2019! AICCM is only ever the sum of its members, and it's wonderful to have your support.

Enjoy this time with your colleagues and I look forward to the conversations we will have.

Alice Cannon
President

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XRF workshop

Presented by Portable Spectral Services

Topics include:

- Fundamentals of X-ray Fluorescence Spectroscopy (XRF)
- Applications of handheld XRF
- Bruker Tracer operation
- Making ARTAX software work for you
- Sample analysis session – Instrument hands-on

Raman workshop

Presented by Metrohm

Topics include:

- Fundamentals of Raman Spectroscopy
- Introduction to Metrohm Raman Systems Mira XTR and Tactic ID
- Applications of Raman Spectroscopy in Conservation Science
- Raman spectroscopy in Archaeological Studies
- Raman spectroscopy for analysis of unknown, potentially hazardous materials
- Advances in Raman Spectroscopy
- Non-Destructive – no contact analysis using a standoff accessory
- Sample analysis session – Instrument hands-on

LED by example: modernising lighting at the NGA floor talk

Presented by the National Gallery of Australia

NGA Preventive Conservator Lisa Addison and Building Services Assistant Manager Taron Scholte are joined by Dr Emrah Baki Ulas and Tamara Hannah from Steensen Varming for a floor talk discussing the recent installation of and research regarding the innovative LED lighting upgrade in the NGA.

Sustainability (un)session

With so much information available on action that can be taken to mitigate and anticipate for the impact of climate change, it can be daunting to decide how to progress. This un-session will be facilitated by Julian Bickersteth (IIC President and International Conservation Services CEO) and Mary Jo Lelyveld (Convenor, AICCM Sustainability Committee) and will seek to unpack what conservators can do and are doing to make a difference, and identify issues getting in the way of action.

Reconciliation Action Plan launch

Reconciliation Action Plans (RAPs) are a framework through which organisations can take meaningful action to advance reconciliation. Led by our Reconciliation Committee and in keeping with the principles and aims of the association, AICCM has decided to embark on the RAP process.

There are four RAP types, of which the Reflect RAP is the first of a series. A Reflect RAP involves scoping and developing relationships with Aboriginal and Torres Strait Islander stakeholders, deciding on our vision for reconciliation and exploring our spheres of influence. This session outlines the goals of AICCM's Reflect RAP and will be presented by Alice Cannon, President, and members of AICCM's Reconciliation Committee

AICCM Anniversary Song

Ian Batterham

It's our golden jubilee
Fifty years of history
Back in August seventy-three
Things were not as they should be
Nation's collection State of neglection
Peter Pigott says 'can you dig it?
Our waking nation needs conservation
Once it's lost, it's lost for all time'

One by one they headed to Perth
But united they returned
Those good people we salute
Those who built this Institute
People like Colin, Ian and Allan,
Sue and Wal, and Chris, Rose and David
They are our founders, some of them gone
Up on their shoulders, here we are standing
Fifty years old and still going strong
Good times and bad times, lean times fat times
We have survived and still we're strong Ah Ah

We care for things that rust and moulder
Things that fade as they get older
Things of value, things of beauty
Things of sadness, things of duty

Paintings, paper, metal, fabric
Stone and glass and now there's plastic
Pots and skulls and planes and bridges
Books and bark and food and fridges

Submarines both large and midget
Time-based art and files in digits.
Photographs and tapes and floppies
In that case we make our copies.

Things in storage, things in transit
Things on show as need demands it.
Things in danger, things just damaged
Things we'll lose if badly managed.

We are the A I C C M Ah
A I C C M A I C C M Ah

Performed at the conference dinner, Old Parliament House, by the 2023 Conservation Choir, accompanied by James Thirkell on the Commonwealth Heritage Listed Grand Piano

Presentation Abstracts

In order of presentation, index of authors at rear

WEDNESDAY, 15TH NOVEMBER

Reflections on the origins of AICCM after half a century

Colin Macgregor
Ian Cook
Allan Byrne
Kay Söderlund

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In 1973, the first national seminar on the conservation of cultural material was convened in Perth, WA and hosted by Dr Colin Pearson. It was attended by 104 delegates from Australia, New Zealand and Papua New Guinea.

Background

During the 1960s, there was a growing awareness of the lack of staff and facilities to care for the nation's collections. Dr Tony Werner of the British Museum was commissioned by UNESCO to write a report about the conservation needs in Australian institutions. The report was submitted to government in 1970, but no action resulted. Sue Walston, when appointed to the Australian Museum, wrote to the directors of most institutions in 1972 to compare the pay scales of conservation staff. The responses revealed how few professional conservation positions existed across the nation.

In 1972, a group of conservation staff from across the country resolved to organise a national conservation seminar to move things forward.

In Canberra, the recently-formed ACT Committee for the Conservation of Cultural Property had undertaken a national conservation survey. This identified the support for the formation of a national conservation body.

Outcomes

The seminar was held between the 6th- 10th August, 1973. Presentations from a broad range of institutions outlined the current state of conservation resources and collections across the region.

Sue Walston and David Horton-James treat a Baining dance mask from PNG at the Australian Museum

During the seminar the first ICCM Committee was formed. In its initial form, it included members from New Zealand and Papua New Guinea with the intention of becoming an Australasian and Pacific organisation.

We are fortunate at this presentation to have Ian Cook, the first secretary, and Allan Byrne, the first treasurer, to discuss the foundation of the Institute and its immediate aspirations.

Some of the first stated goals in 1973 included:

- Engage with major institutions to initiate adequate conservation programs and practices.
- Preparation of a report on the state of conservation, and how to implement effective conservation activities for submission to all relevant state and federal government bodies.
- Bring to public notice the threats to the national collections.
- Raise the profile of ICCM and recruit members.
- Source funding to employ an executive officer
- Create a training course and a national conservation institution for research, analysis and information.

Conservation Training

The Werner report and the subsequent 'Museums of Australia 1975' Pigott report both identified the need for a formal conservation course within Australia as a high priority. Prior to this, the only training available had been cadetships at the Art Gallery of New South Wales (AGNSW) supervised by Bill Boustead.

In 1978, Australia's first tertiary training course dedicated to cultural material conservation was established at the University of Canberra (then known as Canberra College of Advanced Education (CCAE)). Professor Colin Pearson was appointed to head the course after his move from Perth.

Kay Söderlund, one of the first students of the course, will reflect on the early days of the course and its curriculum.

Dr Colin Pearson examines maritime archaeological material at Western Australian Museum

Bill Boustead inspects Blue Poles with James Mollison and Peter Laverty looking on.

50 Years On

Despite the expansion of the profession and the enormous advances in technology and communications, many of the current priorities of AICCM have much in common with those outlined half a century ago.

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Author biographies

Colin Macgregor, FIIC, PMAICCM was employed by the Australian Museum from 1989 -2020 and Manager of Materials Conservation from 2002-2019. He completed the P-grad Dip. Archaeological Conservation at Durham University in 1981. He worked at Sheffield Museums and Scottish Museums Council before emigrating to Australia.

Ian Cook AM, B.App.Sc, Honorary Life Member of both the AICCM and AusHeritage Ltd, Salzburg Fellow, inaugural Chair AusHeritage, inaugural Director ArtLab Australia (1985-2004), inducted into the AICCM Hall of Fame (2016). First conservator trained and employed by the Federal Government (1965). Established Conservation Laboratory at the National Library of Australia (1969). Appointed NLA Director, Preservation Services (1978-1985). Represented South Australian Government on the Heritage Collections Council, including one-time Chair of the Conservation & Collections Working Party responsible for the National Conservation and Preservation Policy and Strategy (1998). Deputy Chair Australian UNESCO Memory of the World Program (2007)

Allan Byrne M.App.Sc, started his career in 1968 as an art conservation cadet at AGNSW. In 1972 he was employed as assistant conservator by the NLA, moving to the Australian War Memorial in 1973 to head its Conservation lab and then in 1976 to the Art Gallery of South Australia as Curator of Conservation. Admitted to the CCAE conservation program in 1978 followed by internship in London at the National Gallery. In 1980 he joined the National Gallery of Australia as Senior Paintings Conservator. 1984-1992 senior lecturer, paintings conservation, CCAE. In later years he has worked in public and commercial conservation facilities. (He currently gardens in the Southern Highlands of NSW)

Kay Söderlund FIIC, PMAICCM was amongst the first conservators to graduate from the Canberra course with the B.App.Sc in Conservation of Cultural Materials in 1982. She has worked in the conservation profession ever since – mainly in private conservation in her business Preservation Australia. The studio is now closed and Kay is semi-retired, undertaking consulting work only.

Australian conservation education

Robyn Sloggett

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At the first meeting of Australia's ICCM in August 1973 Resolution 11/73 stated: 'That due to the serious lack of trained conservators and restorers in Australia a training programme must be implemented as soon as possible'. This Resolution was key to Resolution 11.19 in the 1975 Pigott Report recommending: '... the training of conservators in a degree-granting institution' which in turn led to the establishment of the first tertiary education program in cultural materials conservation in Australia commencing at the (then) Canberra College of Advanced Education in 1978. Drawing on a number of specific examples that include formal education and non-traditional forms of conservation knowledge transfer including cultural maintenance by non-conservators in remote, rural and regional organisation, this paper examines conservation education initiatives in Australia over the past fifty years. Celebrating the various ways in which conservation education has evolved over this period, this paper also reviews lost opportunities and current gaps in conservation education. In doing so, it explores the intellectual genealogy of the discipline, the constraints on developing innovative pedagogy and scholarship, and the at times challenging alignment of conservation education to conservation training. This presentation argues that, as a mature profession, cultural materials conservation in Australia is now well-placed to make a major contribution to Australian public life, including through political and civic engagement, policy development and public intellectualism. It concludes by examining how conservation education supports this contribution, and how research-led practice, Indigenous two-way education, and scholarship are defining a new future for cultural materials conservation in Australia and beyond.

Author biography

Robyn Sloggett is Cripps Foundation Chair and Director of the Grimwade Centre. Her teaching and research explore interdisciplinary studies in materials and techniques, art attribution, ethics and philosophy of conservation, and community-partnered conservation with remote, rural and regional organisations. She recently published Climatic and Environmental Threats to Cultural Heritage with Dr Marcelle Scott.

Translating conservation knowledge and actions

Paula Dredge
Nicole Tse
Tim Ould

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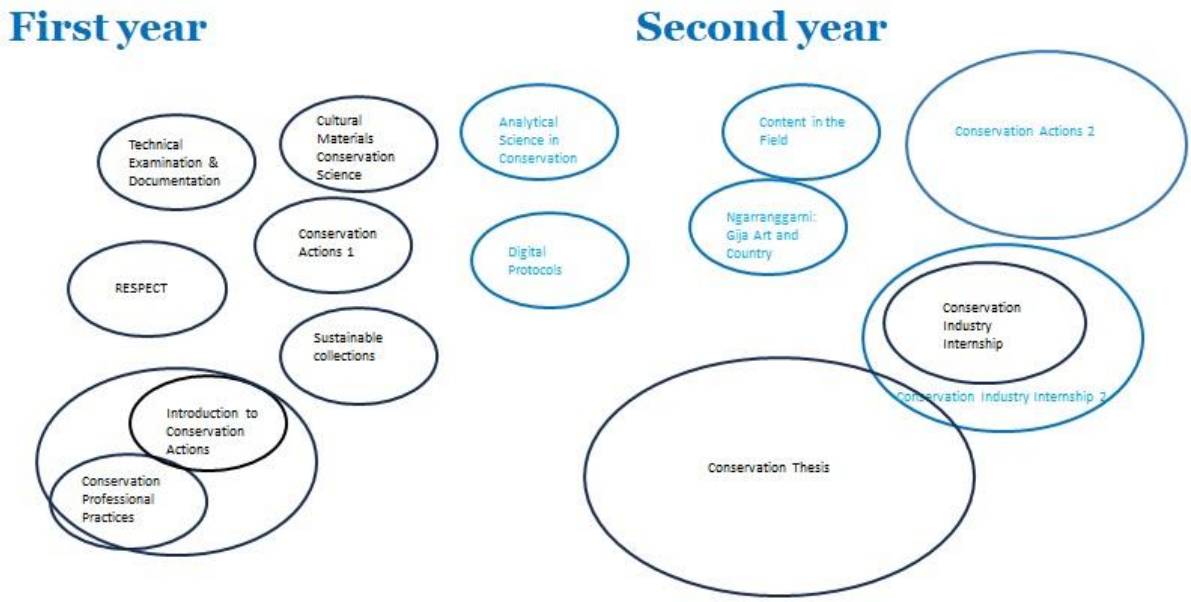
As the Master of Cultural Materials Conservation at the Grimwade Centre for Cultural Materials Conservation celebrates its 20 year anniversary in 2023, it is appropriate to reflect on the contribution made by the program to the body of professional skills, diversity and new pathways for developing conservation knowledge. This paper asks what knowledge and skills do emerging professionals need to maintain relevance and manage change in the twenty first century? It examines how conservation knowledge is translated into actions through the traditional pathways of practice but also in broader areas of impact and meaning where cultural materials conservation is relevant. Our goal is to reflect on the breadth of subjects offered, the disciplinary impetus for change and the core competencies to support conservation actions.

Dr Sadra Zekrgoo (Mary Lugton Postdoctoral Fellow) teaching Introduction to Conservation Actions *at Grimwade Laboratories 2022*



Master of Cultural Materials Conservation, University of Melbourne, course structure 2023. Compulsory subjects in black and electives in blue

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Acknowledgements

The Grimwade Centre for Cultural Materials Conservation would like to acknowledge the considerable input to student learning from professionals in the field and industry partners including Grimwade Conservation Services, State Library of Victoria, National Gallery of Victoria and the many hosts of the conservation internship subject.

Author biographies

Dr Paula Dredge joined the Grimwade Centre for Cultural Materials Conservation in 2022 bringing over 30 years experience as a practicing conservator and work integrated learning mentor and teacher.

Dr Nicole Tse is part of the teaching and research team at the Grimwade Centre for Cultural Materials Conservation, and is a long term supporter of inclusion and representation in the field through her work in the Asia Pacific region and intercultural partnerships.

An Art Historian by training, Tim Ould is Administrative Assistant at the Grimwade Centre. For over fifteen years he has worked in the research, teaching and administration of Conservation and Technical Art History and has been responsible for placements in the Grimwade Centre's two internship subjec

Studies of cultural heritage artefacts using X-rays: a cook's tour through 40 years of collaborative experiments

Dudley Creagh

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How I became involved in cultural heritage conservation is documented in an Obituary commemorating the life of David Hallam (Creagh, 2020). My collaboration began at a time when the Mitchell Annex at the Australian War Memorial (AWM) was just opened, and the first students of Colin Pearson's Course on the Conservation of Cultural Heritage at the Canberra College of Advanced Education (CCAE) had graduated.

Details of the X-ray based analytical techniques I have used are to be found in Creagh (2007).

Initially I studied of the metallurgy of a Japanese Zero fighter (Mitsubishi Zero A6M2) for David Hallam's restoration project at the AWM, which commenced in 1981 and was completed in 1985.

In the late 1980s I commenced a project with John Ashton (AWM) to study the Lusitania medals. Forty-four of these medals were presented to the crew of the U-boat which torpedoed the unarmed Cunard passenger liner Lusitania on 15 May 1915. Using X-ray diffraction (xrd) and X-ray Fluorescence spectroscopy (xrf) techniques we could discriminate between the awarded medals and the numerous replica medals which were produced (Creagh, 1992).

The AWM then inaugurated a project to use xrf for the characterization of all the Victoria Crosses in its collection. The AWM held 52 of the approximately 1450 VCs awarded since the first awards made in 1856. As well, we examined 15 medals held by museums in New Zealand. We were able to correct many inaccuracies in the historical narrative about the Victoria Crosses as well as providing an invaluable database for the AWM (Creagh and Ashton, 1995, 1998).

In the late 1990s John Ashton led a team which studied a Carley float in the AWM collection which was thought to be the sole relic from the sinking of the HMAS Sydney by the German raider HSK Kormoran off the West Australian Coast in November 1941. The Carley float, which was found in the Sunda Strait (Indonesia), contained a cadaver, which was buried in a cemetery on Christmas Island. The mystery surrounding the Carley float and the identity of its occupant was investigated by many techniques (Treasure et al, 2010), and eventually revealed via DNA analysis.

Another 1990s project studied the degradation of waxy protective coatings on outdoor bronze sculptures. (Hallam et al, 1997). Yet another used the XRD, XRF, neutron scattering, and electron microscopy facilities at the Australian Nuclear Science & Technology Organisation (ANSTO) to study the method of fabrication of the armour worn by the bushranger, Joe Byrne (Creagh et al, 2004).

An ARC Grant in 2000 which studied the production and preservation of traditional bark paintings included a study by Maria Kubik of the pigments used (Creagh et al, 2007).

In the 2010s, I was involved in the Clarence Project, which investigated the procedures needed for the safe retrieval, characterization, and reburial of objects from wrecks (Veth et al, 2013).

Later, in collaboration with Thurrowgood, I was involved in the use of the X-ray Fluorescence Microscope (xfm) at the Australian Synchrotron in projects which studied paintings which had been overpainted to conceal the original

(Thurrowgood et al, 2017). And in collaboration with the Rijksmueseum, a comprehensive forensic examination of the Dirk Hartogh plate was made (Davidowitz et al, 2019).

Recently, a report of a forensic study of WW2 Japanese swords undertaken using their neutron facilities (the tomography, diffraction, stress analysis beamlines) was lodged with ANSTO (Salvemini et al, 2023). This was the last experiment in which David Hallam participated. Regrettably he died before the experimental program was completed.

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My thanks go to all who have given me support and encouragement in the past 40 years: their friendship has enriched my life. I acknowledge the assistance of all the National Collecting Institutions in the ACT, museums in many Australian capital cities, the Royal Armouries, the Rijksmuseum, the Museum of the Louvre, the Kunsthistoriches Museum and the Palace Museum in Beijing. Funding was provided by the Australian Research Council, Ansto (Australian Synchrotron and Opal), the National Capital Authority, and the National collecting agencies.

Author biography

Dudley Creagh is an Emeritus Professor at the University of Canberra.

You never stop being a conservator

Natalie Ison[1,2,3]
Sarah Murray[1]

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We are stewards for the nationally significant heritage listed building Old Parliament House (OPH). Our management of the place is founded on conservation principles which are embedded across our approach to managing the building's fabric, the OPH movable heritage furniture collection, and the Museum's Democracy Collection. But we don't have dedicated in-house conservators. So, how do we do it?

This presentation is by two conservators working at OPH, but not as conservators! We trained and worked elsewhere – in conservation teams across a range of museums – and are now working in conservation-adjacent roles. We deliver exhibitions and manage the collection and loans, and we partner with colleagues who manage the heritage values of the place.

In this presentation we reflect on the sweet spot where in-house conservation skills and external expertise meet, using the living building of Old Parliament House and the work of our project managers and our external conservation colleagues as our case study. We will briefly share how a conservation ethos supports and enriches several roles within the sector and we'll also highlight the importance of external conservation expertise for small organisations.

Acknowledgements

We would like to acknowledge our colleagues and managers at MoADOPH and also our private conservation colleagues.

Author biographies

Natalie Ison has worked in Heritage and Conservation roles including in the private sector. She is currently working as a Collection Management Officer at MoAD (which requires a registrar skillset, but conservation does feature regularly) while undertaking research at the University of Canberra.

Sarah Murray is a well-travelled Exhibitions Conservator who has worked in state and national cultural institutions all over Australia. Having been on the pointy end of one too many exhibition deadlines, she moved to Exhibitions Coordination at MoAD. Ironically, she now manages the exhibitions she started her conservation career framing.

New directions: going Loopy!

Sarah Bunn

creativeconservation@gmail.com

As a paper conservator with near 30 years' experience I was offered the opportunity to act as the Exhibition and Loans Conservator at the Art Gallery of New South Wales (AGNSW) in 2022, where I was employed as a paper conservator. I was initially hesitant, concerned my specialism would limit me in dealing with the broad range of loans typical of our institution – but I took the plunge. Sol LeWitt's *Wall painting #995 Loopy Doopy (red and purple 2000)*, included in *Affinities and Resonances* at the AGNSW 2022, was the first major inward loan I was responsible for, and it couldn't have taken me further away from benchwork and my known experiences with paper. Over the period of managing this artwork, and others of varying media, I questioned my role as a conservator afresh, and realised I brought qualities to the role that I wasn't aware I had. Overall, stepping outside of my comfort zone was not just challenging and rewarding, but pivotal in my professional and personal growth.

Conservator Sarah Bunn, maintaining Sol LeWitt's Wall painting #995 Loopy Doopy (red and purple 2000). Credit: Mim Stirling AGNSW.

Author biography

Sarah Bunn is currently on secondment as Supervising Conservator at State Archives, Museums of History NSW. Prior to this she acted as Exhibitions and Loans Conservator at the Art Gallery of New South Wales (AGNSW) for 15 months, and was formerly Conservator of Works on Paper at AGNSW for 13 years, and in private practice.

30 years of conserving the Asia Pacific Triennial of Contemporary Art

Samantha Shellard
Anne Carter

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This presentation explores the evolving contemporary art conservation practice at the Queensland Art Gallery | Gallery of Modern Art (QAGOMA) Brisbane. We focus on discussion of conservation involvement in the Asia Pacific Triennial of Contemporary Art (APT), which was first presented at the Queensland Art Gallery (QAG) in 1993 and since 2006 at the two sites of the Queensland Art Gallery and Gallery of Modern Art. It has become the signature exhibition series for QAGOMA to a worldwide audience. The APT's diverse nature, scale, and complexity has challenged traditional notions of art practice, exhibition planning and conservation. This paper aims to locate contemporary art conservation within this unique exhibition series and to explore how the APT, by its contemporary and ambitious nature, has impacted the conservation team's working methods.

The authors undertook interviews and archival research throughout the gallery – asking QAGOMA conservators and gallery colleagues to identify significant experiences, case studies, issues and changes related to conservation practice influenced by the APT exhibition series over the past 30 years. Major themes emerged during these conversations and are discussed in this presentation through case studies focusing on:

- the logistics of shipping and integrated pest management
- working with artists
- preparing artworks for display (including installation systems, visitor interaction and maintenance on display)
- questions of scale
- issues of conserving contemporary art
- the growth of documentation
- sustainable practices.

As a triennial exhibition, the APT has come to define QAGOMA's focus and provides rhythm and structure to exhibition programs and practice. The conservation of contemporary art and the emergence of time-based media, in particular, have provided opportunities to broaden the expertise within the conservation team and influence career trajectories.

APT2, 1996 - production by the artist and QAG volunteers. Cai Guo-Qiang / Nine Dragon Wall (Drawing for Dragon or Rainbow Serpent: A Myth Glorified or Feared: Project for Extraterrestrials No. 28) 1996 / Purchased 1996 / Collection: QAGOMA / Photograph: R Irma.

Installation of the work at QAG. Photograph: R Irma.

The APT is distinguished by its diversity, unfamiliarity of materials, and its scale. Over the last 30 years, this diversity has been approached through pragmatism – learning to manage artwork challenges and to make realistic decisions based on sound practical and ethical considerations. The APT has initiated conservation protocols and workflows that encompass a whole gallery approach. We conclude by summarising our trajectory towards successful conservation management of this large and complex exhibition based on a solidly interdisciplinary approach to contemporary art conservation.

This presentation compliments a paper submitted to the 50th Anniversary edition of the AICCM Bulletin.

Acknowledgements

The authors would like to thank the following QAGOMA colleagues: Simon Elliott (Deputy Director, Exhibition and Collections), Amanda Pagliarino (Head of Conservation and Registration), Tarun Nagesh (Curatorial Manager, Asian & Pacific Art), Michael O'Sullivan (Design Manager), Tiffany Noyce (Senior Registrar, Exhibitions), Kate Mathers (Exhibition Manager), Chris Booth (Installation Coordinator), Nick Ashby (Leading Hand Installation), Natasha Harth (Senior Photographer), Judy Gunning (Information & Publishing Services Manager), Cath Charlton (Librarian - Collections), Anthony Dettori (Team Leader, Systems, Information Management and Technology), Fay Edis (Project Officer, Stocktake), Emily Gray (Project Registrar, GOMA).

Conversations with the conservation team have been generous and invaluable: Gillian Osmond (Conservator, Paintings), Liz Chapman (Conservator, Sculpture), Elizabeth Thompson (Conservator, Sculpture), Catherine Collyer (Associate Sculpture Conservator), Michael Marendy (Textile Conservator), Rhiannon Walker (Associate Conservator Collection Online), Kim Barrett (Conservator, Works on Paper), Robert Zilli (Framing & Furniture Conservator), Damian Buckley (Framing Technician), Alex Forrest (Framing Technician), Caro Toledo (Conservation Technician), Ruby Awburn (Assistant Paintings Conservator), Emily Kelleher (Assistant Paintings Conservator), Dominic King (Assistant Paper Conservator), Rebecca Negri (Assistant Conservator Collection Online), Margaret Barclay (Assistant Sculpture Conservator), Gabriel Garde (Graduate Conservator), Cody Alexander (Graduate Conservator).

Former QAGOMA colleagues Mandy Smith (Paintings Technician), Diana Coop (Conservator, Works on Paper), Caroline O'Rorke (Conservator, Works on Paper), and John Hook (Senior Conservator, Paintings).

Author biographies

Samantha Shellard has worked at QAGOMA since 2002 as Conservator, Works on Paper, at Queensland Art Gallery |Gallery of Modern Art QAGOMA and previously at the State Library of Victoria (1995-2002), She has a Bachelor of Applied Science in paper conservation at the University of Canberra (1995) and postgraduate studies from ICCROM at the Smithsonian Institute Washington DC (1999). Samantha has knowledge in heritage and contemporary printmaking techniques following undergraduate study (1996 - 2001).

Anne Carter has worked at QAGOMA since 2000 as Head of Conservation (2000 – 2006) and from 2007 as Conservator, Paintings. Anne has a particular interest in modern and contemporary paintings and following tertiary study in Paintings Conservation at the University of Canberra (1996), undertook a conservation internship at MoMA, New York (1997-9). Anne's conservation practice is also informed by undergraduate study in both Art History (1988) and Studio Art Practice (1985).

Development of natural science conservation in Australia

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The development of Natural Science conservation specialists within Australia will be explored. Natural Science as a speciality within the Australian conservation profession is relatively new. The first position being created in 2008 and has grown to five positions across two institutions. This growth highlights the need for the specialisation, but also points to the scale of the issue. Natural Science collections are vast in comparison with other collections, yet few conservators engage with these collections and staff. Using institutions like the Australian Museum and Museums Victoria, where natural science collections make up the bulk of the collections, the amount of collections can be extrapolated across the country.

Insights gained from specialising for over a decade in an institution will explain how collections were treated before conservators became involved and how the few conservators working in this area developed their skills, by international training and establishing national and international networks. Focus will be given to the advocacy undertaken by the few professionals to gather support within the Australian profession.

Natural Science collections are accessed and "used" differently to most collections, often at odds with conservation principles. They are an untapped resource in areas such as the focus on climate change research and developments in scientific techniques. They have nuances separating them from historical and art collections, defining it as a specialty amongst conservators. Conservators must have knowledge fitting the collections, such as an understanding of anatomy and of "scientific value" applied by collection staff. Will staffing in this area continue to grow as we establish relationships with these collections and as we better understand the complexities of preserving these materials? Is there a role for Australian training centres to equip future conservators?

Author biography

Sheldon Teare is Senior Conservator Natural Sciences at the Australian Museum. He holds a Masters in Cultural Materials Conservation. Sheldon has worked as a specialist Natural Sciences conservator for over a decade. His interests lie in best practices for collection care, fluid preservation, specimen preparation, and education.

Focus on frames

Louise Bradley

The Gilded Objects Conservation Special Interest Group (SIG) and the Conservation Framers SIG, AICCM
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The interest in frames and frame conservation has increased worldwide. In this talk I will cover the progress that has been made in Australia, with the support of AICCM, to increase interest in frame research, frame conservation, and frame preservation. This focus on frames grew from newsletters, to workshops, to single day symposia, and to the creation of the dedicated triennial, (but pandemic interrupted), frame symposium, AICCM – FRAME: Concept, History and Conservation. In this short talk I will describe the path that led to the establishment of the AICCM international frame symposium. In closing we will announce the location and date for the 2025 symposium.

Author biography

Louise Bradley is a conservation framer in private practice specialising in mounting and framing of art on paper, and replicating decorated mounts. Louise is a past convener of the AICCM Conservation Framers SIG and helped to establish the triennial frame symposium, AICCM – FRAME: Concept, History and Conservation.

The Queen of Frames: *the Visit of the Queen of Sheba to King Solomon*, 1881-1890 by Sir Edward John Poynter

Barbara Dabrowa

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The monumental painting, *The visit of the Queen of Sheba to King Solomon*, 1881-1890 by Sir Edward John Poynter, entered the Art Gallery of New South Wales in 1892. The artist, an English, 'Victorian Olympians' painter was also a designer, a draughtsman and President of the Royal Academy. It took him several years to finish the artwork and to design its elaborate frame. The painting is regarded as a masterpiece of British 19th century Orientalism, an intriguing historical and imaginative creation, including its magnificent, architectural, gilded frame. Poynter designed the frame with the idea of repeating a number of decorative motifs from the architectural background depicted in the painting including them in the frame's ornamentation pattern.

The Art Gallery's 150th anniversary was marked with a special gift of Léon Girardet, *The visit of the Queen of Sheba to King Solomon*, circa 1890, the photogravure engraving after Sir Edward Poynter in a mini replica of the original, artist-designed frame. No other examples of similarly framed prints of the painting are known. It is thought that such an elaborate and expensive frame was made as a one-off show piece to accompany the large painting during its tour of the UK in 1892 as the large painting did not tour in its elaborate frame due to its size.

Image by the Art Gallery of NSW, The visit of the Queen of Sheba to King Solomon, *1881-1890 by Sir Edward John Poynter.*

This paper will look at both frames from the perspective of their design with a focus on the intricate and unique ornamentation, much like the artist who concentrated equally on every detail of the frame as well as the painting. It will briefly reflect on past treatment of the large frame and present treatment of the mini frame.

Author biography

Barbara Dabrowa completed her Master's Degree at the University of Nicolaus Copernicus, Torun, Poland, majoring in the Conservation of Gilded Objects, 1985. Since 1995 she has been working as a Senior Frames Conservator, at the Art Gallery of NSW, Sydney, Australia. She was the organiser and convenor of AICCM - FRAME: Concept, History and Conservation Symposium 2, AGNSW, April 2019. She is an AICCM Convenor of the Gilded Objects SIG and ICOM CC member.

Approaches to prevention of silver tarnishing: Investigating decision-making associated with coating treatments

Suncana Marochini Darby

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The prevention of silver tarnishing is a complex topic involving various approaches, ranging from environmental management to the application of different coatings. While coating treatments have commonly been used as preventive measures due to their ability to create a protective barrier between the object and its potentially corrosive surroundings, their limitations in terms of longevity are acknowledged in the literature. This presentation will provide a comprehensive overview of the decision-making factors associated with the application of coatings as a method of tarnish prevention.

This research initiative arose from discussions with conservators and personal experiences that underscore the tendency for individuals to develop preferences for specific coating. The presentation will delve into the structural characteristics of silver alloy objects and the mechanisms underlying tarnish formation, contributing to a better understanding of material properties and the adverse environmental conditions that drive tarnishing processes. Furthermore, it will review prevalent tarnish-removal techniques and their effectiveness, as well as examine commonly used coatings and assess their efficacy. The current practices in environmental monitoring will also be investigated. A survey and interviews related to case studies will be conducted to evaluate the factors considered by conservators in their decision-making processes, identifying trends in conservation approaches.

Before (a) and after (b) treatment condition of the tea caddy (A.1956.1380) (Courtesy of the National Museums Scotland)

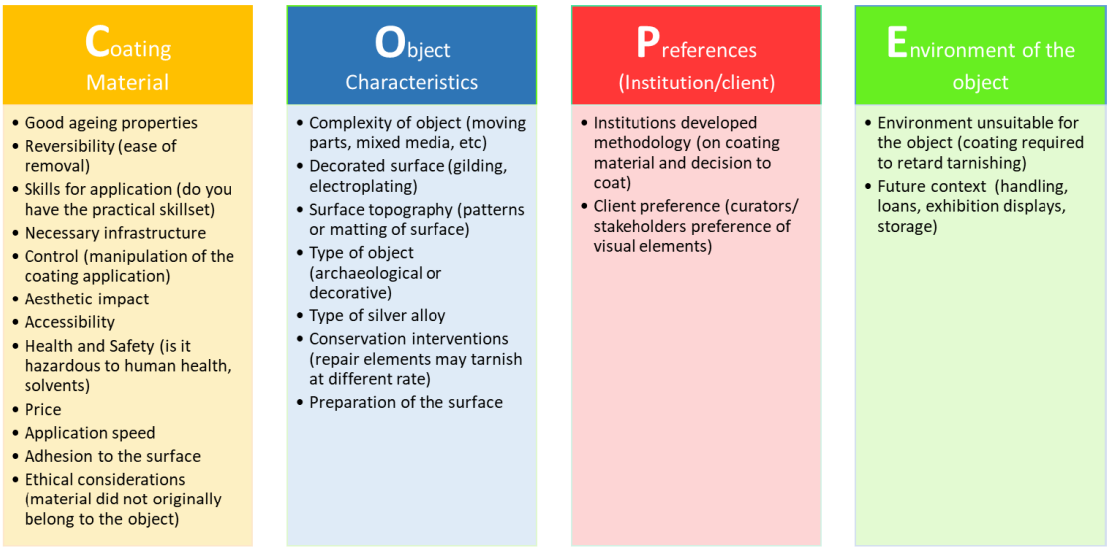
Drawing upon an anonymous survey conducted on the OPINIO platform specifically for this research, the presentation will unveil findings that shed light on the criteria employed by conservators when deciding whether to apply coatings to silver objects. This will also reveal knowledge gaps related to tarnish prevention measures. Through a deeper understanding of the decision-making processes and the insights gained from efficient tarnish prevention research, this presentation will categorize four distinct groups of factors that conservators weigh when determining whether to apply a coating.

By developing a deeper understanding of the decision-making processes and considering the research on efficient tarnish prevention measures, this presentation led to the clear distinction of four groups of factors that conservators consider when deciding on whether to apply a coating, those being:

1) Coating material (reversibility, the necessary infrastructure to apply it)
2) Object characteristics (complexity of object)
3) Preferences of the institution/stakeholder
4) Environment of the object (future context, uncontrolled environment)

These factors, listed as COPE (Coating material, Object characteristics, Preferences of the institution/stakeholder, and Environment of the object), form a memorable acronym. Conservators may ask themselves, "Will the object COPE?" when considering coating application.

In conclusion, this presentation will provide valuable insights into the past, acknowledging the present practices and offering a gaze into the future by fostering a discussion on the development of a more informed and sustainable decision-making framework for silver tarnish prevention.



Summary of decision-making factors gathered through this research

Acknowledgements

I wish to thank my supervisor Dr Caitlin O'Grady for the given guidance and help while writing this dissertation project. I would like to thank National Museums Scotland's Artefact Conservation team for their support, advice and access to their collections. I am very grateful to all the survey participants who took the time to answer my survey questions.

Author biography

Sunny Marochini Darby holds a BA (University of Dubrovnik), MA, and MSc (University College London) in Conservation. She has interned at National Museums Scotland (NMS), the J. Paul Getty Museum, and the American School of Classical Studies. She has worked as an Assistant Engineering Conservator at NMS and as a Conservator at Colchester Museums.

Mould, a growing issue: past, present, future

Adam Godijn
Fiona Tennant
Shrief Eissa
Shima Gholami
Emily Jaques
Christiane Prado
Ruth Thompson
Julian Bickersteth

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Mould is an ongoing issue in conservation, causing damage to objects and posing significant health risks to the public and to conservators working with it. In 2011, concern about the differing opinions on treatments, the potential damage caused by treatments to objects, and the health implications, prompted International Conservation Services (ICS) to undertake research into the safe management of mould remediation. Collaborating with mycologists, ICS developed standardised cleaning and safe work methods for people working with cultural objects by testing and fine-tuning the efficacy of cleaning methods and mould prevention.

In 2023 a team of 6 ICS conservators conducted a review of recent research conducted by universities, institutions and the private sector. We wanted to understand how mould research may have led to changes in treatments over the past 10 years. We discovered that many of the same issues remain, such as misinformation and potentially damaging and inappropriate treatments used in other industries. On the other hand, some research papers indicate exciting new areas to explore. As a result, ICS is currently conducting a number of practical tests on promising treatment options.

This presentation discusses our past research and the journey taken to ensure safe work practices with mould, the results of our literature research and outcomes from practical tests undertaken to date at ICS. We cover the simplification and standardisation of mould treatment within the parameters of conservation, and also discuss why most commercial or mass remediation treatments available on the market are not suitable for conservation.

Author biographies

Adam Godijn, PMAICCM, FIIC, is Head of Conservation of Fine and Decorative Arts at ICS. Adam leads the in-depth research on mould at ICS, and has extensive experience in conservation and disaster response.

Fiona Tennant, FIIC, is Principal Collections Manager at ICS specialising in preventive and textile conservation and leading researcher on mould since 2011.

Shrief Eissa is an Objects Conservator at ICS, with a Masters in conservation science, recipient of multiple scholarships, notably for his work with nanoparticles in conservation.

Shima Gholami is curator and conservator, currently pursuing a PhD in Museum and Heritage Studies at the University of Sydney

Emily Jacques is a researcher at ICS, with a BA in Anthropology and Human Development

Christiane Prado is Conservation Administration Officer, BA in History, qualifications in Conservation Technician and Analysis

Ruth Thompson has been Operations Manager at ICS since 2012

Julian Bickersteth is the Chief Executive Officer and founder of ICS and President of the IIC.

Anoxic pest treatment of a large vehicle with fine wool interior

Nick Zihrul

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The 1954 Royal tour Daimler Landaulette. Photo Jason McCarthy, courtesy NMA.

The 1954 Royal tour Daimler Landaulette is a significant functional vehicle in the National Museum of Australia's collection. It was acquired in 2009 in a dilapidated non-functional state, and over a 10 year period, the vehicle underwent a major conservation and restoration project that returned it to its original elegant, luxurious and functional status.

In late 2022, clothes moths were discovered enjoying the fine wool interior of the vehicle. An anoxic treatment using nitrogen gas was determined to be the most appropriate pest treatment option considering the size and materiality of this object. The NMA Conservation team employed a portable laboratory nitrogen generator, simple gas humidifier and a large enclosure for the treatment. This presentation will reflect how some apparatus options have changed in the 20+ years since the Getty Conservation Institute released their two major publications on anoxic treatments, and will explore how the conservation team used relatively simple apparatus and limited available space practically and effectively.

The vehicle sealed into its foil enclosure, prior to filling with nitrogen. A vacuum pump has been used to evacuate as much air as possible, to reduce treatment time and volume of nitrogen required to reach anoxic conditions. In the lower left is the simple gas humidifier used to keep humidity stable and within desired range. An oxygen alarm is in the lower foreground.

Enclosure during anoxic treatment. Excess volume was reduced by rolling and taping, to reduce treatment time and volume of nitrogen required to reach anoxic conditions. The inflated volume was around 27,000 litres. The enclosure is well inflated, but not straining.

Author biography

Nick Zihrul is Manager of Conservation at the National Museum of Australia.

From dust to display: case study of a late 19th-century costume of Jaisalmer, Rajasthan

Radhana Raheja
H.H. Maharawal Chaitanya Raj Singh Bhati

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The Jaisalmer Fort Palace Museum & Heritage Centre situated in Jaisalmer, Rajasthan, is a heritage museum of India, established more than two decades ago under the Shri Girdhar Smark Dharmarth Nyas Trust. It functions under the patronage of the Royal Family of Jaisalmer, housing exquisite and unique objects belonging to the family's heritage collection.

While the climate of Jaisalmer used to be hot, dry and arid, an attribute of the Thar Desert surrounding the city, in recent times due to the increase in rainfall, the temperature is now becoming humid subtropical. This results in the collection at the museum, especially the textiles, facing the peculiar problem of fine dust accumulation along with fluctuation in the amount of moisture available to the textiles round the year.

The centre has worked towards conserving their cultural heritage. The textile conservation project initiated in 2021 at the museum is one such initiative taken by the royal family to safeguard their rich heritage collection. The objective of the project was to assess the textile collection in display, performed detailed documentation of the objects, formulate and execute curative and preventive conservation procedures, and based on the examination of the condition of the object, either prepare them for storage or for display.

One such object that was conserved was a late 19th century silver brocaded sleeveless waistcoat. The object holds historic and aesthetic value, thus detailed documentation, condition assessment, curative conservation procedures and preparation of the object for display were performed.

Jaisalmer Fort Palace Museum established in the Raja (King) and Rani (Queen) ka Mahal of the Sonar Killa, Jaisalmer by the Shri Girdhar Smark Dharmarth Nyas Trust. Source: https://www.facebook.com/jaisalmerfortpalacemuseum/photos.

Object before conservation. Courtesy: Jaisalmer Fort Palace Museum and Heritage Centre.

Detailed documentation of the object revealed it consisted of *minakari* work; a technique popular in brocades during the 19th century. Upon researching the history of the rulers of the kingdom, the jacket is deduced to belong to Maharawal Shalivahan Singh III (1891-1914), becoming historically significant for the museum collection.

Condition assessment revealed the major causes of concern to be dust accumulation on the textile, especially the silver *zari* threads, and tears and holes present all over the object. Thorough mechanical cleaning was performed. Since the *zari* threads were delicate, gel cleaning was performed for the removal of accumulated dust. Stitch repair with appropriate supporting material was performed to stabilise the object. The object displayed signs of loss of moisture, and deterioration seen from the brittle and weak yarns. The object was given controlled humidity. A custom mannequin was prepared for display, providing appropriate support as per the requirement of the object.

To tackle pest infestation, local natural materials were used to prepare small bags of insecticides which were placed in the mannequin itself.

Conclusion

The object was documented in detail, its condition was assessed and curative treatments were formulated accordingly. The object was conserved and, keeping in mind the climatic conditions and pest infestation risks of the region, the jacket was mounted on the customised mannequin, set in the display case and installed in the display gallery.

Curative conservation in progress. Courtesy: Jaisalmer Fort Palace Museum and Heritage Centre.

Acknowledgements

Shri Girdhar Smark Dharmarth Nyas Trust.

Author biographies

Radhana Raheja is a Textile Conservator, Researcher, and Academician with over 8 years of experience. She is currently the Textile Conservation Consultant for the Jaisalmer Fort Palace Museum. She is also a PhD. candidate, working on the documentation and conservation the languishing traditional Indian craft of *Warak* Printing of Rajasthan.

H.H. Maharawal Chaitanya Raj Singh Bhati, of the erstwhile kingdom of Jaisalmer (Bhati Rajput kingdom in the far-western part of present-day Rajasthan, India, from the mid-12th century CE until 1947). He has been a student of Politics from the School of Oriental and African Studies, University of London. He is involved in various sustainable development projects, ranging from agriculture, education, heritage restoration and water conservation.

The Loong Conservation Project

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Penny Tripp[1]
Marica Mucic[1]
Reyhane Mirabootalebi[1]
Evan Tindal[1]
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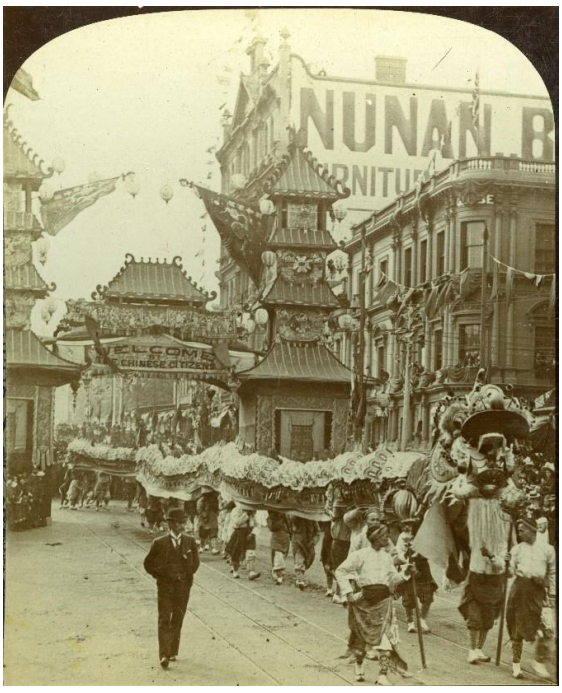
Loong (龍) is a 40-metre long, five-clawed (or imperial) dragon who is over 120 years old. He lives in regional Victoria and is recognised on Victoria's Heritage register for his historical and cultural significance to the Bendigo Chinese community. He is believed to be the oldest, most intact imperial dragon in the world. He paraded in Bendigo's Easter fair from the late 1800s until 1970 to raise money for local charities.



Loong participating in the 1901 Australian Federation parade, Melbourne. Golden Dragon Museum Collection

Marica Mucic and Holly Jones-Amin examining the condition of Loong. Grimwade Conservation Services.

Though supported over the decades by Bendigo Chinese Association community conservation and repair work, particularly pre- and post-parades, Loong was deteriorating due to his advanced age. In 2021, the Golden Dragon Museum was awarded a $133,000 Living Heritage Grant from the Victorian Government to restore Loong, in recognition of his cultural and historical significance. Loong's size and condition required he be worked on in situ at the Golden Dragon Museum, in full view of the public. A team of 12 conservators and five Master of Cultural Materials Conservation students began a year-long conservation project, working alongside Bendigo Chinese Association volunteers and local conservator Jude Schahinger, who has conserved and cared for Loong for a decade.

In 2022 the Loong Conservation project won the AICCM Outstanding Conservation Treatment of the Year Award, and the Golden Dragon Museum won the Archival Survival Award: Small organisations. This presentation is about the Loong Conservation Project, but it also charts Loong's performative function, impact on the city of Bendigo and the wider community, contribution to cultural sustainability, and how the project endeavored to be sustainable.

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Acknowledgements

The Loong Conservation Project was supported by the Victorian Government through the Living Heritage Grants Program. The authors would like to thank the Grimwade Conservation Team members Dr Evan Tindal, Ellie Bernard, Jacinta Brown, Tina Kalliakmanis, Jordi Casasayas, Lisa Yeats, Peter Mitchelson, and Camielle Fitzmaurice; the University of Melbourne Masters of Cultural Materials Conservation students Jingwen Wang, Isabel Walker, Gemma Ghoukkassian, Gabriel Garde, and emerging conservator John Morrison; conservator Jude Schahinger; Golden Dragon Museum Chief Executive Officer (CEO) Hugo Leschen and Collections Manager Megan Hall; the Bendigo Chinese Association volunteers who assisted in the conservation of Loong; the founder of the Golden Dragon Museum, Russell Jack; the former Golden Dragon General Manager, Anita Jack; and climate emissions specialists Pangolin Associates.

Author biographies

Dr Holly Jones-Amin, Team Leader of Objects, Archaeology and Textiles and Senior Conservator, PhD, BAppSc (CultMatCons), BA

Penny Tripp, General Manager, BEd(VisArt), PGDipArts(ArtCur)

Marica Mucic, Objects Conservator, MC-CULMC, BA (Hons)

Dr Reyhane Mirabootalebi, Principal Textile Conservator, PhD, MC-CULMC, BSc

Dr Evan Tindal, Principal Objects Conservator, PhD, MC-CULMC, BA

Doug Lougoon, President of the Bendigo Chinese Association

Leigh McKinnon, Research Officer, Grad Dip (Humanities), BA

Larry Edwards, Textile Conservator, MC-CULMC Dip Ed., Grad Dip (Vis & Performing Arts), MA Ed., Dip (Costume & Performance).

Georgina Duckett, Object Conservator, MC-CULMC, Grad Dip (VisArt), BA

Is it supposed to do that? Treatment reflections by student conservators at the University of Canberra

Hakim Abdul Rahim
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Lisa Hayes
Karen Sorensen
Matilda Skerritt

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The learning journey is filled with reflections and realisations, ups and downs, with materials conservation being no different. In a series of lightning talks, students from the University of Canberra will reflect on their journeys as emerging professionals undertaking the first of many conservation treatments at the University of Canberra Heritage Laboratory. The students will present their treatments, discussing the challenges, successes, and surprises that they encountered undertaking their treatments, and offer their perspectives on their conservation journey so far. An unexpected wash treatment for a Kimono, a novel use for agar and navigating First Nations cultural material will be some of the treatments presented.

Author biographies

Hakim Abdul Rahim is a PhD candidate, lecturer and the lab manager for the Heritage Lab at the University of Canberra.

Heidi Treloar, Lisa Hayes, Karen Sorensen and Tilda Skerritt are students who are currently undertaking or recent graduates from the Graduate Certificate in Materials Conservation at the University of Canberra.

Making the AICCM Medal

Claire Rowson

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International Specialised Skills Institute

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Claire Rowson was a 2019 fellow of the International Specialised Skills Institute with a focus on the preservation of not only the significant numismatic holdings within state and private collections in Australia, but also the rare trade skills associated with the artistry of coins and medals.

In this presentation, Claire will discuss aspects of her past life as a full-time numismatic artist and her experiences with both La Scuola d'ell Arte della Medaglia in Rome and the Money and Medals Network at the British Museum as part of her fellowship activities.

Most importantly, she will frame these events as a journey to her first private commission as a practising medallic artist; the AICCM Medal. Not necessarily awarded every year, but rather bestowed as needed on conservators in recognition of extraordinary and career-long contributions to the field; the AICCM Medal is the equivalent of a lifetime achievement award within the discipline of cultural materials conservation. A detailed photographic record will demonstrate the design and casting process of the medal in silica bronze and Claire will give an exegesis of the artwork, detailing her artistic reflections on the AICCM in this significant year of its 50th anniversary as an organisation.

Author biography

As well as a conservator and senior manager with ICS, Claire Rowson is an artist with over 10 years experience in the making of coins and medals. Claire brings a unique perspective to the rare trades preservation discourse as both a tertiary qualified conservator and experienced artist practitioner.

THURSDAY, 16TH NOVEMBER

The Nyingarn Project

Sophie Lewincamp[1]
Vicki Couzens[2]
Nick Thieberger[1]

[1]University of Melbourne
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> *"Language is the expression of our culture and our land. We cannot have one without the other. We cannot describe our culture and our land if we do not have language."*
>
> Joy Bonner, Queensland Indigenous Languages Advisory Committee (QILAC)

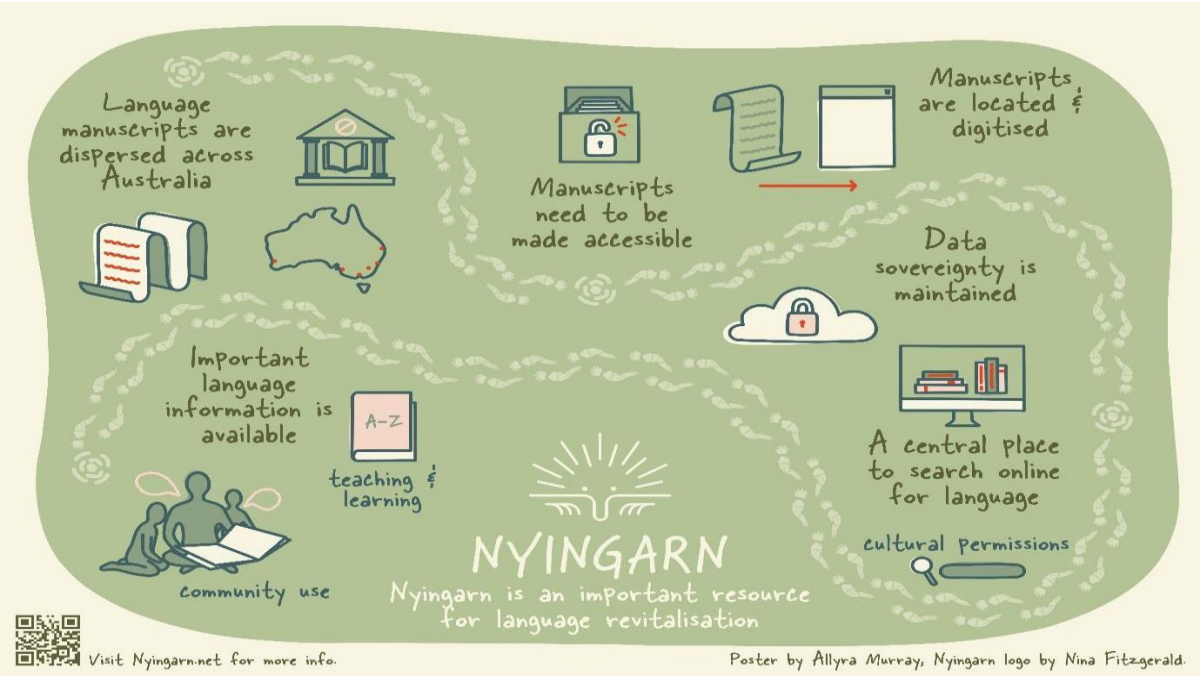
Nyingarn is a platform for access to early Australian language manuscripts for community language revitalisation efforts. These manuscripts are dispersed across Australia but once digitised can be uploaded, accessed, transcribed, and searched.

This project sits within the UNESCO Decade of Indigenous Languages 2022-2032 and the Australian Government's formation of the Coalition of Peaks, providing community-controlled representation for change.

Community access and sovereignty over language material held in our state and national institutions is urgently needed. Individuals and communities are working hard to revitalise their languages. The work is challenging, Elders are passing on and access is inconsistent.

The conservation profession has a significant role to play. Our organisations and our profession are attempting to reconcile past wrongs, support truth-telling, build relationships for shared decision making and ensure cultural intellectual property rights over heritage, manuscripts included. Through our work, we care for objects, we care for stories and knowledge, and we care for people – language is an interface for people to connect with the world around them; it bridges the space between tangible and intangible cultural heritage.

This presentation will discuss Nyingarn as a tool for collection access and language revitalisation, and more broadly and importantly the work we can do together.



Author biographies

Dr Sophie Lewincamp has a PhD in Cultural Materials Conservation. Sophie has worked with a range of communities to preserve at-risk cultural materials using engaged and culturally responsive methods. Sophie is currently the project manager of Nyingarn, which seeks to make language manuscripts accessible and searchable for community language work. Sophie works to engage and train people in the use of the Nyingarn platform. Sophie also worked previously as a project manager for the Victorian Aboriginal Corporation for Languages.

Dr Vicki Couzens, Chair, Victorian Aboriginal Corporation for Languages, is a Keerray Wooroong woman from the Western Districts of Victoria. She is an interdisciplinary Research Fellow, RMIT University and creative cultural expression practitioner. Vicki's practice spans language revitalisation, ceremony, painting, installation, visual arts, printmaking, mixed media, performing arts and teaching. She is dedicated to the reclamation, regeneration, revitalisation and remembering of cultural knowledge.

Dr Nick Thieberger is an Associate Professor in the School of Languages and Linguistics at the University of Melbourne (Australia). He is an adjunct at the University of Sydney, University of Hawai'i, LaTrobe University, and the University of Tasmania. Nick is the lead chief investigator in the Australian Research Centre (ARC) LIEF grant 'Nyingarn: a platform for primary sources in Australian Indigenous languages' (2021-2024) and the ARC LIEF grant: Modularised cultural heritage archives – future-proofing PARADISEC (2022-2024). Nick is also currently a chief investigator for projects; Modelling Pacific Creoles with DSTG (2022-2024), and the Language Data Commons of Australia (LDACA).

Heavy metals in plastics in the Museums Victoria History and Technology collection: implications in degrading plastics

Rosemary A. Goodall
Karina Palmer
Alice Cannon

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Heavy metal compounds in the form of pigments, stabilisers and other additive compounds have been used extensively in plastic products since their introduction. Even in the early 20th century, warnings of the hazards associated with this use can be found in literature and newsprint. Studies in the early 2000's identified that heavy metal pigments and stabilisers were still being used, including in children's toys despite this awareness. There are concerning safety implications for museum collections where many of these items are stored for long periods and are now found to be degrading, particularly the malignant plastics. Plastics identified during a recent ARC project (Polymus) focused on assessing the extent of plastics in the museum's collection, were retested for heavy metals using a portable x-ray fluorescence (pXRF) analyser, focusing on malignant plastics polyvinyl chloride (PVC), cellulose nitrate and cellulose acetate. Lead was found extensively in PVC items and testing of the plasticiser leaching from many of these items identified lead in the exudate. A range of other heavy metals were also identified in many plastics including cadmium, mercury, antimony, selenium, chromium and barium. Mercury was found in cellulose nitrate dolls possibly from the pigment vermillion (HgS) used to create a soft pink skin colour. Many of these dolls are already degrading and so there is a risk of exposure to mercuric sulfide during handling. We are implementing storage processes to reduce the handling of these items and reduce the hazard risk to collection users.

Author biographies

Dr Rosemary A. Goodall, Materials Scientist, Museums Victoria is involved in the identification of materials with a primary focus on the identification of hazardous substances utilizing elemental and vibrational spectroscopy. Research includes heavy metals in book covers, mercury vapour in cabinets, pharmaceuticals, plastics and dart poisons in the Museum's collections.

Karina Palmer works at Museums Victoria as Senior Conservator of Collection Preservation. She graduated as an objects conservator in 2001 and has worked in several Australian art galleries, museums and archives. She currently oversees the preventive conservation program across Museums Victoria with a current focus on plastics conservation and environmental management.

Alice Cannon is the Manager of History & Technology Collections at Museums Victoria. She has a background in materials conservation, specialising in paper, photographic and preventive conservation. Previously she managed Museums Victoria's collection risk management program.

Using pXRF to identify the object histories of zoological museum specimens

Celia Cramer[1]
Elizabeth Carter[1,2]
Jude Philp[3]
Peter Lay[1,2]

[1]School of Chemistry, University of Sydney
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During the nineteenth century, millions of animals were collected, preserved, traded, and incorporated into natural history collections worldwide. The twin cultural movements of museum creation and zoological specimen aggregation formed valuable knowledge and education resources that contribute to understandings of biodiversity, medicine, and cultural histories (Campbell & Drevnick 2015, Tiee et al 2018, Coates 2015).

Much of the value of museum collections is held within the contextual information associated with each specimen (Lane 1996). Over time, however, many specimens have become separated from their associated data rendering them unreliable as resources for research (Knell 2007). Such specimens reduce the return on investment made by agencies that fund zoological collections (National Academies of Sciences 2020). Archival research has been the main tool in reconnecting museum specimens with their histories but is often constrained by gaps in the documentary records. Scientific methods for establishing the geographic origin of a specimen typically require removing a physical sample, diminishing often irreplaceable historic biological material.

This presentation describes the results of an investigation into preservatives and pesticide residues using non-destructive portable X-ray fluorescence spectroscopy (pXRF) and principal component analysis. It was found that remnant chemical residues differ according to the preservation treatment applied. High concentrations of zinc, lead, and copper were associated with preservation in 'spirit'. Specific combinations of chemical residues were linked to individual field collectors and collecting groups revealing previously undocumented information about natural history collection practices of nineteenth century Australia.

With this new-found knowledge, archival investigation was redirected, and new documentary evidence was identified. Field collection histories, including time and place, were proposed for formerly unprovenanced specimens in the Australian Museum collection.

Pademelon skins from the Australian Museum collections A: mounted skin (Thylogale stigmatica). B: juvenile pademelon study skin (T. stigmatica) C: Adult pademelon study skin (T. biilardierii)

This research offers opportunities for natural history museums to utilise existing analytical techniques to re-establish contextual data for groups of specimens.

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Acknowledgements

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Author biographies

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Dr Elizabeth Carter is the Manager of the Sydney Analytical Vibrational Spectroscopy node. Liz is responsible for all day-to-day management and operating activities. She has a passion to research objects and materials of cultural heritage significance to reveal their hidden mysteries and secrets of the artisans who made them.

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Prof Emeritus Peter Lay uses bio-spectroscopy, inorganic chemistry, and molecular and cellular research to better understand the bioinorganic chemistry of transition metals in existing drugs, and to learn more about normal physiological and disease processes to design new therapeutic drugs.

Staging a comeback: the Sydney Opera House tapestries, *Curtain of the Sun & Curtain of the Moon* by John Coburn; Conservation, analysis and future display

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Christina Ritschel[3]
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In 1969 Australian artist John Coburn designed the tapestries *Curtain of the Sun* and *Curtain of the Moon* to be used as the theatre curtains at the newly built Sydney Opera House's opera and drama theatres. They were woven by Pinton Frères atelier (Aubusson) in France and hung when the Opera House opened in 1973.

The cotton warp and wool weft were treated with fire retardants both before weaving and after completion. They were used intermittently as theatre curtains throughout the 1970's and decommissioned in the 1980's due to concerns for their preservation in a live theatre environment and changing tastes of artistic requirements for performance. In the early 1990's a large tear in the *Curtain of the Moon* was repaired, a lining attached to address concerns about the strength of the warp, and analysis undertaken to determine if fire retardants had caused damage. Since then, they have remained in storage, only rarely displayed for public exhibition in their original locations.

The Sydney Opera House has committed to ensuring the conservation and interpretation of these original elements of the House. Part of this has involved the re-examination of the tapestries with the objective of determining the frequency and duration of public display. Over the past few years they have been successfully hung for short periods. To accurately determine future hanging opportunities, collaboration between the Opera House, Artlab Australia, International Conservation Services and Sydney Analytical is under way. Technical analysis is being carried out to better understand the exact nature of the fire retardants and the tensile strength of the warp and weft, which will help determine their condition and future use.

Author biographies

Dr Elizabeth Carter is the Manager of the Sydney Analytical Vibrational Spectroscopy node. Liz is responsible for all day-to-day management and operating activities. She has a passion to research objects and materials of cultural heritage significance to reveal their hidden mysteries and secrets of the artisans who made them.

Mary-Anne Gooden is the Principal Textiles Conservator at Artlab Australia. She holds a Master of Cultural Materials Conservation from the University of Melbourne and is responsible for overseeing textile conservation services for the Art Gallery of South Australia, South Australian Museum, History SA, State Library of South Australia and others.

Christina Ritschel is the Principal Textile Conservator at International Conservation Services in Sydney, Australia. She holds a Master of Science in Art Conservation from the University of Delaware and Winterthur Museum. She has worked in the field for 23 years including at the V&A, the Centre for the Conservation of Cultural Heritage in Denmark and the National Gallery of Victoria.

Laura Matarese is the Heritage Manager at the Sydney Opera House. She holds a Master of Heritage Conservation from the University of Sydney and has over 15 years' experience. While at the Getty Conservation Institute in Los Angeles, she co-authored the Eames House conservation management plan and undertook material conservation projects.

Dr Brad Swarbrick is the owner of KAX Group, a specialist company providing multivariate data analysis solutions to industry, research and academia. Brad was a post-doctoral research fellow at the University of Sydney and has over 25 years' experience in the application of multivariate data analysis methods to spectroscopic data.

Dr Rachel Zhong is the Analytical laboratory Service Coordinator for the School of Chemical and Biomolecular Engineering at the University of Sydney. Rachel has a PhD in specialising in biomaterials, supercritical fluids, and polymers.

Conservation science meets forensic science: past, present and future

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When reduced down to its very simplest form, forensic science uses scientific principles and methodologies to assist criminal and civil law investigations. Like many other complex fields of science, forensic science is broken down into specialist disciplines or areas of expertise. One of the oldest and most well-established fields within forensic science is an area known as Criminalistics. The specialism of Criminalistics deals with physical evidence and trace evidence (smaller than the naked eye) and not what has been biometrically deposited, such as DNA or fingerprints.

Conservation specialisms share many commonalities with criminalistics specialisms due to the emphasis on material science knowledge and expertise. While the final outcomes may differ, the shared process, analysis and use of techniques is discernible.

Due to this close affinity, forensic and conservation scientists have a synergy that can be utilised to benefit both parties. This presentation will highlight some of the successes in the past, present and expected future projects, showcasing how these partnerships can work effectively. The examples have been drawn from collaborative work done with the Australian War Memorial (AWM), National Gallery of Australia (NGA) and the Commonwealth War Graves Commission. For example, Figure 1 shows a press stud relic REL38991.002 (AWM National Collection) recovered from the gravesite of "unknown sailor" believed to have been aboard HMAS Sydney II. The tomogram revealed the presence of the letters 'CA' and 'AU' that spatially corresponded to the stamped inscription commonly used by Carr Fasteners, Australia. This finding supported the notion that the "unknown sailor's" clothing was of an Australian origin, and therefore was likely to have been on board HMAS Sydney II. This finding was significant, because as to date, no other members of the HMAS Sydney II 645 crew members were recovered.

Author biographies

Hannah Barrett ACR is a Forensic Chemist at the Australian Federal Police since 2018 specialising in fibre, hair and textiles. She previously worked as a Textile Conservator at the National Gallery of Australia. She completed her MA Textile Conservation from The Textile Conservation Centre, UK, and is an Accredited Conservator under ICON.

Dr Vincent Otieno-Alego is Forensic Chemist with the AFP. He is serving as an Adjunct Professor at University of Canberra as well as an Adjunct Fellow at Western Sydney University. He is a chartered chemist and has supported Australian War Memorial and kindred collecting institutions with analytical chemistry matters for the past 25 years.

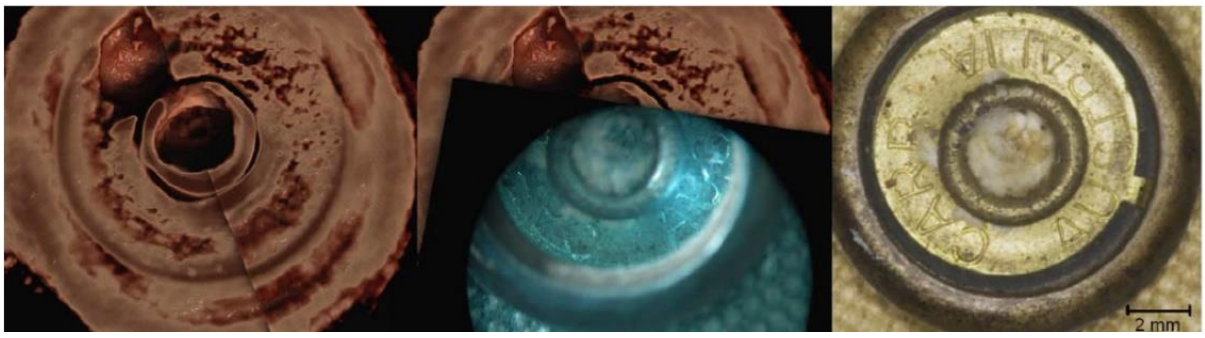

Figure 1 X-ray tomogram of a press stud relic REL38991.002 (AWM National Collection) recovered from the gravesite of "unknown sailor" believed to have been aboard HMAS Sydney II. The tomogram revealed the presence of the letters 'CA' and 'AU' that spatially matched the indentation on an authentic press stud REL33564.002 (AWM National Collection).

Sympathetic to synthetics: Developing tear repairs for matte-laminated papers in twenty-first century periodical covers

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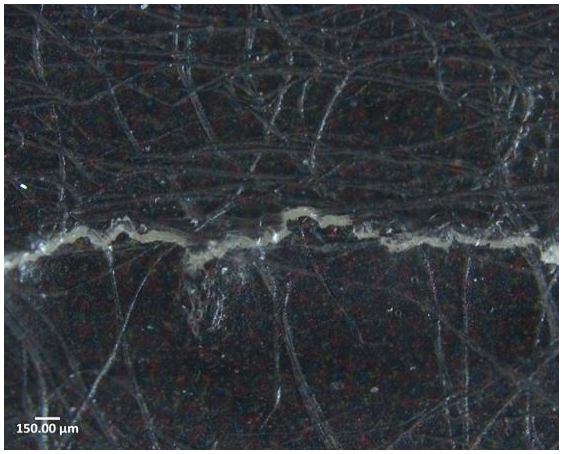

Figure 1. A torn and repaired matte laminated paper sample under magnification.

Plastic-coated papers can be found in the covers of paperbacks, periodicals, and other commercial books of the twenty-first century. These books are potentially collected in libraries and archives containing contemporary print materials, likely becoming more prevalent with time. While synthetic coatings provide added strength and durability to book covers, the waterproof and adhesive-resistant properties of plastic present challenges to the application of conventional treatments for the mending or stabilisation of tears. Adhering synthetic papers with wheat starch paste is likely to be unsuccessful due to the low surface energy of certain plastic coatings (McGlinchey, Piantavigna, & Daffner 2017).

This project aimed to identify conservation materials and methods for stabilising tears in early twenty-first century periodical journals with matte laminated covers (see Figure 1), a type of synthetic-coated paper that was identified in analysis to contain polyethylene. Analytical examination of the paper was conducted with microscopy, infrared spectroscopy, X-ray fluorescence, Photographic Activity Testing, and pH testing. Next, a range of 9 common conservation adhesives were trialled for adhesion to matte laminated papers with an adapted peel testing method. Successful candidates were artificially aged, tested for reversibility, and compared using visual examination, colourimetry, and gloss measurements. Adhesive candidates were then applied in over 160 blends with varying methods of brushed wet application, pre-coated tissues, and cast films. Results were ranked for adhesion and visual properties to select for the most successful methods.

Results indicate that while repairs with most cellulosic adhesives are likely to fail, a strong and reversible bond can be achieved with certain synthetic polymer-based adhesives (e.g., Aquazol® 500, Lascaux® 303 HV, and ethylene vinyl acetate (EVA)). Performing a successful repair is dependent on blend ratios and application techniques that avoid both weak adhesion and high surface tack, the latter of which could cause blocking. Three techniques using a Japanese tissue carrier and compatible adhesive blends were refined for application, namely: brushing through, brushing on, and reactivating pre-coated tissues with ethanol. A practical workshop for conservators and related roles was conducted to demonstrate and disseminate the techniques.

The presented tear repair techniques are proposed based on test findings on matte laminated papers and may be suitable for use with other papers containing polyethylene. Further research is needed to address additional deterioration pathways of synthetic papers, such as deformation and abrasion. There is a

need for conservators to be equipped with adapted techniques for synthetic papers, as these materials can and do form part of present and prospective collections.

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Author biography

Cancy Chu was the inaugural Fulbright-National Archives Heritage Science Fellow (2022-23) at the National Archives and Records Administration, USA, and a PhD graduand of the Grimwade Centre for Cultural Materials Conservation at the University of Melbourne, Australia. She enjoys investigating the conservation of modern book and paper collections.

How are papyrus sheets made? Insights from ancient and modern examples

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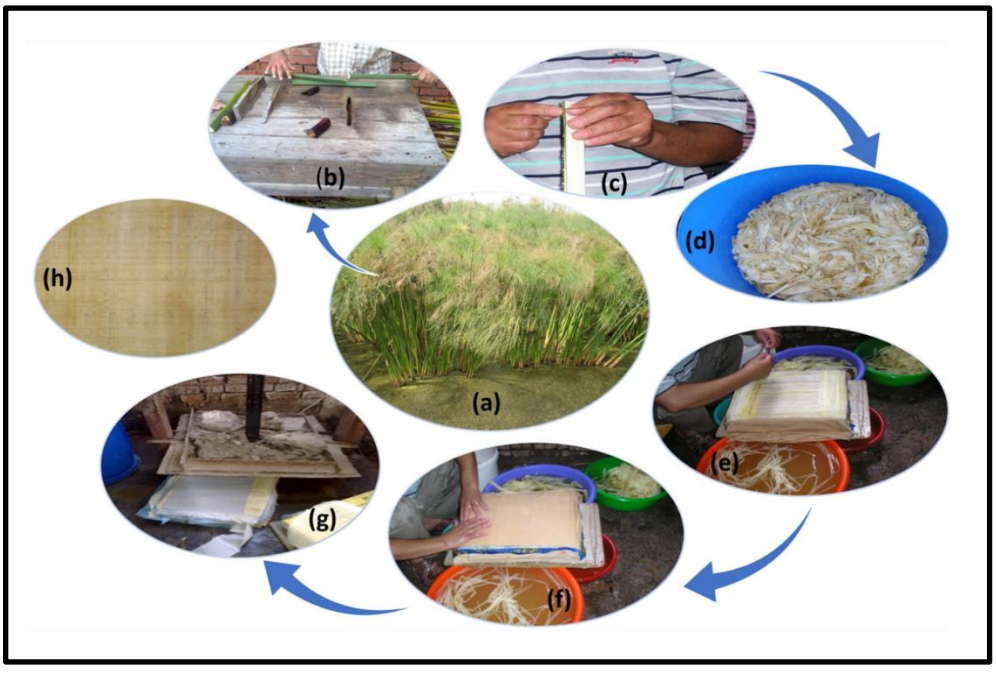
Papyrus plants were used to prepare the first flexible writing sheets 4000 years ago. Ancient papyrus sheets can contain valuable medical, political, sociological, and scientific information about ancient civilizations. However, uncertainties regarding their methods of manufacture remain. Identifying the techniques and materials used to make papyrus is vital for understanding the composition of papyrus sheets and their inks, which in turn allows a range of questions regarding the development of writing technology, papyri provenance, and authenticity to be addressed. Moreover, it helps in understanding the deterioration mechanisms of ancient papyrus sheets and selecting appropriate preservation treatments.

This paper summarises papyrus making techniques in the past and present, including the use of strips or peels from the papyrus plant, the use of different adhesives to create a cohesive single sheet, and the additives such as natron, milk, clay, cedar oil, starch, egg white, bee glue, or lotus seeds to prepare the papyrus sheet surface for writing. Most authors concur that strips of the papyrus plant were used to make sheets, but further research is required to better understand the use of adhesives and surface coatings.

This research consists of three steps; (i) a literature review using Scopus and Web of Science to identify the information about making papyrus in the past, (ii) observations of papyrus manufacture in a modern Egyptian village that is famous for making papyrus, (iii) making papyrus practically by the author and evaluating the resultant sheets.

Author biography

Arzak Mohamed is a doctoral researcher at School of Natural Sciences, Macquarie University and also an assistant lecturer at Faculty of Archaeology, Fayoum University, Egypt. She has a Bachelor of Archaeology from Fayoum University and a Master of Restoration of Manuscripts from Cairo University. Arzak works in using non-destructive analyses for dating, identifying the technology and provenance of archaeological papyrus.



Commercial papyrus manufacture at Qaramos, Egypt: (a) papyrus plants ready for cultivation; (b) cutting the stems using an electrical cutter; (c) slicing the papyrus stem into strips with a nylon thread; (d) soaking papyrus strips in a dilute sodium hydroxide solution; (e) layering the strips into orthogonal layers; (f) placing papyrus sheets between linen and cardboard; (g) pressing papyrus sheets using a manual press; (h) a final papyrus sheet.

Mercury vapour in collection cabinets, showcases and transport containers: adsorber application and strategies

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Intensive surveying of the collection at Museums Victoria has highlighted the presence of mercury vapour inside cabinets storing mercury mineral species, equipment with mercury reservoirs and items treated with mercuric chloride pesticide. Mitigation strategies including vapour containing enclosures and changed access protocols have been successfully implemented in collections stores (Goodall and Measday 2020). However, these findings raised concerns that mercury vapour could also be accumulating in transport containers and showcases used for short-term storage and display. These findings also highlighted the likelihood of accumulated mercury vapour in containers and showcases used for transit and display of collection items historically treated with mercuric chloride. A series of experiments, replicating transit and display contexts, were undertaken to identify the accumulation of mercury vapour, and to test the efficacy of adsorbent materials such as activated carbon cloth and zeolite impregnated board. Measurements were recorded after one week, two months in the transport containers and up to one year in collection storage cabinets. Results indicate absorbent materials significantly reduce mercury vapour in these settings and shows promise for the short and long-term management of the hazard whilst in storage, transit, and on display.

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Author biographies

Dr Rosemary A. Goodall, Materials Scientist, Museums Victoria is involved in the identification of materials with a primary focus on the identification of hazardous substances utilizing elemental and vibrational spectroscopy. Research includes heavy metals in book covers, mercury vapour in cabinets, pharmaceuticals, plastics and dart poisons in the Museum's collections.

Danielle Measday is Conservator of Natural Sciences for Museums Victoria Research Institute. She works closely with collection managers, curators and researchers across biological and geological sciences to facilitate access to the Natural Sciences collections and preserve them for the future.

Karen Fisher, Exhibitions Conservator in the Collection Development & Access team at Museums Victoria, works across various item and material types to support access to collections and deliver Museums Victoria's exhibition and loans program. Recent collaborations include the development of a modular display system for showcases and bespoke bunding to meet OH&S requirements for the display of wet specimens in ethanol.

Designing and building a low oxygen display case for the “last thylacine”

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The grainy black and white vision of the last known thylacine at a Hobart zoo remains one of the haunting images used internationally to describe the loss of species. The Thylacine is also one of the must-see objects at the Tasmanian Museum & Art Gallery (TMAG) for visitors. When the remains of the last animal were identified, the question of how to display and preserve this object came to the forefront.

The Getty Conservation Institute and other leading institutions have undertaken extensive scientific research on the use of low oxygen as a rate limiting step for degradation caused by lighting. Removing oxygen greatly reduces the quantum yield of light exposure, and object fade rate can be reduced by above 90%. Historically this technology has been difficult to implement at a technical level, and manufacture of designs like the Getty design has had limited success.

This paper will discuss the reasoning behind using the technology, the novel Australian design that builds on international experience, and the unexpected result of environmental stability of the case that greatly cuts environment management costs. For this design, custom electronics and software were developed that continuously monitor oxygen, light (and even spectral distribution), relative humidity and temperature amongst other parameters. We will also describe custom lighting circuits that are suitable for in-case use. At an overarching level this paper will describe solving a career-long problem of conflict over display periods of critical objects by design and custom manufacture by a conservator of novel systems to solve real world conservation challenges.

Both a thylacine skin and mount are required to be on permanent display as icons of the collection in Hobart, and will be displayed in low oxygen environments as a preservation system. This image shows a cover removed from the case to show the access door and custom and electronics fitted for monitoring the microenvironment.

"Last" thylacine skin on display in a flat case. When the case is sealed the internal conditions are monitored continuously and displayed on a small screen.

Author biography

David Thurrowgood is an experienced metals and objects conservator who has worked for institutions for approximately twenty years and now works in private practice in regional Tasmania where he has taken the step of setting up a laboratory, focusing on complex and bespoke projects.

64Hz and the unexpected impacts of vibration on a gallery redevelopment

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During the design, preparation and install of the National Museum of Australia's (NMA) Great Southern Land gallery (GSL), various risks and hazards were considered extensively; however, the challenges caused by various vibration sources during preparation, transport, installation and display were more unexpected. Some involved WHS hazards and many required innovative solutions to mitigate risk to people and collections. Five vibration issues provide the case studies in this paper.

Thylacine – footfall vibration transfer affecting fluid dynamics

An icon of the GSL gallery is an extremely fragile fluid-preserved specimen of a Thylacine. In a previous display its susceptibility to vibration was identified and the specimen was deinstalled and stored on the NMA ground slab without further deterioration. The GSL gallery design situated the Thylacine over a structural pillar to provide the most stable floor possible. Using vibration monitoring we compared the previous display, storage and proposed locations. The highest vibration measured at the storage location was 0.2mm/s which established our maximum allowable vibration as the specimen was stable in these conditions. The proposed location demonstrated less vibration than the previous display, yet remained higher than 0.2mm/s. Vibration expert Bill Wei advised us that the key risk frequencies for fluid-preserved specimens were 1-3hz as this 'sloshed' the fluid, exacerbating deterioration. These frequencies align with visitor footfall and provided isolation parameters for further mitigations. In consultation with the GSL team and external showcase, mount and engineering contractors, we designed a stand-alone compressed spring isolation table for the vitrine with a showcase shell, detached from the isolation unit, to mitigate horizontal vibrations (Figure 1). The engineer tested its vibration isolation capacity in-situ and demonstrated that the table isolated vibrations from 0.8-1000hz, well below 0.2mm/s, eliminating the key risk frequencies and meeting minimum isolation requirements. Whilst the Thylacine install was challenging yet no further deterioration has occurred since it was installed on display.

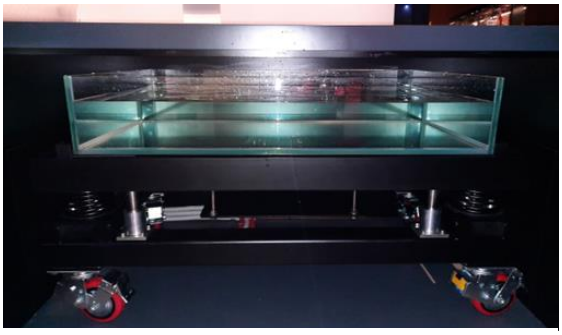

Figure 1: Vibration isolation table.

Mineral Wall – acoustic vibration from soundscapes

248 claw-mounted mineral specimens were installed in a showcase adjacent to a large cinematic experience. Many of the specimens are incredibly fragile, and seven emit low level alpha radiation, which poses minimal risk unless friable. Potential collection and WHS risks were flagged as the soundscape was tested prior to opening, complete with the pounding bass which caused significant vibration through the floor and into adjacent showcases. I worked with sound and vibration engineers to quantify the showcase vibrations, identifying that the showcase glass acted as a bass sink, amplifying the acoustic vibration which was further amplified by the length of the projecting post mounts (Figure 2). We identified the resonant frequency of the case as 64Hz and collaborated with the sound engineer to strip that frequency from the audio track. We also negotiated for the bass to be turned down in the mix and the entire audio was reduced to a level which was safe for objects but still engaging for visitors. Ongoing monitoring has confirmed the safety and stability of the specimens.

Figure 2: Vibration monitoring in the mineral wall

Bunya – HVAC vibration through floor

During installation of the Bunya corridor showcase at the entrance to the gallery, minor vibration was felt through the floor. Small opalised Araucaria cones were mounted on long thin post mounts so they could be seen through a magnifying lens. The vibration was amplified by the post mount and the specimens oscillated accordingly. Installation ceased and upon investigation, the Museum's HVAC plant was mounted to the underside of the floor at this point and a maintenance issue had resulted in excess vibration. The maintenance issue was rectified however the floor vibration continued, impacting installation schedules. Our Gallery Manager worked with the Project Manager to have the plant relocated from to the ground slab, the vibration was eliminated and installation was able to proceed. This highlighted the impact of HVAC plant maintenance and placement on gallery design and the potential impacts this can have on installation schedules and management of galleries.

Life Showcases – design challenges resulting in case vibration

GSL's 'Life' display comprises standalone glass showcases with hinged doors and heavy glass shelves suspended on a metal framework. Whilst reviewing the showcase design we considered size, installation, cleaning and access issues, yet stability was assumed. During installation, the glass shelves shook significantly, so the objects were deinstalled and mock objects used to test various solutions to the vibration. Eventually contractors installed a series of round inserts that cross-braced the metal framework against the showcase walls, mitigating all but the most severe of bumps to the showcase. Mounts were also modified to further support at-risk objects from potential future vibration impacts.

Coal – vibration in transport and installation

The conservation and transport of a 2.5 tonne coal specimen provided unique challenges. After excavation it was wrapped in plastic for transport to the NMA. The release of pressure during excavation and vibration in transport caused significant cracking and loss. After consultation with geologists and extensive testing, NMA conservators consolidated the cracks to stabilise the specimen. One structural crack remained through the centre of the coal and we were concerned about vibration during transport and installation, and the WHS risk if it broke apart. Risk assessments were undertaken and in consultation with WHS managers, Large Technology conservation, external contractors, curators and exhibitions

Figure 3: Coal specimen wrapped, strapped & mounted.

staff, the coal was re-wrapped, padded and supported with strapping, slung and placed on the display plinth/transport pallet (figure 3). Heavy duty metal mounts were installed to cradle the coal if it split, mitigating risk to personnel. The coal was transported to site and placed in front of the showcase. The strapping successfully prevented further cracking in transit and the coal was safely installed in the showcase without further damage.

Relevance to other collections

Whilst some of these risks were foreseen, others were entirely unexpected. A holistic understanding of the design, including soundscapes, showcases, plant locations and potential hazards in conjunction with comprehensive risk management frameworks can help to manage these risks. As project managers and collections care professionals, understanding the interconnected risks between building envelope, display, hazards and collections allows us to approach design conversations and installations with greater insight into the risks posed by vibration. This project also highlighted the importance of consultation, working with allied experts and the role of conservation in the early design phases of gallery development. This paper seeks to share these challenges and the solutions implemented in the hope that other collection care professionals may foresee some of these risks in their own exhibition projects.

Acknowledgements

I would like to acknowledge the GSL Project and Conservation teams, Louise Palmer and Stephanie Scroope for their patience and grace with all of these challenges. I also want to thank Bill Wei, Nicki Smith and Cassandra Pomroy for their valuable assistance with the Thylacine.

Author biography

Jennifer Brian is A/g Manager of Conservation at the NMA and PhD candidate at ANU who has worked in objects, preventive and registration at various Australian institutions. She is passionate about supporting emerging conservators and facilitating the use of musical instruments in collections.

Not set in stone: reflections on the Shellal Mosaic

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Taylor Moore

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The Shellal Mosaic is an 8 m x 5 m floor mosaic, was built in 561-62 CE in Palestine. The remains of the early Byzantine church floor are on display within the Australian War Memorial's galleries. The Mosaic is made of small marble tesserae, with between 100-210 tesserae in a ten squared centimetre grid. This object was collected during the First World War and has been adhered to the wall of the Memorial's Main Building since it was constructed in the 1940's.

Access to the Shellal Mosaic has been hindered by the location and size of the mosaic. The Australian War Memorial is undergoing a large development project and the Shellal Mosaic needed to be condition reported and monitored for any damage caused by construction vibrations.

Overall image of the Shellal Mosaic, 2021.

Hand drawn overlay of section G2, 2021

Image of section G2, 2023

The scaffolding was erected in mid-2021 providing the opportunity to get up close to the Mosaic and perform a detailed condition report. During the Covid lockdown in 2021, two teams were able to install a crack monitoring system, using cotton thread, onto the surface of the mosaic. This is used to identify new cracks resulting from construction activities. Condition reporting and monitoring has continued in the Shellal Mosaic since October 2021.

This paper will briefly discuss the background of the Shellal Mosaic and reflect upon previous limited treatments performed before 2021, and realisations after completing the initial condition report. Crack monitoring methodology and plans on how to conserve this object into the future are also discussed.

Author biographies

George Bailey is Senior Objects Conservator at the Australian War Memorial. George has worked on an array of objects within the Memorial's collection and has been at the Memorial for over 30 years.

Taylor Moore is Conservator – Preventive, Hazards and Analysis at the Australian War Memorial. Taylor is an emerging conservator who has worked at the Memorial for over 5 years. Taylor has been assisting George in the conservation work being done on the Shellal Mosaic

The current preservation practices used by audiovisual conservation practitioners when facing collection format hazards including naphthalene syndrome, vinegar syndrome and mould

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The presentation summarises two papers published in the Studies in Conservation Journal (Soleymani & Russ 2021, 2023). Our presentation presents the findings of two international online surveys and uses examples from work at the National Film and Sound Archive of Australia to better understand current practices and knowledge surrounding cellulose-based and magnetic films showing signs of vinegar and naphthalene syndrome and mould.

This presentation determines gaps and potential areas for future research among organisations holding film collections. This paper talks about the confusion over aspects of film deterioration and the associated potential health effects which appeared to be common among many respondents. There is a distinct lack of knowledge surrounding the use of plasticisers such as triphenyl phosphate and the potential health effects. However, the findings of the survey show that the use of personal protective equipment and practices could be mitigating the potential dangers of handling highly deteriorated films. This presentation will also talk about mould growth and its impact on magnetic media deterioration (figure 1). Over time, mould impedes element retrieval and can even cause its total loss, resulting in the loss of our cultural heritage (figure 2). Information on magnetic media is limited, resulting in the question: what are the current experiences and practices surrounding mould on magnetic media in the cultural heritage sector? The aim of this presentation is to seek out the opinions of audiovisual conservators and film practitioners about magnetic media (full coat magnetic film, magnetic audio and video tapes), conservation processes and their experience with mould.

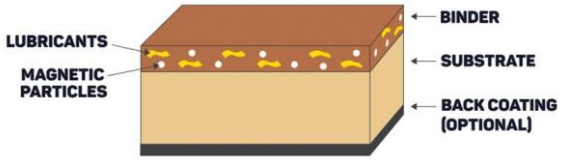

Figure 1. General Structure of magnetic films.

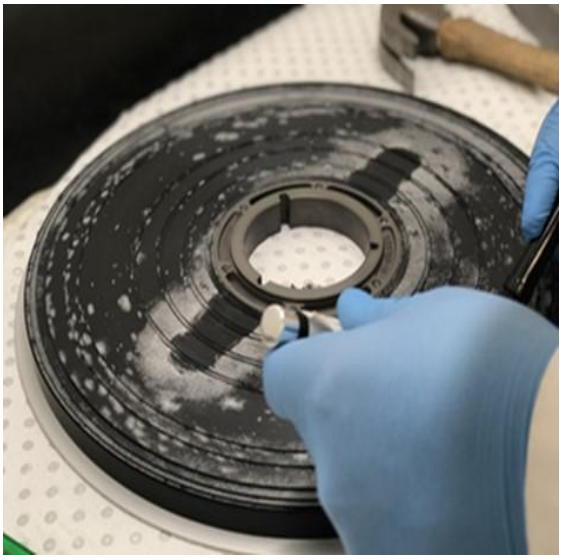

Figure 2. Mould on magnetic film with its housing removed, demonstrating a preference for growing within the microclimate between the film pack and housing (NFSA, 2020).

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Soleymani S (Mona) & Russ L 2023, 'Mould on Magnetic Media: What Are the Current Preservation Practices by Audiovisual Conservation Practitioners?' *Studies in Conservation*, vol. 68 (7) pp. 704-719 DOI: 10.1080/00393630.2023.2167040

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The authors are also grateful to Jan Muller (Former CEO) and Meg Labrum (Former General Manager) at the National Film and Sound Archive of Australia for providing a list of international contacts for the survey distribution and their continuous support.

Author biographies

Mona Soleymani received her PhD from the University of Canberra in Applied Science in 2015. As the recipient of the Donald Horne Fellowship at the Centre for Creative and Cultural Research in 2016, Mona completed her Post Doctorate studies at the UC. Mona's professional experience includes roles in academia, government, and the private sector in Australia and overseas. Mona is currently working as a Project Manager. Here is a link to Mona's publications, including publications in prestigious peer-reviewed journals: https://orcid.org/0000-0002-2362-6968

Lisa Russ is a PhD candidate at the University of Canberra investigating the presence of triphenyl phosphate (TPP) in heritage collections and the risk to those entrusted with collection care. Lisa was introduced to plastics conservation during an undergraduate research internship and subsequent work with the National Film and Sound Archive of Australia. Through an internship with the Australian War Memorial (AWM) she has used Fourier Transform Infrared spectroscopy to identify TPP in heritage objects. Currently she is the Project Officer for Hazardous Chemicals Management at the AWM.

Eugowra: Recognising the resourcefulness of the community in disaster recovery

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On November 14, 2022, the small town of Eugowra, about an hour's drive from Orange in west NSW, was hit by a flash flood – a 'tsunami' of water. It devastated the town on the banks of Mandagery Creek, population about 700, including the small museum. The town is still struggling to recover.

The river system upstream of Eugowra was already over capacity, resulting in extensive flooding. A torrential downpour on the Sunday night caused the Wyangala Dam to spill releasing huge amounts of water into the already swollen Lachlan River. As this huge volume of water moved down the river, it was forced into the smaller Mandagery Creek, which runs through Eugowra, and became a huge wave of water later described as a tsunami. A first wave of water came through resulting in knee-deep flooding, but this second wave of water was up to peoples' armpits and devastated the town. They had received an evacuation order early Monday morning but by then it was too late. Some residents were able to move to higher ground, some were forced onto rooftops, while others clung to trees. Over 200 people were rescued throughout that first day and two people died. This is now a familiar story in Australia, along with other devastating disasters, and we must assume it will only get worse in the future.

The Eugowra Historical Museum and Bushranger Centre was flooded with water moving through the full length of the building. Everything was damaged, wet and muddy. Just over a week after the event, on November 22nd two conservators, Tegan Anthes and Kay Söderlund were on a plane to Orange/Eugowra, supported by Create NSW, in order to assist in the salvage and recovery of the museum collection. Orange Council Community Museum workers and Orange Regional Museum staff had been working with the volunteers of Eugowra Museum over the years, and they also came to the aid of the museum. While this support was vital in the effort to save the museum's collection, it was the wide community involvement in the recovery that really made it possible.

For the first few days the town had no water, no food, no electricity, no clean areas or space – all the things that help make a recovery possible. Resourcefulness was the order of the day and the volume of objects retrieved, stabilised and moved to a safe space over the course of the first

Flood damaged interior of museum – tide line evident

two days was impressive. The conservators were only available for a limited time and recovery continued with support from Orange museum staff over the course of several weeks to ensure the collection and building were stabilised. This recovery was only possible with the commitment, hard work and resourcefulness of the community which persevered, working tirelessly to recover the collection from the devastating flood.

In July 2023, eight months after the flood, Tegan and Kay returned to run the first of two workshops with the volunteers of Eugowra Museum in the hands-on recovery of some of their collection – focusing on objects that had been successfully salvaged and dried. Another workshop scheduled for late November 2023 will focus on paper, textiles and other objects that required freezing during the recovery stage.

It is clear from this experience, along with other disaster response and recovery events in the recent past, that conservators need to become more creative in how they manage response and recovery from community-wide disasters. We must fully understand the materials commonly found in these collections and how they respond to different treatments and handling. In these situations, it is unlikely that there will be access to the materials and equipment we normally would use to salvage a collection. Few community museums have a Disaster Bin, let alone the scope and quantity of equipment and materials that enables effective recovery. How can we adapt a recovery treatment to suit the situation? And how will that treatment affect the object in the short term and long term? What equipment and materials might be ready to hand that we can adapt to help in the recovery?

Volunteers cleaning salvaged objects

Tea break and update on situation

While we don't have all the answers to these questions, we hope this paper provides some food for thought for the conservation profession and a stimulus to think creatively.

Acknowledgements

The work of the following individuals was critical to the success of the recovery of the collection:

Allison Campbell – Orange Regional Museum; Hayley Lavers – Museum Consultant, Millthorpe; Ray Agustin – President, Eugowra Historical Museum and Bushranger Centre; Mary-Elizabeth Andrews – Museum Manager, Orange Regional Museum; Alison Russell – Community Museum and Heritage Manager, Orange City Council

Author biographies

Now semi-retired, Kay Söderlund has worked as a conservator for over 40 years, mainly in the private sector. In 2000 she authored 'Be Prepared: Guidelines for Small Museums for Writing a Disaster Preparedness Plan'. This manual is used internationally and has been translated into four languages. She has delivered Disaster Preparedness training throughout Australia and overseas. In August 2021 she closed Preservation Australia and now only works in preventive conservation consulting, disaster preparedness and running workshops on request.

Tegan Anthes operates as a collection care consultant to the heritage sector, sharing over 25 years of conservation experience. She educates, supports and collaborates with communities on disaster prevention and recovery, and preventive conservation. She specialises in disaster prevention and recovery. Initially as State Library of NSW Disaster Coordinator, then at Preservation Australia from 2008 to 2019 where Tegan co -developed and facilitated international disaster prevention workshops.

The composition and impact of soot on heritage surfaces

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Fire is becoming an increasing threat to heritage materials, both from the fire itself as well as the soot the fire leaves behind on heritage materials.

While the risks of fire are well understood, there is little information about the compounds within the soot deposits that settle on heritage surfaces, the way that these compounds interact with heritage surfaces over time, or what methods might be most useful for removing the soot without damaging the surfaces underneath. There is also a lack of understanding of the way these residues might affect people working to remove them, whether those be private owners of heritage properties and items, or professional or volunteer heritage workers.

This research will use analytical techniques such as infrared spectroscopy and gas chromatography mass spectrometry to determine the composition of soot residues. Samples will be collected from sites affected by ambient soot deposition, as well as from small, controlled test fires. Samples will include examples from both predominantly vegetation generated smoke, and smoke that also contains components from a selection of synthetic materials typically found in modern homes.

This presentation will discuss the progress to date, and briefly discuss the potential for using improved understanding of the soot residues to guide options for removing the soot, with a focus on the use or development of environmentally sustainable cleaning processes.

Sawmill outbuilding that survived the 2019 fire at Nerriga in NSW, Australia, showing the soot deposition on the side that faced the firestorm. Image: Alison Wain, 2019

Author biographies

Amber Anderson, BBiomedSc(Hons), is currently a PhD candidate at the University of Canberra, examining the composition of fire soot deposited on heritage materials. Amber became interested in the heritage field after having previously completed her honours in cancer research, and now brings her background in biology and analytical science and an interdisciplinary lens to the heritage field.

Alison Wain trained as an archaeological conservator before discovering a passion for large technology conservation. She is now Assistant Professor and Discipline Lead in Cultural Heritage at the University of Canberra teaching materials conservation and heritage practice. Her research is focused on the challenges of preserving and interpreting engineering, industrial and science heritage.

Community-led conservation of the 1897 Stage Curtain in Bullumwaal, East Gippsland

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Conservation is increasingly working to include community participation in its practice. This presentation reflects on such a collaborative process, through the case study of the community-driven conservation of a stage curtain painted in 1897 for the Mechanics Hall of a remote township in the state of Victoria (Australia). From fundraising efforts and navigating grant applications to managing the conservation project, the challenges faced by the local community in order to conserve their curtain and keep it in situ are examined in light of current heritage preservation policies and practices. Close collaboration with the conservators and flexibility of all preconceived plans resulted in a negotiated outcome that respected both community values and ethics of preservation. Social events are now planned to advertise the curtain's presence and attract people to the township. The conservation treatment also triggered more research by local historians, expanding knowledge about the place and its people and opening the Bullumwaal community to new connections with other parts of Victoria. This case illustrates the importance of living cultural heritage in a community and conservation's contribution to strengthen identity, social cohesion and sense of place through the preservation process.

Peter van Diesen, Sabine Cotte, Nadine Fleischer, Phil Large and Kevin Fleischer installing the new hanging system on the treated Bullumwaal Hall stage curtain.

Visitors view the treated stage curtain at the Bullumwaal Hall Open Day March 2023

Author biographies

Sabine Cotte holds conservation degrees from France, Italy and Australia. She has worked in the Himalayas for UNESCO, ICCROM and private NGOs, training local people in conservation and disaster recovery. She is an Honorary Fellow of the Grimwade Centre for Cultural Materials Conservation, and a tutor in the Masters of Curatorship, University of Melbourne. Her book *Mirka Mora, a life making art* was published by Thames and Hudson Australia, in 2019.

Sherryn Vardy holds visual arts degrees from Monash University and a Master of Cultural Material Conservation from the University of Melbourne. With over 25 years' experience in the museum industry, she has held roles at regional galleries, National Exhibitions Touring Support (NETS) Victoria, Australian Centre for the Moving Image (ACMI) and Australian Museums and Galleries Association (AMaGA) Victoria. Sherryn currently operates a private conservation practice in Gippsland, Victoria.

Shining a light on collaboration: relocating the South Solitary Island Lighthouse Optic

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From 2021 to 2023, International Conservation Services managed the relocation of the South Solitary Island Lighthouse optic (SSILO) in Coffs Harbour. This 19th century lens and its cast iron pedestal are a 6.5 tonne assemblage, containing hundreds of prisms of virtually irreplaceable polished optical glass.

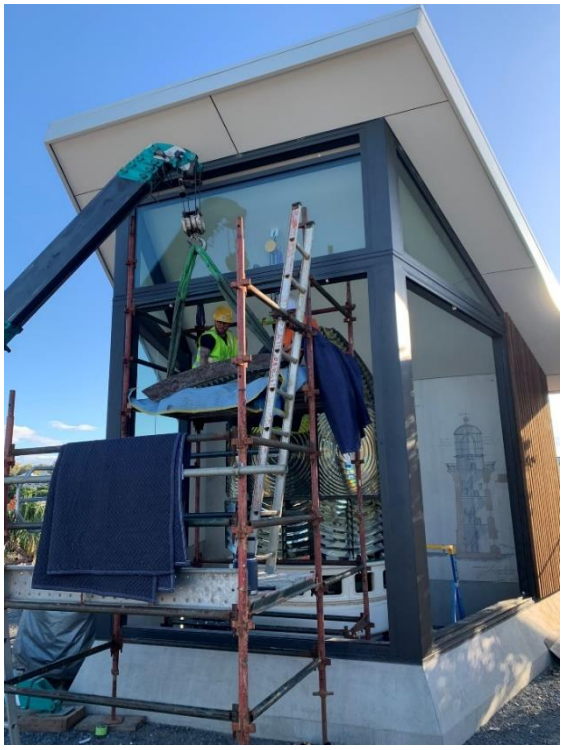
In 2021, Coffs Harbour City Council (CHCC) made the decision to relocate the lighthouse optic to a custom-built pavilion as part of an extensive foreshore development. Given the substantial weight, community significance, and extremely high insurance valuation of SSILO, ICS recognised the logistical complexities of this job from the start and reached out to IAS Fine Art Logistics for expert technical handling assistance. Over the course of the project, the team grew to include riggers, crane operators, licenced builders, and electricians, each of whom has contributed invaluable trade expertise.

This presentation, drawing on the complex case study of SSILO, offers musings on the role of the conservator in industrial heritage projects and the importance of collaboration between conservators, heritage experts, and skilled tradespeople. With many conservators now coming to the profession with predominantly academic and arts backgrounds (the author included), this project highlights the value of consulting experienced industrial and construction tradespeople for technical knowledge. This project also emphasises the growing significance of the 'conservator as project manager', which requires that we acknowledge the limitations of our skillset and are resourceful in where we seek assistance to help us preserve our industrial heritage.

Commencing disassembly of SSILO (Image: ICS)

Lifting cast-iron pedestal through roof of old building (Image: ICS)

Reassembly in progress (Image: ICS)



Reassembly in progress (Image: ICS)

Acknowledgements

Michelle Smith and the Museum & Gallery team – Coffs Harbour City Council

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Matt Foley and Peter Jones – North Coast Cranes

Richard Silink - International Conservation Services

SSILO in its new custom-built pavilion (Image: CHCC)

Author biographies

Amy Walsh held the position of Objects Conservator at International Conservation Services. Although Amy is a ceramics conservator by training, while at ICS she gained valuable exposure to the conservation of industrial heritage. She holds an MA in objects conservation from Melbourne and a PgDip in ceramics conservation from West Dean.

Julian Bickersteth is the founder and CEO of International Conservation Services. He is deeply networked within the conservation profession and the wider cultural heritage sector both nationally and internationally. He regularly writes, speaks and commentates on conservation matters and museum policy. Julian is currently President of the International Institute of Conservation (IIC).

Implementing professional experience from the Warsaw Uprising Museum to the Furneaux Museum; Similarities and new challenges

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Comparing the Warsaw Rising Museum (WRM) to the Furneaux Museum (FM) offers a way of contributing to the ongoing discussion about the new definition of museums, raised at the last general conference of the International Council of Museums (ICOM) in Prague, 2022.

At first glance the difference between the two institutions is huge. The WRM is one of the most modern museums in Poland. Its design demonstrates a new trend of historical, narrative museums in Central Europe. It has a big budget and more than 150 employees. The FM is a small, local community museum. It was founded by the Furneaux islanders and is run by volunteers who are members of the Furneaux Historical Research Association.

However, the major difference is in the scale of the project: the WRM – two million Warsaw citizens, the FRM – one thousand Flinders Island residents.

- Both were created by the community to serve the community
- Both work with communities, memory and collections
- Both tell stories about history to locals and tourists

The statement defining the FM goals, written in 1964 by Richard (Dick) Fowler, remains current to this day. The FM is an excellent model of a well-organised local museum on the Australian museums map. I am impressed by the work of our voluntary team.

The GW Wolff Anchor after conservation

The collections in both museums consist of items documenting the life of the community: archival documents, photographs, videos, everyday life objects and pieces of art. In general, there's a large diversity of materials, eg. paper, photographs, wood, glass, metal etc.

In both museums, metal artefacts play a big part in the collection. FM owns a large collection of maritime artefacts, eg. from the wrecks of the *Sydney Cove* (1797) and the *G W Wolff* (1912). Both museums have aviation artefacts. The main difference for me, is that there is a big collection of natural history artefacts in the FM – from shells and minerals to mutton-birds. There is also an impressive collection of Aboriginal shell necklaces.

Collection care and preventive conservation is always the most important subject for conservators in every museum. For example, maintaining stable environmental conditions (low temperature, specific relative humidity, no exposure to UV or pollution). This is a big challenge here, because the permanent exhibition of the FM is displayed in six

different buildings. Many exhibits are not in showcases and some of them are in the open air. Archival documents or copies about important events on the islands are put together in 183 thematic folders and are available to the public. The most valuable items are kept in new fireproof storage. I would like to prepare a sustainable prevention plan and conservation documentation for this complex exposition.

Based on my experience from the WRM, I identified three unique photographic items; they represent two early photographic techniques: ambrotype and ferrotype (Lavedrine 2003). We are working to ensure they are conserved appropriately to exhibit.

Examples of early photographic techniques

Hand-painted sign after conservation.

From my 'perspective as an outsider', I came across our collection of hand-painted, contemporary signs, which feature a dose of Australian humour. My first conservation task was the long process of removing yellowed epoxy or polyurethane varnish from a more fragile original oil painting, in order to restore '*The Reg Munro Airfield sign'*, a relic of the local aviation history.

I adopted classic treatment methods, used for the conservation of board paintings or polychromic sculptures: tratteggio' technique for retouching, to define the areas of original paint and constructed wooden bracing on the reverse side as reinforcement for the chipboard base.

The next challenge was the conservation of the 50-year Time Capsule content. It was impacted by moisture. It involved three weeks of intensive work, step-by-step drying, cleaning, and sterilizing for a new temporary exhibition 'The Tomb of History' and to return letters to the families.

The biggest project was conservation of the anchor from the *GW Wolff*. I was using a method of three step protection treatment used for conserving archaeological metal objects for this large-scale artefact saved from a shipwreck (Domasłowski 2011).

When working for a regional museum, we have to forget about the global tendency for narrow specialisation. However, art conservation is indeed a multidisciplinary science which involves practical skills. By putting together art and conservation skills, knowledge of materials, chemicals, training in old masters techniques and new science research methods, the role of conservators of cultural materials can be reinforced. This improves our ability to present well-conserved artefacts which speak to the wider community, and make them accessible to national and international networks. It also improves our ability to assess and appreciate an object's significance.

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Domasłowski, W 2011, *Stone and metal monuments, their deterioration and preventive conservation*, Nicolaus Copernicus University Publishing House, Toruń.

Acknowledgements

Special thanks and appreciation to the Furneaux Historical Research Association members.

Author biography

Joanna Lang completed her Masters in Conservation and Restoration of Works of Art at The Nicolaus Copernicus University and undertook post-graduate studies in Museology at The University of Warsaw. She worked from 2004 – 2021 at The Warsaw Rising Museum, Poland and since 2021 in private practice ART&CONSERVATION, Flinders Island/ Melbourne, Australia.

FRIDAY, 17th NOVEMBER

Accounting for conservation? Embedding the social, environmental and economic value of conservation in wider public policy

Kate Clark

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This presentation will review initial findings from a joint Australia ICOMOS/University of Canberra PhD project on embedding cultural heritage conservation in wider public policy.

Although culture is the fourth pillar of sustainable development, cultural heritage is often overlooked in wider public policy, despite a growing evidence base for the social, economic, and environmental benefits of conservation.

Understanding the public value of our work can help us to advocate for heritage conservation as something of wider relevance, that goes beyond the narrow confines of museums and heritage protection.

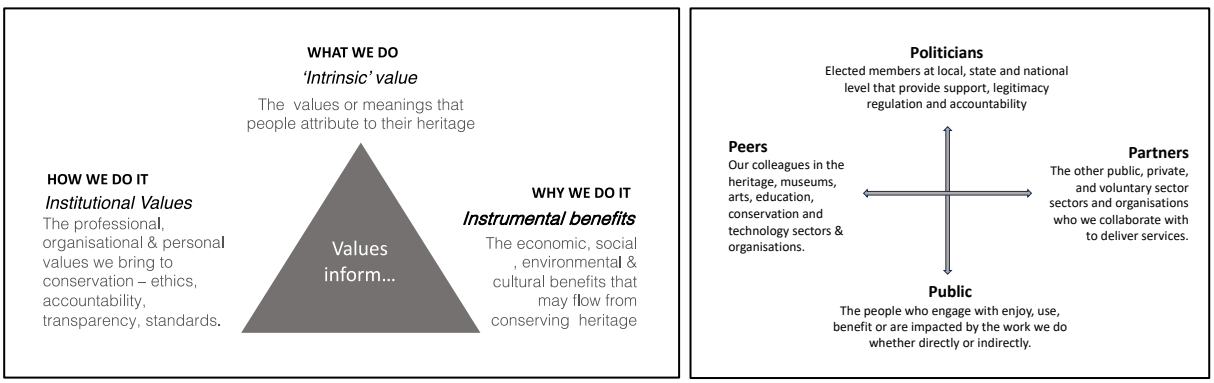
Conservation is both a social and a technical enterprise. Decisions about what is conserved, why it is conserved and how it is conserved involve both technical knowledge and concepts of value.

As our work often involves reconciling very different values in conservation practice, so it is also important to think about 'value for whom'.

There is a growing body of empirical evidence for the social, environmental and economic benefits of conserving objects, landscapes, buildings and intangible cultural heritage.

For example, indigenous leaders and policymakers see cultural heritage as foundational to social outcomes such as health, confidence and inclusion. This is supported by evidence for the social value of engaging with collections including learning outcomes for young people, fostering cultural equity and helping former veterans deal with post-traumatic stress syndrome.

Caring for cultural heritage also has environmental benefits. Repairing, mending and reusing things reduces the waste generated through discarding textiles or demolishing older buildings. Indigenous cultural knowledge relating to burning, land management and the natural environment can improve environmental outcomes, whilst repairing older buildings can contribute to decarbonisation.



Questions of what matters and why and to whom are central to conservation practice.

Economic benefits also flow from conserving cultural heritage; a UK study recently concluded that the sector contributed more to the economy than defence or aviation. Large technology attractions such as preserved railways or historic aviation displays can deliver jobs and spending in a region, whilst culture and heritage visitors stay longer and spend more than other visitors.

Such data is the starting point for considering cultural heritage in wider public policies. In the UK DCMS is developing a culture and heritage capital model that seeks to monetise heritage assets (including collections) and the value of conserving them to give weight to heritage conservation in economic appraisal.

In Wales culture is one of seven well-being public policy goals, so the latest Welsh transport policy includes a policy on conserving heritage in transport projects.

In Australia, there are moves to consider the embodied energy in existing buildings within building energy calculations, which in turn will create more incentives for retrofitting, conserving and repairing existing buildings.

If we are going to make the case for spending money on conservation or give weight to cultural heritage in wider land-use planning decisions, we need to be better at recognising, reflecting and realising the wider public value of heritage conservation.

Acknowledgements

Thanks to Australia ICOMOS and the University of Canberra for their support for this project.

Author biography

Kate Clark is an industrial archaeologist with a career in museums and heritage in Australia and the UK. She is the author of 'Informed Conservation' and has a special interest in the public value of caring for cultural heritage. She is currently a PhD student at the University of Canberra.

A sedimental journey: developing and strengthening conservation involvement in the Geoscience Collections at the Australian Museum

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The Geosciences collection has historically had limited interaction with the conservation department at the Australian Museum. This situation is not unique within the Life and Geoscience departments at the museum as the role of conservation and our ability to support and assist collection staff in caring for these collections is not always understood. As such our specialist expertise and knowledge in this area is not always accessed or utilised when collection care is required. In these situations, conservators must sometimes advocate for and demonstrate the benefits of our involvement in the ongoing care of natural science collections.

The development of a new permanent gallery at the Australian Museum focusing on our significant mineralogical collection, provided the catalyst for the Natural Science Conservation team to begin working closely with the Geoscience collection and to develop and strengthen working relationships with collection staff. An off-site trip to Bathurst, to pack and return partof the collection to the Australian Museum site in Sydney, provided an early opportunity to work alongside collection staff, develop strong and trusting working relationships, and instigate two-way learning between our departments. The mineralogy collection staff are subject matter experts and have significant knowledge of the specimens in their collections. Their willingness to share their expertise with the conservation team provided valuable information about the properties and terminology specific to different specimens. This aided our ability to process the specimens and helped expand our appreciation of these incredible natural wonders.

These strengthened relationships with collection staff helped build a united voice when advocating for collection care despite the stress and time pressure of a gallery installation. The ongoing and enhanced care of our Natural Science collections is crucial and can only be achieved through the development of collaborative working relationships. While there is still work to do in communicating the importance and value of conservation in the care of our vast science collections, projects such as this offer a case study for the benefits of building strong collaborative relationships to achieve long term preservation goals.

Author biographies

Sophie Phillips is a Natural Science conservator at the Australian Museum. She is a graduate of the master's program from The University of Melbourne, where she specialised in objects conservation. Sophie works with the Senior Natural Science Conservator across numerous projects to ensure the highest level of collection care.

Sheldon Teare is Senior Conservator Natural Sciences at the Australian Museum. He holds a Masters in Cultural Materials Conservation. Sheldon has worked as a specialist Natural Sciences conservator for over a decade. His interests lie in best practices for collection care, fluid preservation, specimen preparation, and education.

150 candles: Planning for the use and preservation of the Cape Bowling Green Lighthouse beyond its 150th birthday celebrations

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Emma Hayles
Inger Sheil

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Lighthouse on Cape Bowling Green spit, 8 Apr 1875. Image: Illustrated Sydney News

The Australian National Maritime Museum is busily preparing for the 150th birthday of the Cape Bowling Green Lighthouse and the tool helping us to cut the cake is a Conservation Management Plan (CMP). Beginning its life on a sandy spit 70km south of Townsville in July 1873, the lighthouse found its way to Darling Harbour and the museum's waterside in 1994.

After 30ish years, like so many permanent exhibits, its appeal has been taken for granted and the light that once boasted 64,000 candle power had lost some of its glow. Not having adapted its interpretation and without an organised program of maintenance and renewal, the lighthouse not only faced irrelevance, but deterioration risked its structure and the safety of visitors. The need for an organised approach was obvious and, through the efforts of museum conservators and curators, a CMP was born. The process of drafting this document forced us to organise our thoughts, articulate the significance of the object, assess the tolerance for change of its components and adopt an ethical approach suitable for a functional object.

Cape Bowling Green lighthouse: disassembly, transportation and reassembly. Images: Ove Arup

Cape Bowling Green lighthouse: disassembly, transportation and reassembly. Images: Ove Arup

Through the CMP, we began to plan our efforts in a coordinated way, replacing the previous cycles of reactive works followed by periods of neglect. The use of the lighthouse now better supports the aims of the museum and we are able to more easily attract the resources necessary for its preservation. For our lighthouse, the CMP is the gift of a brighter future.

Author biographies

Nick Flood is never more at home than when his hands are dirty, and as Senior Conservator – Special Projects at the Australian National Maritime Museum he is frequently up to his elbows. Nick has conservation expertise in metals, functional objects, maritime archaeology and photographic documentation.

Emma Hayles started her career in conservation in 2018 as an archaeological conservator. Since then, she has worked with ICS in Melbourne, Grimwade Conservation Services, and the Powerhouse Museum. Now at the Australian National Maritime Museum, Emma is accustomed to working on a variety of materials from archaeological assemblages to 3-dimensional objects.

Inger Sheil is Assistant Curator, Major Exhibitions at the Australian National Maritime Museum. Her work includes content development focusing on Australian-USA maritime links, ocean liner technology and culture, and Australian lighthouses. She has a special interest in the history of the mercantile marine, Antarctic exploration and the development of swimwear.

The evolution of the management of Vietnamese refugee vessel – *Tự Do*

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Jeff Fox

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The Australian National Maritime Museum acquired the Vietnamese refugee vessel *Tự Do* in 1990. Located primarily on the museum's waterfront, the vessel was maintained as a functional object and made available for events and education programs. The nature of *Tự Do's* construction materials combined with its location in a working harbour made it difficult to maintain, leading the museum to reassess its approach in 2019.

After a two-year scoping and research process, the museum decided to relocate *Tự Do* to a land-based display. This reflects the museum's commitment to preserving the vessel as part of the National Maritime Collection and its dedication to sharing the vessel's historical significance with visitors.

The complex process of preparing the vessel for display inside the museum commenced in October 2021. Despite the additional complications of the COVID lockdowns, the vessel was lifted from the water and transported to an outdoor location on the museum site. The work is guided by the Tự Do management plan. The museum's Conservators and Shipwrights are working closely together to ensure the structural components of the ship remain intact while using conservation treatment processes to slowly dry and retain the shape of the vessel.

Tự Do (Vietnamese Refugee Vessel) during conservation treatment to complete structural repairs and control moisture evaporation. Image: ANMM 2022.

Plans for the management and interpretation of Tự Do continue to evolve. This includes adapting to the change in the vessel's location, reflecting the expectations and attitudes of today's visitor, as well as considering recent developments in conservation and technology. The primary objective remains, to realise the museum's commitment to the long-term preservation of such heritage objects for future generations.

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Author biographies

Agata Rostek-Robak has well over 30 years of experience of working in conservation, having studied Conservation at the University of Canberra. While she has broad skills and experience, collection conservation and management has always been her passion. Agata is currently the Manager, Conservation at the Australian National Maritime Museum.

Jeff Fox has over 10 years of experience working across private and institutional sectors in Australia and internationally. Jeff is currently Senior Conservator, Collections at the Australian National Maritime Museum. He enjoys planning and leading conservation activities related to the museum's national maritime collection, preventive conservation, and outgoing loans.

Preservation vs. Access: the role of visible storage at Arts Centre Melbourne

Samantha Hamilton

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Visible storage is said to have originated from 'cabinets of curiosities' which flourished in Europe from the late 15th century. These cabinets, also referred to as Wunderkammer or 'cabinets of wonder', are examples of preservation and access to a collection of diverse materials. Since the proliferation of museums and galleries, there has been an ongoing tension between preservation and access resulting in the creation of exclusive spaces for storage and exhibition. This has resulted in approximately 95% of collections being kept in storage, often facing preservation issues and with very little public access.

Visible storage has therefore incorporated opportunities to increase public and community access and has been related to theories of democratising and decolonising museums and galleries. Visible storage has also been linked to access concepts of sustainability, equity, inclusion and diversity. However, it has raised access challenges such as the need for additional visitor interpretation and interaction with further information. Visible storage has provided preservation opportunities including the ability to reorganise, rehouse, document and treat objects. It has also created issues such as increased deterioration risks and resourcing needs.

This paper will present and discuss the preservation and access considerations and outcomes of visible storage within Arts Centre Melbourne (ACM)'s new storage, research and education facility. The Australian Performing Art Centre (APAC)'s Reveal project has increased storage, built ACM's first ever conservation lab, created an internal street for access programs and many other outcomes. It has also increased preservation and access to the APAC collection within the greater Melbourne Arts Precinct Transformation project.

Author biography

Samantha Hamilton is the CEO of Rock Art Australia, a not-for-profit organisation committed to bringing science and First Nations cultural knowledge together to advance the understanding of Australia and its ancient beginnings. In previous roles she was the Head of Collections, Preservation and Access at Arts Centre Melbourne and spent over 16 years working in various conservation roles in national and international institutions and in private practice.

The ABC Method of risk management: an effective tool for analysing risks

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As resources shrink and collections grow in diversity and size, heritage professionals confront new challenges in making effective decisions and establishing priorities for preserving and managing collections. Conservators face questions about which criteria best align with collection priorities? What is the most efficient use of resources? How can we plan for the future?

This presentation shows the implementation of the ABC Risk Management tool at the House of Representatives, Brazil. This system, created by ICCROM, Netherlands Cultural Heritage Agency and CCI, provides heritage professionals with criteria and information to address preservation challenges more holistically. It allows for efficient collection surveying and reporting, taking into account significance and relative risk, streamlining interpretation of data, improving stakeholder communication, and supporting more assertive long-term preservation actions.

Scenario

The Chamber of Deputies boasts a large and nationally significant collection related to the legislative history and cultural memory of Brazil. It is composed of library books, manuscripts, rare books, audiovisual materials, museum items and oversized artwork panels from Athos Bulcão, Oscar Niemeyer and Emiliano Di Cavalcanti. Since its beginning, the preservation service faced many problems, most of which related to poor support and credibility, lack of reliable knowledge of the Institution's collections and related problems, and inappropriate or ad hoc approaches to these preservation issues in the absence of effective teamwork.

Action

In order to effectively face the crises of the modern world, it is crucial for conservators at collecting institutions to employ the most appropriate tools in identifying risks, managing priorities and using resources efficiently and assertively. The ABC Risk Management methodology allows managers to understand and approach problems as they relate to the whole collections or storage areas (Michalski & Pedersoli 2017). Conservation decision-making can take into account priorities for preventive actions in a well-founded and transparent way, dramatically improving preservation outcomes, enriching reportable data and improving project accountability to stakeholders.

Methodology

The risk management tool is based on three steps:

1. Identification
2. Analysis, and;
3. Evaluation of the risks

Each step generates a numeric indicator on the ABC scale, which is used to quantify the magnitude of risk to each asset or asset group. This data can then be assessed or weighted according to collection significance.

The ABC survey method is based around the Ten Agents of Deterioration (Canadian Conservation Institute 2017), their causes, mechanisms and propagation routes. Data collected during the analysis stage is then evaluated and risks calculated, enabling the creation of reports and Magnitude of Risk graphs, where risks were represented by their levels, frequency and items affected, from largest to smallest (see fig 2).

Results

With the ABC Methodology, relative risk is assessed holistically and in context, with compensation allowed for different material types, agents of deterioration, frequency and severity of risk. Raw data is fed into ICCROM's free online tool, the ABC Risk Management System for Cultural Heritage, which generates comprehensive graphs and reports relating to risk across all storage areas and collection groups (see fig. 1). This allows for quick identification of priorities and areas most at-risk, relative to their overall value within the collection.

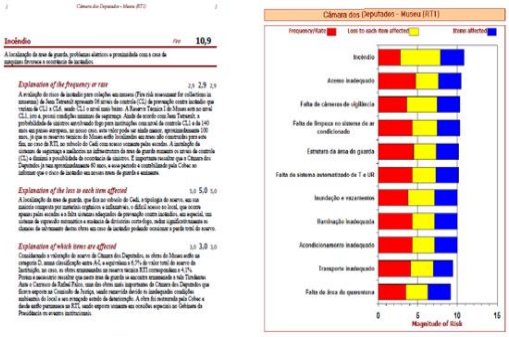

Figure 1. Visualisation of relative risks to collections. Each bar represents one of the agents of deterioration, considering the frequency or rate of occurrence (red), projected loss to each effected object (yellow), and extent of collection effected (blue). The residual score presents its magnitude of risk.

The tool can be used for assessing whole collections or individual objects. When paired with significance assessments, it will provide a more comprehensive result, as it can be evaluated against key attributes related to the assessor's strategic mission, objectives and policies, such as historical, social, artistic or monetary values, as well as rarity, context and provenance. Significance data is used to generate a 'value-pie' (fig. 2), which clearly visualises relative importance of all components as a percentage, such that they can be weighed against their relative risk.

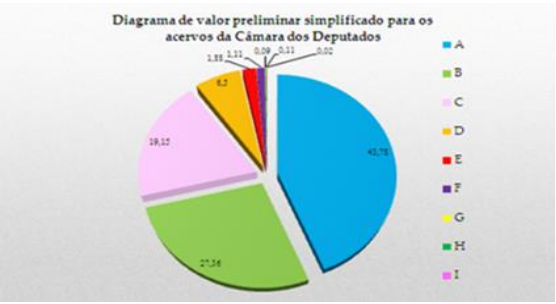

Figure 2. Value pie, where each slice represents a grouping of objects weighted by significance, quantity, and other relevant values according to its overall value (as a percentage) within the broader collection.

Conclusion

As conservators in charge of collection care, it is our responsibility to reflect critically on our procedures in use, and seek new forms of management and communication that will contribute to improved preservation outcomes.

The Brazilian Chamber of Deputies Preservation Team's adoption of the ABC Risk Management Methodology demonstrates its transformative power in the short-, medium- and long-term. The ability to present reliable data relating to risks through graphs and numbers promoted better communication with managers and stakeholders, leading to increased resourcing, creation of new projects and upgraded storage areas. On a broader level, it also facilitated greater knowledge and understanding of the collections and the problems raised by the Preservation team, contributing to better relationships and long-term preservation outcomes for the collections.

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Author biographies

Jucara de Farias is the Senior Conservator Paper & Textiles at the National Museum of Australia. For more than 18 years, she was the Preservation Manager of the House of Representatives, Brazil where she oversaw the implementation of the ABC Risk Management tool, observing excellent preservation management outcomes. She has since promoted the ABC methodology at seminars in Brazil and other countries.

Daniel Bornstein is a conservator at the National Museum of Australia, with broad experience across paper, photographs, textiles, and functional objects. He has worked in private collection/archive management, photography, 2D/3D heritage digitisation, and fine art printing. He is an assistant editor with the AICCM Bulletin.

Collection hazards and control banding at the Australian War Memorial

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The Australian War Memorial's collection contains a wide range of items that are potentially hazardous to human health. Some are inherently hazardous due to their material composition, some have been made hazardous through the application of or their association with hazardous substances, some become hazardous due to deterioration or changes in their condition, and some were intentionally designed to be hazardous!

Factors that affect the level of risk include:

- the physical and chemical state/condition of the item or hazardous component
- the potential hazard exposure pathways
- how accessible or contained a hazardous component/constituent is within the item

The hazards in our collection have long been acknowledged. Various methods of documentation and labelling of both the hazards and risks present, and the controls put in place, have been employed. This evolved into using the Collection Management System (CMS) to record information regarding hazards associated with a collection item. Where legislation required a register of a particular hazard to be maintained (ie. radiation and asbestos) the CMS fulfilled this role for collection items. However, the list of other hazard type terms continued to expand as new hazards were identified. This resulted in somewhat inconsistent terminology and an ever more complex array of hazards for which controls were required.

At the Memorial, collection hazards are now managed, in accordance with relevant legislation and regulations, under the aegis of a *National Collection Hazard Management Plan* with a defined focus on being 'hazardous to human health'. In addition to laying out a framework for the management of collection hazards, the plan directs workers to a variety of Standard Operating Procedures (SOPs), task-specific workflows, and hazard-specific management plans.

As part of this move toward holistic management of collection hazards, the Memorial is introducing a control banding approach that prioritises the control measures required to ensure worker safety for general handling (movement and viewing). Control banding, at the Memorial, does this by grouping hazardous items according to the risk-mitigating controls they share in common so that workers do not need to know exactly what the hazard or risk is to be able to implement adequate controls for their safety during handling. This is particularly relevant to a collection and workforce as large and diverse as the Memorial's.

As a result, the previous multitude of CMS hazard types have been categorised under six broad classes:

- asbestos
- chemical/biological
- electrical/mechanical/laser
- flammable/explosive
- ionising radiation
- distressing material

Comprehensive risk assessments for general handling have been written for each of the hazard classes to identify the likely risks, exposure pathways and therefore what control measures are required, for safely handling collection items containing these hazards.

Each hazard class is therefore further divided into four *Control Bands*; titled NIL, LOW, MEDIUM and HIGH, which specify the level of controls required for that hazard class during general handling, noting that a collection item may fall into multiple hazard classes and require multiple control bands. The 'distressing material' class is not divided but remains a single band of controls for a worker to consider, as this is dependent on the individual worker rather than being so universally prescriptive.

Control Bands are assigned and recorded in a *Hazard Record* on the CMS, where the instructions detailing their controls auto-populate upon selection of a control band. *Hazard Records* also include the status of the hazard (eg. suspected, confirmed or not found) and any additional information where known (eg. details of the hazard, analytical results and any item-specific controls). This provides workers with instructions on what control measures are needed to undertake their work safely.

To further empower workers at the Memorial a *Hazard Reference Tool*, based on object-type and context, has been created to assist all workers in the identification of collection items that may contain hazards and the control band to which they should initially be assigned.

This reference tool takes a conservative approach to risk and, in most instances, will see suspected hazards assigned to the appropriate HIGH control band, one of the controls for which is that a designated Materials Specialist will then carry out an assessment of the item. The Materials Specialist will then re-assign it to the appropriate control band for future worker interaction, possibly after mitigation and recording any additional item-specific controls in the CMS.

Activities other than general handling, such as interventive conservation treatments and the loan or display of items, still require separate risk assessments, however workers conducting them will now be better informed by the existing general handling control band risk assessments. Most importantly *Control Bands* provide accessible, clear and useful instructions that greatly enhance the safety of workers in the majority of their day-to-day interactions with the collection.

Acknowledgements

We would like to acknowledge the following colleagues for their contribution to hazards management and control banding at the Memorial; George Bailey, Cathy Challenor, Sarah Clayton, Ainslie Greiner, Laura Kennedy, Eliza McKenna and Principle Occupational Hygienist (Robson Environmental) Nicola Power.

Author biographies

Alana Treasure has been the Senior Conservator, Paintings at the Australian War Memorial for 15 years. In time spent acting the Conservation Manager role, she found an interest in hazards in the collection and is currently getting back to her science side as the Project Manager for Hazardous Chemicals Management addressing both commercial chemicals for use and those found in the Memorial's diverse collection.

Jessie Firth has worked at the Australian War Memorial for over 20 years recently becoming Senior Conservator, Textiles. Prior to this she was seconded to the Memorial's Hazard Management Project. Her early interests in historic costume, design and chemistry have morphed into research on asbestos in gas masks, mercury in felt, and the implications of the deterioration of 20th and 21st century textile polymers.

Andrew Schroeder has specialised in the conservation of technology at the Australian War Memorial for over 20 years, and been a Radiation Safety Officer there since 2015. He has worked extensively in the identification and remediation of radioactive and radioactively contaminated material, explosive ordnance, loaded antique firearms, asbestos, and the development of practical approaches to managing collection hazards.

Eileen Procter (FIIC) has recently taken up the position of Friendly Neighbourhood Senior Conservator, Preventive, Hazards and Analysis; a position that incorporates her love of Science! with her knowledge of hazardous materials garnered from 20 years working at the Australian War Memorial. Her previous engagement at the Australian Institute for Aboriginal and Torres Strait Islander Studies has given insight into distressing materials – a recent classification at the Memorial.

Deadline 2025: a catalyst for change at the National Gallery of Australia

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The National Gallery of Australia opened its doors in 1982 with an expansive collection of modern art, some of the notable works in this early collection include Jackson Pollock's infamous *Blue Poles* and Williem de Kooning's *Woman V.* Perhaps lesser known, alongside these early works, the National Gallery was collecting pivotal audio-visual works of art on film and magnetic tape by prominent Australian and International artists. This early interest in audio-visual works of art continued into the 21st century and the National Gallery now holds an audio-visual art collection of roughly 400 titles, nearly half of which were originally supplied on film or magnetic tape.

Since the early 2000s the National Gallery has been caring for the analogue collection alongside other institutions across Australia. This has included multiple rounds of migration, advocating for physical and digital storage, implementing a Digital Asset Management System, and establishing policies and procedures for audio-visual art.

In response to the National Film and Sound Archive's 2015 discussion paper Deadline 2025: Collections at Risk, the NGA began digitising their analogue collections. Using the Deadline as a catalyst for change, the National Gallery built on the work of the 2000s to develop workflows, documents and procedures that greatly influenced the care of the now increasingly digital collection. As we approach 2025, this presentation will discuss the complexities of digitisation at an institutional level. It will also reflect on the obstacles and successes that ultimately lead to the implementation and refining of policies and procedures.

Author biography

Alysha Redston is the recently appointed Conservator for objects and time-based art at the Museum of Old and New Art, Mona. Prior to this position Alysha worked at the National Gallery of Australia in multiple roles including Time-Based Media Conservator, Object Conservator and Conservation Technician. Alysha graduated with a Masters in Cultural Materials Conservation from the University of Melbourne in 2017, and a Bachelor with Honours in Art History and Curatorship from the Australian National University in 2015.

Te Papa's National Time-Based Media Art Capability Building Project

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The Museum of New Zealand Te Papa Tongarewa have developed a National Time-Based Media Art (TBMA) Capability Building Project for 2023, aiming to strengthen the long-term care and preservation of the national collection of time-based media art. The project has an internal Te Papa-focused component and an external outreach component that aims to build capability across New Zealand's gallery and museum sector.

The internal capability project has five key focus areas: review, policy and procedure development, collection management, education and strategy development. Te Papa are conducting an audit of the TBMA collection and refining their definition of time-based media. The project will draw on expertise from staff across Te Papa, partnering with Asti Sherring, Manager of Changeable and Digital Collections at the National Museum of Australia, and Rose Cangadis-Douglass, who has joined Te Papa in the role of Time-Based Media Art Assistant Conservator. Partnering with the National Museum of Australia is enabling both institutions to develop key shared terminology, expand Digital Preservation practices, and work on common time-based media challenges.

The national outreach component will be achieved through a series of workshops aimed at institutions that collect time-based media artworks in both metropolitan and regional centres. The workshops will provide the opportunity for discussion of real-world challenges and opportunities; aiming to foster a national community of practice around the preservation of time-based media art in Aotearoa New Zealand. This lightning talk will give an overview of the project and progress since the beginning of the year.

Rose Cangadis-Douglass and Asti Sherring at Te Papa Tongarewa

Author biography

Rose Cangadis-Douglass is the new Time-Based Media Art Assistant Conservator at Te Papa, a position created for the National TBMA Project. Since graduating from the Grimwade Centre in 2018, she developed her speciality in Audiovisual Conservation at the National Film and Sound Archive, and has a keen interest in media obsolescence.

Dynamic objects, evolving collections: a new approach to changeability at the National Museum of Australia

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The museum is in a moment of transition. The digital revolution has disrupted the archetype of the 20th-century museum. We are moving from a place of tradition and contemplation into an active space, driven by experience and both in-person and virtual connectivity. This transition is driven by cultural changes in the present day which are increasingly mediated by technologies with the ability to engage human senses in different ways, therefore creating new connections (Sherring 2020).

In contrast, historically, the museum has been grounded in the indexical belief of the permanent object-hood of its collections. The conviction that a cultural heritage object, once within the care of the museum, should maintain its authenticity by 'staying the same' impacts all future decision making related to the care, management, and display of collections. This has led to the development of a negative paradigm, in which the concept of change is understood primarily as deterioration; an event or action that results in the loss of authenticity. The fourth industrial revolution is progressively blurring the lines between physical, digital, and biological spaces and therefore disrupting the archetype of the museum. Consequently, the role of cultural stewards "to define, describe and prolong the existence of cultural material" (Wain and Sherring 2021) also needs to change – in response to and anticipation of – these societal shifts.

Since early 2022 the National Museum of Australia has been undertaking the Changeable Collections Project, which identifies both the thinking and activities required to acquire, manage, and make accessible changeable and digital collections. The long-term goal of this program is to develop and implement a philosophical approach that applies to all NMA objects and will support new ways to collect, manage, preserve, and activate the Museum's collections.

Changeable heritage is defined by the necessity of an object to adapt, evolve, and transform its tangible and intangible states over time as an intrinsic part of its survival and continuity. The concept of Changeable heritage contrasts with the notion of static or fixed cultural heritage objects, which remain unchanged and preserved in an original form or a preferred authentic state. This approach acknowledges that culture is not something static and unchanging, but rather a vibrant and adaptive force that is reflected in the continual evolution and expression of the cultural heritage objects in our care.

Acknowledging the changeable nature of cultural heritage is crucial for ongoing preservation and activation within a museum environment. Despite Changeable and Digital Collections being ubiquitous, collecting in these formats has not been a priority and has often been overlooked as part of an assessment or occurred sporadically. Further, a lack of integration between digital platforms and systems used to manage digital collections and collection information is impacting the Museum's ability to create meaningful connections with their audiences. By viewing NMA objects through a lens of change we will enhance our understanding, management, and care of collections by ensuring that our collections can develop, evolve and remain significant as time, contexts and audiences change. These re-evaluations inform new decision-making paradigms and provide theoretical underpinnings for approaches that permit change in the material of the object to preserve authenticity in the experience of the

object. Authenticity can be seen to lie not in keeping things the same, but in understanding how and why things have changed (Wain & Sherring 2021).

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Author biography

Asti Sherring is the Manager, Changeable and Digital Collections at the National Museum of Australia. Asti held the position of senior time-based art conservator at The Art Gallery of New South Wales between 2015-2020. She has also worked at institutions such as Los Angeles County Museum of Art, University of Newcastle Special Collections Library, National Archives of Australia and Museum of Contemporary Art, Sydney. Asti is currently undertaking doctorate research at Canberra University.

Reframing musical instruments as time-based objects and changeable heritage to facilitate their care in collections

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Musical instruments in collections that remain silent are at risk losing of their intangible meanings and interpretation potential in addition to aspects of their physical structure and acoustic integrity. ICOM's International Committee of Museums and Collections of Instruments and Music (CIMCIM) defines musical instruments as *"objects that have been created in order to generate sounds"* (Birley et al. 1998, p.2). Although many Australian collections house musical instruments, few have frameworks in place for balancing their: physical, historical, cultural, acoustic and analytical significances, impeding access, use and the holistic preservation of their tangible and intangible meanings. Reframing musical instruments as changeable heritage allows them to shed the constraints of a *'single authentic state'* (Sherring 2023), thereby enabling their activation and fulfilling their purpose as vibrant sources of cultural expression and engagement. Therefore adopting frameworks around the care of Changeable and Time-Based objects could facilitate the preservation of musical instruments' tangible and intangible meanings more holistically.

As conservators strive to engage with the nuanced challenges posed by contemporary art, new approaches and philosophical frameworks around contemporary art conservation have arisen. Scholars such as Wharton(2015), Murphy(2020), Watkins(2020) and many others have developed approaches to the conservation of contemporary art particularly with regard to obsolescence, functionality and artist engagement alongside preserving time or site specific meanings (ed. Köln 2019). Approaches to time-based art fit within this larger conceptual framework and emerged as a specific subset of contemporary art conservation philosophies. Research by Sherring and others (Sherring, Murphy, & Catt 2018, Wain & Sherring 2021, Sherring & Barnott-Clement 2021) took these philosophies and applied them to practice-based research in the management of time-based artworks in collections, providing theoretical frameworks alongside practical tools to explore the complexities around their preservation. Sherring & Barnott-Clement (2021) provide recommendations for documenting time-based art at acquisition including: recording the object, identifying replaceable or ephemeral componentry and makers' intent. By reframing musical instruments as time-based objects, their intangible significance is elevated whilst providing practical frameworks for their documentation and management. By adopting these frameworks for musical instruments, their future management is streamlined whilst considerations around their maintenance are simplified. Furthermore, this documentation encourages negotiation with allied experts who are essential for the successful management of functional collections (Scott 2015).

Emerging from this exploration of time-based collections and research with Wain (Wain & Sherring 2021) into the interrelationships between time-based objects and functional objects, Sherring developed the concept of *Changeable Collections*. Sherring (2023) defines changeable heritage as

> *an object that is dynamic, variable and relational, where change is inherent to its ongoing meaning, value and significance (Sherring 2023).*

Although Sherring developed the above definition to inform collection management approaches at the National Museum of Australia (NMA), it is directly relevant to the care of musical instruments. This paper accepts this definition and argues that musical instruments are necessarily changeable as they are dynamic, variable and relational. They are *dynamic* as most instruments

have moving parts that require maintenance to facilitate their functional requirements. They are *variable* as they have features that change within the intentional and conceptual (musical) boundaries of the object and they are *relational* as most instruments are inherently interconnected with cultural practices, and their performance is intrinsic to preserving the object's embodied meanings. She further clarifies that change incorporates appearance, condition and functionality (Sherring 2023). This is directly relevant to musical instruments as few have not experienced change in appearance, condition or functionality whilst being played to facilitate the production of sound.

This paper advocates for adopting both time-based management tools and changeable object frameworks, for the management of musical instruments. This includes the thorough documentation of the key aspects of their significance, their physical and material structure, their sound and the identification of replaceable or consumable parts at acquisition. This would clarify an instrument's significance, facilitate repair and replacement of parts, streamline access, use and recording, preserve intangible significances, whilst enhancing resources for future access, exhibition, outreach and use. Furthermore, through the adoption of the frameworks and tools most commonly used in contemporary art conservation, instrument maintenance and management may be more easily undertaken, facilitating a flexible and object specific approach that is consistent across functional, changeable and time-based collections. It concludes that collections management professionals should collaborate with curatorial teams in addition to public programming, exhibitions, digital outreach and external stakeholders such as instrument makers and musicians to ensure that the various tangible and intangible significances of these objects are meaningfully preserved.

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I would like to acknowledge Asti Sherring for her guidance and leadership in managing Changeable collections at the NMA and my NMA colleagues and managers for engaging with changeable collections and supporting my research into the use of musical instruments in museum collections.

Author biography

Jennifer Brian is A/g Manager Conservation at the NMA, PhD candidate at ANU and a practicing musician who has worked in registration, objects and preventive conservation. She is passionate about supporting emerging conservators and enabling the use of historic musical instruments in collections.

Conservation thinking outside the centre: lessons learnt from tropical Southeast Asia

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With less fixed notions of universal conservation practices, decision making in Southeast Asia has occurred between knowledge centres and at the 'points of collision'. Perhaps such 'in between' thinking has allowed for flexibility and adaptation to occur in situated contexts and a collective understanding of conservation to evolve. This talk will draw on collaborations, dialogues, and research in tropical Southeast and the activities of the APTCCARN Network (Asia Pacific Tropical Climate Conservation Art Research Network) that began in 2008. In the region we see examples of how attitudes to material permanence are culturally and climate contingent. While extreme climates and responses to HVAC and climate control have brought greater knowledge of material behaviour and biodeterioration for pragmatic, technical solutions to evolve. We further see how artists are creatively engaging with conservation dialogues and climate realities by intentionally producing archival and non-archival works and preserving installation artworks through networked performances and shared knowledge. These few examples are broad but are collective, situated and time responsive. Maybe approaches that occur at the edge and between knowledge domains, create change, sustainable actions and represent what we can learn from the 'tropics'.

Author biography

Dr Nicole Tse is a Senior Lecturer at the Grimwade Centre for Cultural Materials Conservation, The University of Melbourne and has a long-standing record of research in Southeast Asia. Her research focuses on regionally relevant conservation approaches for material culture in tropical Southeast Asia, under the auspices of APTCCARN (Asia Pacific Tropical Climate Conservation Art Research Network, www.aptccarn.com).

Keeping the intangible heritage of operating machinery alive: a fossil fuel dilemma

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Natalie Ison[1,3,4]

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Operating heritage machinery helps to maintain community engagement with older machines and the skills and lifestyles associated with them. This engagement enhances well-being for community participants, and preserves intangible heritage aspects of skill, culture and affective experience. Heritage machines, however, are powered by fuel sources that are quickly becoming heritage themselves, as are the networks and facilities that enable their extraction, production and distribution. What happens when the fossil-based fuels and lubricants needed to keep heritage machinery operating become harder to find, more expensive, or even unavailable?

The aims of this project are to put flesh on the bones of this issue – what fossil-based fuels and lubricants are currently being used and an estimate of how much per annum; what fossil carbon replacement options are currently available, or on the horizon, that might be suitable for operating heritage use; and what is the general level of awareness of the issue and plans for coping with it in the heritage machinery sector? With this information we will be better placed to work with operating heritage communities and manufacturing and distribution bodies to identify solutions that will enable people to continue to experience the sensory qualities of operating heritage and to maintain the skills and cultures associated with this type of heritage. We are also hoping that we can carve a niche for heritage machinery in the production of carbon neutral fuels.

As well as endeavouring to find a future for operating heritage machinery, this project will explore evolving ideas of the role of the conservator in preserving intangible heritage, where the traditional involvement of a conservator as a "fixer" of problems may give way to a new role as an enabler of continuity for living traditions.

Author biographies

Alison Wain trained as an archaeological conservator before discovering a passion for large technology conservation. She is now Associate Professor and Discipline Lead in Cultural Heritage at the University of Canberra, teaching materials conservation and heritage practice. Her research is focused on the challenges of preserving and interpreting engineering, industrial and science heritage.

Neil Hogg is a mechanical engineer and an expert in movable heritage. He is a past Chair of Engineering Heritage Australia, and the founder of Operating Heritage Australia, an informal association of organisations caring for operating heritage machinery of all types.

Natalie Ison is a materials conservator who has worked in a variety of Heritage and Conservation roles across both the public and private sectors. Her current role as a Collection Management Officer at the Museum of Australian Democracy is complemented by research at the University of Canberra.

Get your motor running: Revitalising the *Kara Kara* steam engine display

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When a functional display grinds to a halt not only does it highlight the benign neglect that long-term exhibits can suffer, but for the objects involved it can be terminal (Wain 2017). The steam engine from the Sydney harbour ferry *Kara Kara* was the very first object installed into the Australian National Maritime Museum building. Literally at the centre of the museum's galleries, for decades the engine quietly turned over, driven by an electric motor and the joy of visitors, see Figure 1.

However, like so many permanent museum exhibits, its ongoing contribution eventually became unnoticed. As the museum, visitor expectations and safety standards changed around it, the engine's operation and interpretation remained unaltered. That was until 2019, when perceived workplace health & safety issues led to a decision to pull its plug, leaving the engine lifeless. In 2022, the museum conservation team took responsibility for this beleaguered object and successfully worked to re-establish its rightful place at the heart of the museum. The process began by demonstrating the public's affection for the *Kara Kara* engine. During school holidays, weekly maintenance of the engine was carried out in opening hours, giving visitors a chance to witness "conservation in action" and safely see the engine in motion, see Figures 2-6.

This helped to show the value of the display to the museum and funding was soon secured to upgrade the engine's barrier and safety systems, returning it to its previous dynamic state. The long overdue investment of time and resources has revitalised the *Kara Kara* engine and ensured its preservation into the future.

Figure 1. Kara Kara Engine display. Image: A. Frolows/ANMM


Figures 2-3. Museum Fleet Volunteers Eric Deshon and Peter Baldridge. Images: N. Flood


Figures 4-6. Conservation in action and Fleet Volunteers with conservation intern Annabelle Williams. Images: N. Flood

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Acknowledgements

Peter Baldridge and Eric Deshon, Fleet Volunteers, Australian National Maritime Museum; Alix Fiveash, Social Media Producer, Australian National Maritime Museum; Megan Baehnisch, Digital Education Project Officer, Australian National Maritime Museum.

Author biography

Nick Flood is never more at home than when his hands are dirty, and as Senior Conservator – Special Projects at the Australian National Maritime Museum he is frequently up to his elbows. Nick has conservation expertise in metals, functional objects, maritime archaeology and photographic documentation.

Pulse lasers to clean the Sydney Harbour Bridge

Julia Brand [1,2]
Alison Wain [1]
Steve Madden [2]
Andrei Rode [2]
Penelope King [2]
Ludovic Rapp [2]

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The conservation of cultural heritage requires innovative methods that protect and preserve the past while acknowledging the present and preparing for the future. Laser cleaning has emerged as a popular approach for restoring and maintaining heritage materials, and has significant environmental advantages over traditional cleaning methods, as it is powered by electricity, does not require chemical cleaning agents or mechanical abrasives, and results in a significantly reduced waste profile.

Traditional nanosecond and microsecond pulsed lasers, however, can cause undesirable damage to the substrate due to heat and shock wave propagation, such as melting and cracking, which can, in time, lead to further alteration. The development of ultrafast femtosecond pulse lasers has opened new possibilities for non-destructive cleaning. With pulse durations in the femtosecond range, those lasers rely on the electrostatic breakage of molecular bonds with minimal heat load, in a process often referred to as "cold ablation".

This presentation explores the application of femtosecond pulse lasers for cleaning the Sydney Harbour Bridge's pylons and arch, which are made of heritage stone and steel. By comparing the results with those obtained using a popular nanosecond pulse laser, we demonstrate the potential of femtosecond lasers for minimizing undesirable damage to the original materials.

We highlight the limitations of traditional laser cleaning methods and recognize the need for innovative solutions that minimize damage to heritage materials. Through our exploration of the potential of femtosecond lasers, we prepare for a future where heritage conservation is more effective and sustainable.

Author biographies

Julia Brand is a PhD student at the Faculty of Art and Design at the University of Canberra. She is working on the Sydney Harbour Bridge Project. Her research interests include lasers applied to conservation, analytical science, cultural heritage, and art.

Alison Wain trained as an archaeological conservator before discovering a passion for large technology conservation. She is now Assistant Professor and Discipline Lead in Cultural Heritage at the University of Canberra teaching materials conservation and heritage practice. Her research is focused on the challenges of preserving and interpreting engineering, industrial and science heritage.

Steve Madden is a Professor currently leading research on Chalcogenide, Tellurite, and polysiloxane integrated optical devices at the Laser Physics Centre of the Australian National University (ANU). His research career in fibre & integrated optics spans much of the period from 1984 to the present in start-ups, multi-nationals, and academia covering a diverse range of areas of physics.

Andrei Rode is Emeritus Professor at the ANU. The research interests are in short-pulse laser-matter interaction, laser processing of materials and laser cleaning of surfaces, laser-induced phase transitions and transient states of matter, laser-produced nanoclusters and their properties, laser trapping of particles in air, and related phenomena.

Penelope King is Professor at the ANU in the Research School of Earth Sciences where she currently leads a research group using remote, micro-analytical and experimental techniques to study the behaviour of planetary materials. She leads the SPEC-E laboratories: Spectroscopy, Characterization and Experimental Lab and worked on NASA's Mars Science Laboratory mission.

Ludovic Rapp is a Senior Research Fellow at the ANU and the group leader of the High-Power Laser Group at the Laser Physics Centre (LPC). He has a strong background in ultra-fast laser interaction with matter, ultra-fast micromachining, and expertise in beam shaping. His research work at ANU is on developing the femtosecond laser cleaning technology.

‘Flat or Fabulous’: modern 3D imaging techniques in cultural heritage documentation

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As advances in computing and technology bring three-dimensional (3D) imaging within easy reach, many heritage practitioners have identified as ‘3D-curious’, turning their thoughts or hands to experimentation in its use for condition documentation or even digital surrogation of cultural materials in collections. Of particular interest to heritage practitioners are techniques which utilise photographic equipment readily available in most labs.

Photogrammetry and RTI

Photogrammetry is a broadly supported and financially accessible 3D imaging technology which, with minimal training, can yield good results for geometric form capture. It uses ‘structure-from-motion’, where shape is extrapolated through analysis of perspective divergence, similar to visual parallax. Textured surface maps can be generated from photogrammetric scans, providing pseudo-photographic records of surface details mapped to 3D meshes which are sufficient for virtual reality or animation rendering in static lighting. From the conservator’s perspective however, the lack of high-frequency surface detail means that photogrammetrically generated 3D meshes do not provide sufficient information to truly document condition of “2.5 dimensional” planar surfaces, such as paint impasto, woodgrain detail or surface distortion.

Documentation of such surfaces can be achieved using reflectance transformation imaging (RTI), a ‘structure-from-shading’ technology which analyses discrepancy in shadow projections from different lighting angles to determine surface topography. Developed within the heritage field, the technology is effective but dependent on software which is not frequently updated or broadly supported outside the heritage industry, and assets generated are not readily compatible with mainstream 3D asset formats.

Comparison of texture detail from a) photogrammetric model and b) photometric stereo model—note that detail in a) is static, and does not respond to simulated light sources, while b) is dynamic, and able to simulate responsive texture and shadows. Artwork repr. w. permission: Ramsay, Hugh, James S. MacDonald, 1901*, Gift of Mrs J.O. Wicking, 1947, Univ. of Melbourne Art Collection.*

Photometric stereo, hybrid assets

This research examines the use of photometric stereo, another 'structure-from-shading' technique developed and adopted by the gaming and animation industries. Simpler and more versatile than RTI, photometric stereo uses 10-20 images taken at a single elevation to quickly capture high-frequency data with submicron accuracy, sufficient for digital surface reproduction with simulated lighting.

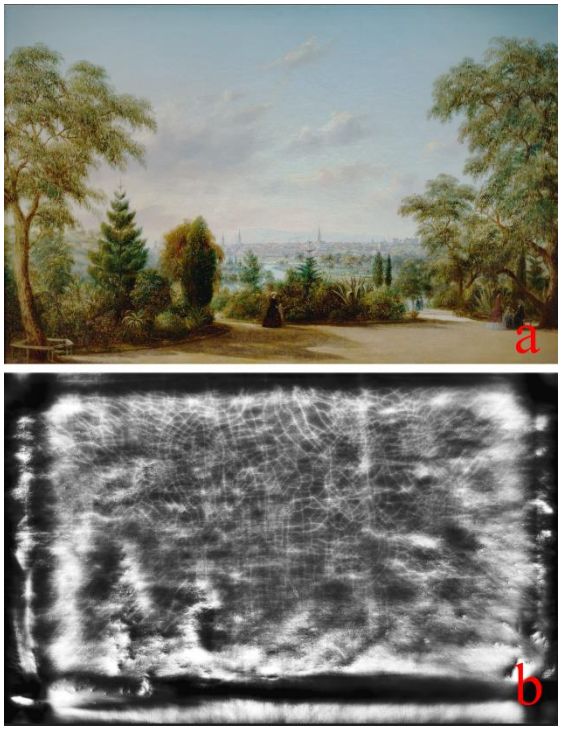
Critically, normal maps and surface height-map data generated through photometric stereo can be combined with photogrammetric models to create hybrid assets which contain improved planar surface detail, generating cleaner, leaner and more accurate 3D documentation. It may also be possible to generate similar hybrid assets from legacy RTI scans with Cultural Heritage Imaging (CHI)'s transition to the new RelightLab software.

Potential use-cases in conservation

Beyond documenting visual form and surface condition, a variety of specialised applications can be explored using simple data enhancements. In the case of the Henry Gritten painting pictured to the right, a simple manipulation of channels in the height map generated accurate craquelure and impasto mapping of a painted surface, highlighting the location of the canvas stretcher and documenting irregularities in the support surface which were otherwise imperceptible.

In another instance, woodcut printing blocks were imaged in 3D with sufficient detail for digital fabrication and subsequent traditional relief printing. Alternately, it was found that the photometric stereo data could be used to generate simulated relief prints through digital sectioning of the print surfaces.

With minimal training or expense, conservators can use these combined models to create comprehensive, efficient and accurate documentation of cultural materials, recording detail beyond the observational capacity of the naked eye or traditional photography. These techniques represent an opportunity to rethink conservation workflows, enabling efficient and thorough documentation of cultural heritage.



Assets generated from photometric stereo including: (a) albedo map and (b) height map, enhanced to generate a map of craquelure, impasto and canvas/strainer condition. Artwork repr. w. permission: H. Gritten, Melbourne from Botanical Gardens, 1867, *purchased through the Russell and Mab Grimwade Miegunyah Fund, Univ. of Melbourne Art Collection.*

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Author biographies

Daniel Bornstein is a conservator at the National Museum of Australia, with broad experience across paper, photographs, textiles, and functional objects. He has worked in private collection/archive management, photography, 2D/3D heritage digitisation, and fine art printing. He is an assistant editor with the AICCM Bulletin.

Thomas Keep is an archaeologist and PhD candidate at the University of Melbourne. His research focuses on digital reconstructions and virtual reality displays of rural archaeological heritage in the interest of public engagement. He has worked as a photogrammetrist on archaeological sites and materials across Italy, Israel, and Australia.

Conservation in social media: why are we doing it?

Alayne Alvis

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Since becoming mainstream 20 years ago, social media is now ubiquitous in our lives personally and professionally. Why and how do conservators "do" social media, and what do they think they get out of it. A variety of conservators using social media completed questionnaires and were interviewed about their motivations, topics, interactions and how they feel about the influence their posts have. They also discuss their expectations and strategies for the future of social media.

Author biography

Alayne studied Materials Conservation at the University of Canberra last millennium, when dial-up was a thing, ASCII ruled computer based communications and the word "app" hadn't been invented yet.

Creating conservation videos: curating content for non-conservation audiences

Lucilla Ronai

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Videos are a powerful and important way to communicate conservation information both to the general public and cultural heritage professionals. Conservation lends itself very well to video content–we are a dynamic profession that looks after cultural heritage that is visually and materially interesting, while culturally significant. Whenever we do share our work, people are captured by it. Conservation does appear in the media but it is usually other professionals creating the content. We often have no control over the content and are sometimes not even consulted. It is important as a profession that we are involved in the creation of video content about us. Furthermore, we can be the ones creating the videos or driving their creation. This means we can advocate for our roles, our workplaces, and the cultural heritage we work on. Our stories, our work and our words should be told in our voices.

This talk will explore two case studies where conservation is shared through two very different videos. It will conclude with a summary of lessons learned by creating these videos, and some considerations on how and what we communicate to colleagues and the general public.

Case Study 1: Online Induction Video at the National Library of Australia

The Collection Care team at the National Library of Australia, in collaboration with the Workforce Capability & Development and Facilities & Security teams, were tasked with creating a video to induct new and existing staff on what it means to work in a heritage building with heritage collections. It was targeted towards internal staff only and was suitable for everyone working at the Library (staff, contractors and volunteers), despite their previous experience working with heritage collections or in a heritage building. Collection Care developed the script which was reviewed and added to by other teams and stakeholders. Majority of the content focused on preventive conservation strategies and raising awareness about the collection and building. The video is currently in the process of being included in the online induction system and is soon to be released.

This video was a collaborative effort with multiple internal stakeholders and utilising skills of external professional video creators. Each step of the process was driven by the Workforce Capability & Development team and they set the schedule and were the liaison point between all teams involved. Collection Care still had a lot of control over the content through the script, shaping the shots and being involved in the editing and review process. This was a learning process on how to create conservation videos in the Library, and we hope to explore creating other videos to assist with training needs.

Case Study 2: YouTube channel focused on conservation content

In 2020 I created a conservation specific YouTube channel to reach non-conservation audiences. There were three main reasons behind this: to counterpoint extreme restoration videos that are becoming more prevalent on social media; to talk about the profession I love; and to teach myself how to make video content. Over three years I created 25 videos varying in duration (1minute to 18 minutes), purpose, style and success. Initially I created videos about collection items and treatments I was working on while at the Australian National Maritime Museum. After three videos I started creating content to answers I was recurringly getting as the general public interacted with my videos.

I had limited resources at my disposal with no budget, no team and only utilising equipment I had access to. It shows it is possible to produce conservation videos with limited resources, but it does restrict your ability to outsource tasks and enlist specialists. For the videos I was everything: the scriptwriter, videographer, director, the person in front of the camera, the editor and the sharer. I had full control over the schedule and content. The post-production part of the process was the most arduous – editing and then sharing the content on YouTube. Due to the scale of YouTube as a platform, it is very possible that you spend an incredible amount of time and effort creating videos that no one will ever watch. Despite this, YouTube provides you with a vast audience to consume your content and the potential to reach people with conservation content.

We have a responsibility when sharing our work to ensure we are representing ourselves, the profession and the cultural heritage we care for appropriately. There are also legal, cultural and professional considerations. Questions we need to ask ourselves include: how do we want to represent the profession and what should and should not we show? As individuals our answers to these questions might vary. If we are creating video content about conservation, it is necessary to develop our own protocols for this.

These two case studies created very different conservation videos. Despite the differing contexts, schedules and resources available, each video was tailored to the purpose, audience and platform it was to be shared on. Both show how diverse video communication is and how it can be adapted for conservation messages and stories. It ensures conservators are not disembodied hands shown with the object. Furthermore, it shows how it is possible for conservators to be heavily involved in the video production process. We can contribute to the script, collaborate with a professional filming company, be in front of the camera, consult during the editing stage, or do the whole process from start to end with no external involvement. It is important that we are the ones to tell our stories in our voices and in our words. In this way we ensure the profession is well represented, the information is accurate, and we can advocate for our roles, workplaces and the cultural heritage we look after.

Acknowledgements

I would like to acknowledge the team at the National Library of Australia that created the induction video used as a case study in my talk. It was truly a collaborative effort that I was lucky to be a part of.

Author biography

Lucilla Ronai is a conservator and Professional Member of the AICCM with over eight years of international conservation experience. This includes a postgraduate qualification, professional positions, and extensive professional development in Australia, the USA, China, Italy, and Ireland. She is currently a Senior Conservator at the National Library of Australia.

Conserving the essence of an artist's studio

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Brett Whiteley is undoubtedly one of Australia's most notable artists. He led a highly productive yet turbulent life, with an addictive personality that contributed towards both his success and demise. Much of his work is located and displayed at the Brett Whiteley Studio, where he both lived and worked between 1987-1992. The studio offers visitors the unique opportunity to experience the atmosphere of the space which includes Brett's unfinished paintings, reference materials, photographs, furniture, and graffiti walls covered with images and quotes.

The tumultuous extremes of Brett's life are very evident in his art, with his works on paper in particular, taking on the memory of the moment in which they were made. While traditional conservation approaches might aim to remove stains, creases, dents or other incidental blemishes or imperfections very often present in a sheet of paper, in the case of Whiteley, such approaches would result in significant meaning loss relating to the physical act of how those works were made and the mood of the artist when he made them.

This paper explores the delicate and interdependent relationship between Whiteley and his work, and key considerations when displaying works within a studio environment, which is in truth a revealing space which exposes an artist's work and practices from concept through to completion (warts and all). The paper also discusses the mindful strategies employed by AGNSW conservators to ensure the 'honest' representation of Whiteley's work which is so vital to shaping our informed understanding of his life and practice.

Author biography

Analiese Treacy is Manager of Paper & Frames at the Art Gallery of New South Wales and a Co. Convenor of the AICCM Book & Paper Special Interest Group. Analiese holds a joint Honours Degree in Art History & Italian from University College Dublin, and a Masters Degree in Fine Art Conservation from the University of Northumbria, Newcastle, England.

Clarice Beckett

Jocelyn Evans

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In 1972 Clarice Beckett's sister, Hilda Mangan, gifted a group of 24 small paintings by Beckett to the National Gallery of Australia. Although individual paintings from the group had been previously displayed, and had accordingly undergone some conservation treatment in preparation, they hadn't been approached as a group before. This presentation will discuss aspects of the group's recent conservation treatment, framing and display at the Gallery. It will also delve further into Beckett's materials and techniques as a painter.

Author biography

Jocelyn Evans has been Paintings Conservator at the National Gallery of Australia since 2013. Prior to joining the Gallery she has held positions at the Australian War Memorial, Queensland Art Gallery, Queen Victoria Museum and Art Gallery, the Straus Centre for Conservation and Technical Studies (Harvard University) and the University of Melbourne Conservation Services. With over 20 years experience in paintings conservation, Jocelyn's key interests include complex treatment pathways, and raising the profile of Australian women artists.

Clockwise from top left: Clarice Beckett, Not titled (Seascape with yacht), c 1919-1935; Clarice Beckett, Not titled (Seascape), c 1919-1935; Clarice Beckett, Not titled (Seascape), c 1919-1935; Clarice Beckett, Not titled (Seascape with boat and reflection), c.1919-1935.

Whale of a time: the care and management of hot air balloons *Skywhale* and *Skywhalepapa*

Carmela Mollica

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Textile conservators are often faced with exciting challenges when working with contemporary textiles. How have two hot air balloon sculptures *Skywhale* and *Skywhalepapa* created a challenge for Textile conservators at the National Gallery of Australia? Designed by artist Patricia Piccinni, the *Skywhales* were acquired by the National Gallery of Australia (NGA) in 2019 and 2020 respectively. They embarked on a national tour, *Skywhales: Every heart sings* in 2021.

These unconventional works of art necessitate an atypical care and management plan that has been developed and refined over the course of the multi-venue tour. The plan has been developed by National Gallery textile conservators in close collaboration with the artist and broader National Gallery team, in addition to Bristol-based balloon manufacturers, Cameron Balloons, the Civil Aviation Safety Authority (CASA) and wider Australian ballooning industry.

As part of the care management plan for these works, textile conservators are required to manage condition checks, cleaning, and drying pre and post flight to ensure the balloon sculptures remain in the best possible condition to prolong their limited 'lives'. The care and documentation of aircraft produced from 300kg or 3,500 square metres of Hyperlast fabric have presented numerous challenges, many of which are outlined in this paper.

Patricia Piccinini, Skywhale*, 2013, gift of anonymous donor 2019 through the Australian Government's Cultural Gifts Program,* Skywhalepapa*, 2020, National Gallery of Australia, Kamberri/Canberra, commissioned with the assistance of The Balnaves Foundation 2019, purchased 2020 © Patricia Piccinini. Photo: Carmela Mollica, Dunkeld, Victoria, 2021.*

Author biography

Carmela Mollica is a Textile conservator at the National Gallery of Australia. She graduated from the University of Canberra (CCAE) in 1986 with a Bachelor of Applied Science in the Conservation of Cultural Materials. Prior to joining the National Gallery of Australia (NGA) she worked at the Australian War Memorial (AWM) and the National Museum of Australia (NMA) as the Senior Paper and Textile Conservator, as well as in private practice.

POSTER PRESENTATIONS

In alphabetical order

The Strappo technique: the recent detachment and transfer of an at-risk wall painting from a cell at Fremantle Prison

Lily Bennion[1]
Alis Jitarescu[2]
Claire Rowson[2]

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Fremantle Prison is a UNESCO World Heritage site of truth telling and trauma, with great significance derived from its status as a continually operating prison from the convict era to the modern period. As a result, the heritage materials, objects and artworks associated with the place vary in age and composition, presenting unique challenges for curators and conservators alike.

In March 2023, International Conservation Services worked with Fremantle Prison to detach and transfer a deteriorating wall painting from inside a cell onto a specially designed auxiliary support, using the Strappo technique; a radical yet necessary intervention to save the painting from being lost entirely. The acrylic wall painting inside cell E51 was painted by a Prison inmate in 1988 and features a brightly coloured pastoral scene spanning across three walls of the cell. The modern paint layers of the central wall of the panoramic scene were badly delaminating due to the highly porous nature of the brick-against-limestone wall construction, moisture and soluble salts from the coastal location and the context of age and adaption.

This fascinating treatment raised several physical and ethical challenges which were overcome by interdisciplinary engagement, thorough assessment and documentation and a highly considered approach all-round. Step-by-step photographs will be used to illustrate the Strappo detachment and transfer, demonstrating the suitability of the method uniquely for wall paintings as the surface topography of the Prison wall is maintained, as is the possibility of returning the painting to the wall after further remediation of the built heritage.

Author biographies

Lily Bennion is an assistant curator at Fremantle Prison with a Masters in Cultural Material Conservation from the University of Melbourne. Based in Walyalup, (Fremantle), Lily assists with the preservation of objects in the prison collection and the historical graffiti and murals across site.

Alis Jitarescu is a senior conservator of Murals and Decorative Arts at ICS. She works with a wide variety of art techniques and materials (both organic and inorganic) and has built an extensive portfolio in artwork conservation and restoration with a strong background in the conservation of panel paintings and polychrome surfaces.

Claire Rowson is an objects conservator and senior manager with ICS. Based in Perth, she manages and undertakes technical aspects of conservation as well as all areas of project management. Her areas of specialisation include, public art and sculpture conservation, built and industrial heritage, and metal conservation and fabrication.

A harlequin pair: revealing the Sydney Punchbowl monogram

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In 2006, the Australian National Maritime Museum (ANMM) acquired an enamelled, porcelain punchbowl decorated with a historically significant panorama of Sydney circa 1820 (ANMM 2023). The ceramic closely resembles a punchbowl held by the State Library of New South Wales (SLNSW 2023). Together, the two ceramics are known as a 'harlequin pair', meaning that they are similar but not identical (Hundley 2006, p. 40). There are two key differences between them. Firstly, each vessel shows a different view of Sydney, as seen from two distinct vantage points. Secondly, in the area where the library's punchbowl proudly displays a gilded monogram, the museum's punchbowl is bare, see Figure 1.

Close investigation of the empty area using raking light shows the subtle texture of a surface design (Ellis 2013). Due to the faintly etched surface and the curvature of the bowl, it was difficult to adequately reveal details of this area using direct visual and photographic investigation, so, it was decided that Reflectance Transformation Imaging (RTI) would offer a better understanding of the surface design. RTI's strength as an imaging technique lies in its ability to reveal fine differences in surface texture and is especially useful in revealing obscured inscriptions (CHI 2023). The RTI model produced successfully confirmed the remains of a monogram on the museum's punchbowl (see Figures 2-3). Comparison of these RTI images with the library's punchbowl show clear similarities between the monograms. Results indicate that the harlequin pair punchbowls are in fact more similar than first thought.

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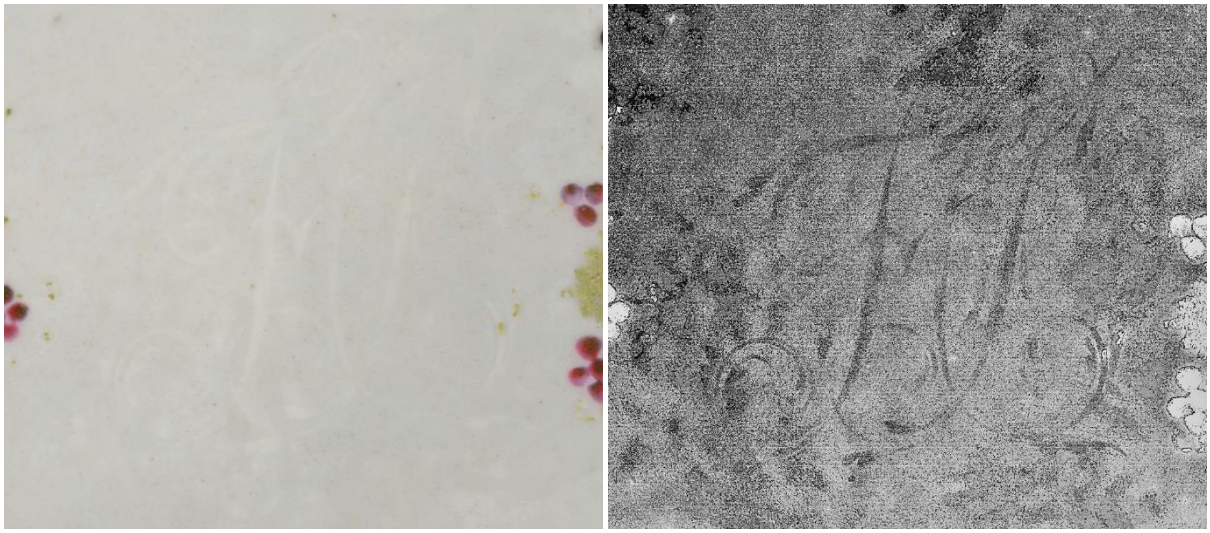
Figure 1. The Museum Punchbowl with no gilded monogram in the "V" shaped gap in the panorama. Image: A. Frolows/ANMM.



Figures 2-3: RTI model and with enhancements. Images: N. Flood/ANMM

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Acknowledgements

Jasmin Poole, Collection Digitisation Photographer, Australian National Maritime Museum; Leonie Jones, Acting Head of Digital Engagement & Insight, Australian National Maritime Museum; Mr Sno, Lead Developer, Australian National Maritime Museum.

Author biographies

Nick Flood is never more at home than when his hands are dirty, and as Senior Conservator – Special Projects at the Australian National Maritime Museum he is frequently up to his elbows. Nick has conservation expertise in metals, functional objects, maritime archaeology and photographic documentation.

Emma Hayles started her career in conservation in 2018 as an archaeological conservator. Since then, she has worked with ICS in Melbourne, Grimwade Conservation Services, and the Powerhouse Museum. Now at the Australian National Maritime Museum, Emma is accustomed to working on a variety of materials from archaeological assemblages to 3-dimensional objects.

Finding safety in notches: learnings from the use of ATR-FTIR to identify the substrates of photographic negatives

Caroline Garratt

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During the first half of the twentieth century cellulose nitrate was commonly used as a substrate for photographic negatives. Nitrate was eventually superseded by the less flammable cellulose acetate. The latter was often denoted by film manufacturers with an edge stamp of "Safety film".

The introduction of acetate did not lead to the immediate cessation of nitrate film manufacture. Early forms of cellulose acetate, such as diacetate, lacked some of the attributes of nitrate and were often considered inferior. Large scale production of triacetate was not feasible until the late 1940s. Cellulose nitrate film was finally phased out in the 1950s, but in the intervening years both types of film support were used.

The highly flammable properties of degraded cellulose nitrate require it to be treated as a dangerous substance. This has been the impetus for institutions moving to segregrate nitrate from other collections. Identifying the two film substrates has often proven to be a challenge. Not all film was produced with an identifying edge stamp. Notch codes — small indentations on the film's edge — aided photographers orientating a film in the dark and were used by manufacturers to represent a specific emulsion and film base. But the only notch codes and corresponding substrate information that are widely known are the Kodak 'V' and 'U' notches - as described by Horvath (1987, p. 52).

At the Museum of New Zealand Te Papa Tongarewa (Te Papa), segregation of nitrate was guided by a limited number of criteria: the presence of edge stamping, published Eastman Kodak notch code information, and a date range that covered nitrate film manufacture. This date range encompassed a degree of latitude as the published dates for the manufacture of nitrate film appear to be based on those for Eastman Kodak and Agfa-Ansco (Jamison 2003, p. 177). It is not clear if other contemporary photographic companies, e.g. Ilford, Defender and Barnet, followed the same time line. Where physical markers were absent, assessment erred on the side of caution. These negatives were determined as 'base TBC' (or 'base to be confirmed') and would require testing to establish the substrate type.

Process

Over recent years Fourier Transform Infrared (FTIR) spectroscopy has become increasingly used in the cultural heritage sector as a fast, safe and accurate way of distinguishing between the two film substrates. A 12-month project was undertaken at Te Papa to identify negative substrates in the Spencer Digby / Ronald D. Woolf collection using FTIR spectroscopy. The Digby / Woolf collection originated from a commercial studio that had operated in Wellington from 1931. Approximately 27% of the Digby / Woolf negatives were 'base TBC' (approximately 4,580 job bags with unknown quantities of negatives).

A Thermo Scientific Nicolet Summit X FTIR Spectrometer was used with an iD7 ATR (Attenuated Total Reflectance) accessory. The ATR accessory has a depth of penetration of approximately 2 µm. A photographic negative has a layered structure which includes a coating of gelatine, measuring approximately 2 - 3 µm, applied to the verso of the base. This gelatine layer will mask a successful reading of the substrate layer by the ATR device, and so a small

area of gelatine (approximately 2 mm) needs to be removed prior to analysis.

During the initial stages of analysis it was hoped that recording notch code data with correlating substrates could potentially lead to substrate identification without the need for testing. Research into manufacturers' catalogues was undertaken in an attempt to further support this work.

Findings

Thirteen different notch codes were encountered throughout the course of testing, with slight variations amongst each sub-group. Tracking notch codes proved to be both a help and a hindrance to progress. For example, it became evident that a notch code used for nitrate was often later adopted for acetate film sheets. Additionally, it was discovered that competing companies used similar shaped notches to Kodak but for the opposing substrate. Kodak's competitors were possibly only using notches to indicate an emulsion, not the substrate.

The majority of the negatives encountered from the 1930s period had been cut down from larger sheets by the original photographic studio and no edge area that could be used for testing remained. This meant it was impossible to discern the earliest use of acetate within the collection using the ATR accessory.

However, the project was able to successfully establish a cut-off date for nitrate sheet film within the Digby / Woolf collection. This time frame can potentially be applied to other sub-collections within Te Papa's photography collection. The result, in retrospect, could have been achieved sooner with a date-based focus to testing from the outset.

It is hoped the project's findings will be of interest to other institutions endeavouring to identify film substrates.

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Acknowledgements

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Author biography

Caroline Garratt currently works as Kaitiaki Taonga Conservator Photography at the Museum of New Zealand Te Papa Tongarewa. Initially focussed on the FTIR spectroscopy and stabilisation of photographic negatives within the Spencer Digby / Ronald D. Woolf collection, Caroline is now progressing with treatment work on different sub-collections within Te Papa's photography collection.

The art of plastics: reflecting on the Plastic Survey at the National Gallery of Australia

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The collection at the National Gallery of Australia (NGA) holds many artworks comprised of polymeric materials ranging from large scale sculptures to fashion accessories. The variety, scale, and often composite nature of these artworks present many challenges in terms of identification and long-term care. In 2004, a brief survey of polymeric materials was undertaken which highlighted artworks that were at high risk of degradation. In 2021, the object and textile conservation team began a collaborative project to assess the 2004 survey and develop a new framework for assessing what types of polymeric artworks were held in the collection, where and how they were stored, and their current condition. The aim of this new survey was to create accessible and easy to use documentation, accurately identify polymeric materials, rate the level of risk of degradation of these materials, and recommend treatment, packing, and storage options. This presentation will outline the steps taken to create the survey form, establish parameters, and the implementation of this survey. It will reflect on the progress made, which will be illustrated by case studies, and some of its successes will be highlighted, such as the use of artist surveys to understand polymeric materials. The limitations with instrumental analysis, database searches, time, and resources will also be discussed, and ways forward and the future of this project will be shared.

Author biographies

Kim Goldsmith has been an Objects Conservator at the NGA since 2017. She holds a Master of Visual Arts (University of Sydney) and Master of Cultural Materials Conservation (University of Melbourne). Kim was the 2016 International Museums and Collections Award recipient (University ofBirmingham) and has presented and published conference papers in the fields of art, design, and conservation since 2003.

Michelle Hunter has been a Textile Conservator at the NGA since 2019. She holds a MPhil in Textile Conservation from the University of Glasgow and has worked as a Conservation Assistant at Windsor Conservation, and was the 2017-2018 Postgraduate textiles intern at the Canadian Conservation Institute.

Characterisation of cultural material for conservation work at Sydney Analytical

Thérèse Harrison
Lorraine Leung

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Sydney Analytical Core Research Facility at The University of Sydney provides state-of-the-art instrumentation and technical expertise to support public and private researchers as they address their most challenging research priorities. The facility hosts a suite of high-end portable and benchtop instrumentation including Raman, Infrared and X-ray Fluorescence spectroscopy instrumentation. These non-destructive methods are well-established for the characterisation of cultural heritage objects and samples. This poster will highlight past and present projects that combined addressing conservation research questions with analytical science. It will also detail the new portable Raman spectrometer and addition of Infrared Reflectography capabilities at Sydney Analytical.

Author biographies

Thérèse Harrison is a Professional Officer, Cultural Heritage Analysis. Thérèse has a background in Fine Arts and Chemistry. She specialises in the analysis of Cultural Heritage across a number of analytical techniques including vibrational and X-ray spectroscopy

Lorraine Leung is a Professional Officer, Cultural Heritage at Sydney Analytical, the University of Sydney. She has experience working on a wide range of interdisciplinary projects with archaeological, museum and cultural material using analytical techniques including vibrational spectroscopy and X-ray fluorescence spectroscopy techniques

The *SS Orontes* ship-builders model: a relic of a past era

Emma Hayles

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A case study of the treatment considerations of a 4,200 mm long ship model. Six years shy of its 100-year birthday, the *SS Orontes* model is one of the large, long-term projects that the conservation team at the Australian National Maritime Museum have been working on. Built in 1927-29 in England, at the height of the glory days of ocean-liner steam travel, the ship-model has had a long life travelling from showroom to showroom until it arrived at the museum in 2019. Treatment so far has aimed to address multiple issues such as shattering silk rigging, lifting and broken paint, build-up of years of dirt and removal of incompatible materials. Whilst not completed, it has been through consultation with curators and ship-model makers, so that the conservator has been able to balance the aesthetic needs of the *SS Orontes* ship-builder's model with its stabilisation requirements.

Author biography

Emma Hayles started her career in conservation in 2018 as an archaeological conservator. Since then, she has worked with ICS in Melbourne, Grimwade Conservation Services, and the Powerhouse Museum. Now at the Australian National Maritime Museum, Emma is accustomed to working on a variety of materials from archaeological assemblages to 3-dimensional objects.

The conservation treatment of four Egyptian cartonnage objects

Melissa Holt

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Between 2021 to 2022 the Australian Museum Trust Fund funded an intensive treatment of four Cartonnage objects held in the World Cultures collection. Included were two masks from Sedment in Upper Egypt and another mask and foot covering from Abydos in Upper Egypt. The goals of this project were to stabilise the cartonnage objects and provide an opportunity to undertake scientific analysis on the masks.

During the initial assessments of the masks, two showed evidence of past treatments predating their acquisition in the early 1900s. There were also modern paper repairs on the inside of the masks with signs of over painting. This was an assumption based on observation as there was no documentation of any previous treatment of the masks whilst in the museum collection. This earlier undocumented treatment became a key point of interest for our scientific research. X-rays were taken and radio-carbon dating was done to also confirm the age of the cartonnage and identify the age of the paper repairs. FTIR and Raman were also used to analyse and identify the pigments on the masks. Results of these analyses will be shared in greater detail in the final poster.

During the project, a treatment was completed including remedying large cracks, reshaping areas, and attaching large fragments. Before and after photos will be included in the poster to show some of the most important repairs.

Author biography

Melissa Holt is a Conservator at the Australian Museum. She graduated with a Masters of Cultural Materials Conservation in 2019 and has worked at the Australian Museum since the beginning of 2020 to the present. Currently she is working on the large exhibitions programme occurring at the Museum.

Investigation of unknown substances from entomology collections using ATR-FTIR spectroscopy

Clare Kim

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The presence of unknown substances found within the Australian Museum entomology collections have been investigated by the use of Attenuated Total Reflection-Fourier Transform Infrared (ATR-FTIR) spectroscopy. The entomology collections currently consist of over 1.8 million specimens, which includes 5,035 primary types and 17,362 secondary types, with the oldest registered specimen dated 1850. The majority of the specimens are housed in shallow glass-lidded wooden cabinet drawers. Drawers in the older cabinets commonly have a cork-lined bases and often include fumigants such as naphthalene.

The investigation involved visual examination, microscopic examination, photographic documentation, and sampling, followed by ATR-FTIR analysis to understand the physical and chemical structure of the unknown substances. ATR-FTIR spectroscopy is a useful analytical tool for identifying unknown substances, both organic and inorganic. Knowing the substances associated with specimens is a crucial step in determining the best preservation and treatment options. Both ATR and reflectance spectroscopic techniques were explored initially. Due to the minuscule sizes of the substances, it was challenging to obtain good quality spectrum in-situ. The ATR technique proved to be more effective because small samples can be clamped in direct contact with the diamond crystal window, resulting in better spectral data.

Over 200 samples have been obtained, ATR analysed, and databased. This includes unknown substances that had formed on specimens and their enclosed collection drawers, as well as old adhesives and housing materials found within various Entomology collection stores. Results indicate the presence of fatty acids, phthalic acid, verdigris, fungal growths, naphthalene, and a diverse range of adhesives and housing materials including rubber, polyvinyl chloride (PVC), cellulose acetate (CA), and cellulose nitrate (CN).

Challenges include: (a) obtaining adequate sample sizes; (b) interpretation of spectra from heterogeneous multicomponent samples; (c) having limited reference spectra provided by commercial libraries and databases; and (d) limited previous research and a general lack of information on this topic. While the research project is still in an early stage, the results have already yielded positive outcomes for conservation and care of the insects in the entomology collections.

Author biography

Clare Kim is the Collection Enhancement Conservator at the Australian Museum. She is currently assessing the needs of 10 natural science collections, in excess of 20 million collection items. Clare's role includes condition assessment, conservation treatment as well as materials testing and analysis. Clare has specialised in both paper and objects conservation. Her previous roles and experience are in the field of public, private and community-based organisations, mainly in Australia and New Zealand.

Revealing the decorative technique of Peranakan glittery green surfaces: two case studies of early 20th-century wedding beds

Sophia Lee
Birte Koehler
Lynn Chua

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The Heritage Conservation Centre (HCC) in Singapore houses a collection of 19th–20th century Peranakan Chinese Red-and-Gold furniture from Southeast Asia, distinct in their opulent and ornate designs and holding important cultural significance. Panels of intricate open-work carvings and bas-reliefs of auspicious motifs are prominently gilded against red lacquer-coated surfaces (Ho 1994, pp.69-112). The gilt panels are commonly accentuated in vibrant colourful borders, glittering with mother-of-pearl flakes. The design style and construction are considered traditionally Chinese, akin to those found in Guangdong and Fujian provinces of Southern China during the Qing dynasty (Knapp 2013, p.242). Such furniture was often crafted specially to suit local tastes and aesthetics of Peranakan Chinese (Knapp 2013, p.238), a mixed ethnicity which begun from early Chinese immigrants settling in Malay regions since the 15th century (Low 2009, p.4; Tan 1988, p.299).

This glittery decoration, however, does not always hold well over time, with mother-of-pearl flakes often detaching from the coloured borders. While maritime trade routes showed active links between Southeastern China and Southeast Asia between 15th to 18th centuries (Lockard 2010, p.223), limited information is available on the craft materials and decoration technique involved, its provenance, or possible trade routes. Two wedding beds showing signs of such deterioration were studied at the HCC conservation lab in 2022, providing fascinating new insights into Peranakan Chinese material culture.

Figure 1 Peranakan Chinese Wedding Bed. Collection of the National Museum of Singapore, National Heritage Board. Gift of Mrs. Quah Hong Chiam.

Methods

In this study, we attempted to identify the layers involved in the glittery surface decorations. Mother-of-pearl flakes and green ground samples were prepared from areas of existing losses, and studied under cross-section microscopy, scanning-electron microscopy-EDS (SEM-EDS), fourier-transform infrared spectroscopy (FTIR).

Discussions and Conclusions

Analysis revealed copper-arsenic green pigment, layer build-ups with different white

Figure 2 Detail image of gilt panel with glittery green borders

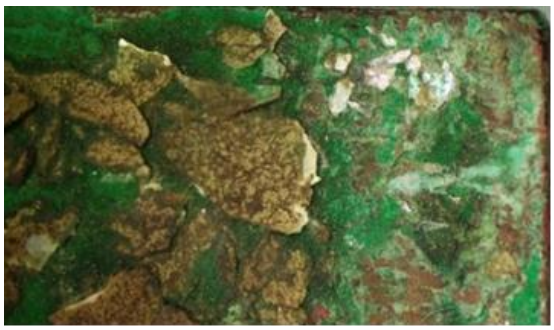

Figure 3 Close-up detail image of mother-of-pearl flakes

pigments or fillers, contrasting surface preparations between kaolinite and possible Asian lacquer, and differing mother-of-pearl applications. While surface decorations of the two beds are similar in appearance and deterioration, the historical materials involved and interpreted craft methods are different. With material analyses, it is possible to reveal and distinguish commonalities and differences in craftsmanship between similar furniture pieces to advance material culture knowledge in conservation.

Further research

Further research may allow us to trace the provenance and trade routes of this decorative style, support the selection of suitable methods for conservation treatment and propose practical considerations when storing or handling toxic arsenic collections.

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Acknowledgements

This work is supported by the Heritage Conservation Centre, National Museum of Singapore, and The Peranakan Museum of the National Heritage Board in Singapore.

Author biographies

Sophia Lee was trained in design with experience in props construction and restoration work. She joined the Heritage Conservation Centre in 2019 as an Assistant Conservator, supporting the conservation of objects in the National Collection. She is currently training to specialise in the conservation of wood and furniture.

Birte Koehler has been trained as a conservator for wood & furniture in Germany in the 1990s. Since 1999, she has worked as a conservator, team leader, supervisor, and trainer in private practice as well as in museum settings in Germany and Singapore. Since 2012, Birte works as Senior Conservator (Objects) and Head of Objects Conservation at the Heritage Conservation Centre, Singapore.

Lynn Chua is Conservation Scientist at the Heritage Conservation Centre, where she uses multiple instrumental techniques to characterise materials for the research and conservation of the National Collection. Lynn holds a MSc (Research) from the University Technology of Sydney on the micro-characterisation of painted works of art.

Insights into new marble protection treatments from computational research

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Enrico Sassoni[3]
Martina Lessio[1]

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Marble is a predominant material within countless important cultural heritage objects around the world. However, these carbonate stones – including marble but also limestone and other calcite derivatives – are significantly affected by exposure to water which threatens the aesthetic detail and structural integrity of these objects. To mitigate these effects, calcite objects require treatments which provide consolidation (i.e., restore mechanical strength) and surface protection typically through the formation of a protective coating. A novel treatment has recently been developed based on the in-situ reaction between the calcite and an aqueous phosphate solution to form a layer of hydroxyapatite (HAP), which is a stable calcium phosphate mineral (Sassoni, Naidu and Scherer 2011). HAP treatments address the limitations typically presented by established conservation strategies: the treatment is highly compatible with calcite in terms of its aesthetic properties and adhesion (because of the close crystal lattice parameters between HAP and the calcite), and it possesses improved stability in acidic environments in comparison to calcite (Sassoni et al. 2018, p. 255-256). However, HAP treatments are often compromised by micro-cracks and pores which form during the crystallisation process and limit the efficacy of the conservation attempt. Recent experimental tests have demonstrated that the addition of small amounts of organic solvents such as ethanol, isopropanol, and acetone drastically improve the density (and thus effectiveness) of the HAP layer produced; however, the reason for why this change occurs is still unknown (ibid, p. 259). Understanding this reason would allow us to optimise the treatment by selecting the best possible organic additive to use.

Presently, there are two hypotheses surrounding the effect of the organic solvent on the synthesis of the treatment layer: the first, that solvent interacts with the calcite surface (which potentially inhibits crystallisation) and the second, that the solvent disrupts the phosphate ions in solution (which is hypothesised to facilitate nucleation). To answer this salient question, our work – as an example of the emergent intersection between cultural heritage conservation and computational chemistry – utilises a computational approach to explore both hypotheses. The former was initially investigated, and the alcohols were found to adsorb to the calcite surface and where they formed a hydrophobic layer – which potentially inhibits crystallisation – while acetone did not. The results from these computational investigations led to acetone being explored experimentally as a viable solvent where it was found to perform almost identically to the two alcohols. As such, it was concluded that the interaction of the solvent with the calcite surface does not play a critical role in the improvement of the treatment layer (Papasergio et al. 2023).

Currently, we are investigating the second solution-based hypothesis. We use molecular modelling techniques to study the solvation sphere of the ions in pure and mixed organic-aqueous conditions. In the presence of the organic solvent, it is hypothesised that the ion hydration sphere of the phosphate (i.e., the ordered shell of water surrounding the ion) is compromised which in turn facilitates calcium phosphate nucleation (Tung and O'Farrell 1996). Under experimentally relevant conditions, our simulations demonstrate that the addition of

small amounts of some organic solvents do indeed disrupt the hydration sphere of the phosphates. This study is coupled with further investigations into the effect of the organic solvent on mitigating ammonium and phosphate ion pairing in the initial reagent solution. These results are then combined with our experimental results: focused ion beam scanning electron microscopy and dispersive X-ray spectroscopy are used to characterise the density, mineral composition, thickness, uniformity, adhesion and protective ability of the layer formed when using this mixed organic-aqueous solvents for the treatments. All together these results allow us to establish whether the ability of the organic additive to disrupt the hydration shell as well as other solution-based effects are critical factors for the treatment's effectiveness. Ultimately, our computational investigations coupled with experimental results will allow us to develop more effective treatments for the conservation of marble and other calcite cultural heritage objects.

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Author biographies

Ria Stephenson is a PhD student in the School of Chemistry at the University of New South Wales. Her project surrounds the improvement of novel marble conservation treatments through computational approaches. She completed her BSc (Hons) in Chemistry in 2023.

Dr Karen Privat is a Senior Research Associate at the UNSW Electron Microscope Unit who specialises in scanning electron microscopy and microanalysis techniques including energy-dispersive spectroscopy, electron microprobe, and variable-pressure SEM. While Dr Privat supports work in various fields, her academic background and primary interest is in the analysis of cultural heritage materials.

Dr Enrico Sassoni is an Associate Professor at the Department of Civil, Chemical, Environmental, and Materials Engineering at the University of Bologna, Italy. He is an expert in the development of novel phosphate-based consolidants and protective treatments for stones, mortars, and archaeological bones.

Dr Martina Lessio is a Scientia Lecturer in the School of Chemistry at UNSW where she leads a research group focused on using computational chemistry to address sustainability issues. Her research interests include water purification, conversion of waste to high-value products, and cultural heritage conservation.

Hangin' out

Heidi Treloar[1]
Shannon Hutchinson[2]

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The National Film and Sound Archive of Australia (NFSA) embarked on a journey of coat hanger exploration in response to a substantial acquisition of costumes from Baz Luhrmann's film *Elvis*. The scale of this acquisition necessitated the exploration of alternative storage methods for costumes, leading to a shift from traditional costume boxes on longspan shelving to hanging costume storage.

The Collection Management team's rigorous research into best practices for hanging costumes revealed the challenges of sourcing suitable supplies, including coat hangers, garment bags, and racks. Collaboration with other cultural institutions in Canberra and extensive supplier searches yielded no off-the-shelf solutions that met the specifications. The quest for appropriate supplies revealed the prevalent practice of crafting hangers and storage items in-house among the contacted institutions, contingent upon available expertise, resources and time.

Despite these setbacks, the project gained new momentum when the Collection Management team was contacted by the University of Canberra's Heritage Materials Conservation program to facilitate an internship placement. The scope of Heidi Treloar's internship would be to further research best practice hanging museum storage practice, investigate suppliers and develop in house solutions to resolve the hanging storage method for the *Elvis* acquisition.

Again the research conducted faced challenges with local and international suppliers. Australian suppliers offered limited options for archival hangers, while international options posed obstacles such as high minimum orders and extended shipping times.

To address these constraints, the scope of the search broadened to include unconventional sources like wetsuit manufacturers and shop outfitters. Engaging non-traditional suppliers necessitated additional research to ensure adherence to archival standards, particularly concerning potential off-gassing and long-term material stability.

Throughout the journey, uncertainties arose from suppliers' lack of knowledge about their products' composition. This compelled a deep dive into the properties of wood, wood varnishes, plastics, and metals to assess their long-term suitability and compatibility with museum costume collections.

The eventual breakthrough was inspired by a unique solution that was discovered when another acquisition arrived. Bakana the Bilby, a costume from a local kid's television production in Port Pirie, South Australia provided the answer. The costume team at the television station fashioned a thick gauge welded metal hanger with protective pool noodle, and cover.

Heidi ascertained that these items were not only readily accessible but also easy to procure and tailor to specific needs. They could be swiftly assembled and provided ample strength and width to effectively house the *Elvis* costumes. Importantly, Heidi also confirmed their compatibility with archival materials standards. As a result, this approach has become the new standard for packaging hanging garments at NFSA.

In conclusion, the NFSA's endeavour to transition to hanging storage for the *Elvis* costume acquisition exemplifies the challenges faced by cultural institutions in sourcing suitable archival supplies. The collaborative research journey underscores the necessity for well-supported best practices and the ingenuity required to navigate the scarcity of suitable solutions. Through innovation and careful

consideration, Heidi and the Collection Management team identified a viable solution that balanced archival integrity and practicality in a challenging storage landscape.

Acknowledgements

Heidi and Shannon would like to thank all of their colleagues and friends who have shared their knowledge in hanging costume storage over the past 12 months. This includes Jessie Firth, Rob Butler, Nick Zihrul and Thomas O'Rourke.

Author biographies

Heidi Treloar is a current postgraduate student in Cultural Materials Conservation at the University of Canberra and is concurrently completing a Certificate in Collection Management Fashion and Textiles with the State University of California, Long Beach.

Shannon Hutchinson is the current Team Leader, Collection Management at the National Film and Sound Archive of Australia.

PROGRAM

WEDNESDAY 15th NOVEMBER *James Fairfax Theatre, National Gallery of Australia*	
8.00 – 8.50	**Registration open** - *Gandel Hall*
9.00	**Welcome to Country** from Auntie Violet Sheridan, Senior Ngunnawal Elder **Welcome from NGA Director** Dr Nick Mitzevich **Welcome from AICCM President** Alice Cannon
9.30	**AICCM Reflections** Colin MACGREGOR, Ian COOK, Allan BYRNE and Kay SÖDERLUND
10.30	**MORNING TEA** = *Gandel Hall*
11.00	**Australian conservation education** Robyn SLOGGETT **Translating conservation knowledge and actions** Paula DREDGE, Nicole TSE and Tim OULD
	Studies of cultural heritage artefacts using x-rays: a cook's tour through 40 years of collaborative experiments Dudley CREAGH
	You never stop being a conservator [lightning] Natalie ISON and Sarah MURRAY **New directions: going Loopy! [lightning]** Sarah BUNN
12.30	**LUNCH** - *Gandel Hall*
13.30	**30 Years of Conserving the Asia Pacific Triennial of Contemporary Art** Samantha SHELLARD and Anne CARTER **Development of Natural Science conservation in Australia** Sheldon TEARE
	Focus on frames [lightning] Louise BRADLEY **The Queen of Frames: *The visit of the Queen of Sheba to King Solomon 1881-1890* by Sir Edward John Poynter** Barbara DEBROWA **Approaches to prevention of silver tarnishing: Investigating decision-making associated with coating treatments** Suncana MAROCHINI DARBY
15.00	**AFTERNOON TEA** - *Gandel Hall*
15.30 – 17.25	**The impact of recent shut-downs and climate changes on pest distribution and populations in museums and galleries** Trusted Pest Management - Premier Event Partner **Mould, a growing issue; past, present, future** Adam GODIJN, TENNANT, EISSA, GHOLAMI, JAQUES, PRADO, THOMPSON and BICKERSTETH **Anoxic pest treatment of a large vehicle with fine wool interior [lightning]** Nick ZIHRUL
	From dust to display: Case study of a late 19th century costume of Jaisalmer, Rajasthan Radhana RAHEJA and H.H. Maharawal Chaitanya Raj Singh BHATI **The Loong Conservation Project** Holly JONES-AMIN, TRIPP, MUCIC, MIRABOOTALEBI, TINDAL, LOUGOON, McKINNON, EDWARD an DUCKETT
	Is it supposed to do that? Treatment reflections by student conservators at the University of Canberra Hakim ABDUL RAHIM, Heidi TRELOAR, Lisa HAYES, Karen SORENSEN and Matilda SKERRITT **Making the AICCM Medal [lightning]** Claire ROWSON
17.30	**WELCOME EVENT AND AICCM AWARDS CEREMONY** - 17.30 – 20.00 - *Gandel Hall*

THURSDAY 16th NOVEMBER *James Fairfax Theatre, National Gallery of Australia*	
9.00	**AICCM Reconciliation Action Plan launch**
	The Nyingarn Project Sophie LEWINCAMP, Vicki COUZENS and Nick THIEBERGER
10.00	**MORNING TEA** - *Gandel Hall [Student sponsors event]*
10.30	**[Materials and analysis]** Portable Spectral Services (Portaspecs) – Premier Event Partner
	Heavy metals in plastics in the Museum Victoria History and Technology collection: implications in degrading plastics Rosemary GOODALL, Karina PALMER and Alice CANNON
	Using pXRF to identify the object histories of zoological museum specimens Celia CRAMER, Elizabeth CARTER, Jude PHILP and Peter LAY
	Staging a comeback: The Sydney Opera House tapestries, Curtain of the Sun & Curtain of the Moon by John Coburn; Conservation, analysis and future display Elizabeth CARTER, Mary-Anne GOODEN, RITSCHEL, MATARESE, SWARBRICK and ZHONG
	Conservation science meets forensic science; Past, present and future Hannah BARRETT and Vincent OTIENO-ALEGO
	Sympathetic to synthetics: developing tear repairs for matte laminated papers in twenty-first century periodical covers Cancy CHU
	How are papyrus sheets made? Insights from ancient and modern examples Arzak MOHAMED
12.30	**LUNCH** - *Gandel Hall [optional SIG catch-ups – packed lunch]*
13.30	**ENVIRONMENT Monitoring. Two case studies: Museum of Transport and Technology (NZ) and Australian Centre for Wildlife Genomics (Australian Museum)** ECEFast – Premier Event Partner
	Mercury vapour in collection cabinets, showcases and transport containers: adsorber application and strategies [lightning] Rosemary GOODALL, Danielle MEASDAY and Karen FISHER
	Designing and building a low oxygen display case for the "last thylacine" David THURROWGOOD
	What's so wrong with 64 Hertz? The various vibration challenges faced during the National Museum of Australia's most recent Gallery Redevelopment Jennifer BRIAN
	Not set in stone - Reflections on the Shellal Mosaic George BAILEY and Taylor MOORE
	Current preservation practices used by audiovisual conservation practitioners when facing collection format hazards; including naphthalene syndrome, vinegar syndrome and mould Mona SOLEYMANI and Lisa RUSS
15.00	**AFTERNOON TEA** - *Gandel Hall*
15.30 – 17.00	**Eugowra: recognising the resourcefulness of the community in disaster recovery** Kay SÖDERLUND and Tegan ANTHES
	The composition and impact of soot on heritage surfaces [lightning] Amber ANDERSON and Alison WAIN
	'After the fire' video screening *Museum of Australian Democracy*
	Community-led conservation of the 1897 Stage Curtain in Bullumwaal, East Gippsland Sabine COTTE and Sherryn VARDY
	Shining a light on collaboration: relocating the South Solitary Island lighthouse optic Amy WALSH and Julian BICKERSTETH
	Implementing professional experience from the Warsaw Uprising Museum to The Furneaux Museum: similarities and new challenges Joanna LANG
18.30	**CONFERENCE DINNER** 18.30 – 23.00 – *Members' Dining Room, Old Parliament House*

FRIDAY 17th NOVEMBER - *James Fairfax Theatre, National Gallery of Australia*	
9.00	**Accounting for conservation? Embedding the social, environmental and economic value of conservation in wider public policy** Kate CLARK **A sedimental journey: developing and strengthening conservation involvement in the Geoscience collections at the Australian Museum [lightning]** Sophie PHILLIPS and Sheldon TEARE
	150 candles: planning for the use and preservation of the Cape Bowling Green Lighthouse beyond its 150th birthday celebrations Nicholas FLOOD, Emma HAYLES and Inger SHEIL **The evolution of the management of Vietnamese refugee vessel - Tự Do** Agata ROSTEK-ROBAK and Jeff FOX **Preservation vs access: the role of visible storage at Arts Centre Melbourne** Samantha HAMILTON
10.30	**MORNING TEA** - *Gandel Hall [AICCM Professional Member catch-up]*
11.00	**The ABC Method of risk management: an effective tool for analysing risks** Jucara DEFARIAS and Daniel BORNSTEIN **Collection hazards and control banding at the Australian War Memorial [lightning]** Alana TREASURE, Jessie FIRTH, Andrew SCHROEDER and Eileen PROCTER
	Deadline 2025: A catalyst for change at the National Gallery of Australia Alysha REDSTON **Te Papa's National Time-Based Media Art Capability Building Project [lightning]** Rose CANGADIS-DOUGLASS **Dynamic objects, evolving collections: A new approach to changeability at the National Museum of Australia** Asti SHERRING **Why we should reframe musical instruments as time-based objects [lightning]** Jennifer BRIAN
12.30	**LUNCH** - *Gandel Hall*
13.30	**Sustainability (un)session** International Conservation Services – Premier Event Partner – CEO & IIC President Julian BICKERSTETH and AICCM Sustainability Committee Chair MaryJo LELYVELD **Conservation thinking outside the centre: lessons learnt from tropical Southeast Asia** Nicole TSE
	Keeping the intangible heritage of operating machinery alive: a fossil fuel dilemma Alison WAIN, Neil HOGG and Natalie ISON **Get your motor running: revitalising the *Kara Kara* steam engine display [lightning]** Nicholas FLOOD **Pulse lasers to clean the Sydney Harbour Bridge** Julia BRAND, Alison WAIN, Steve MADDEN, Andrei RODE, Penelope KING and Ludovic RAPP
15.00	**AFTERNOON TEA** - *Gandel Hall*
15.30	**'Flat or Fabulous': modern 3D imaging techniques in cultural heritage condition documentation** Daniel BORNSTEIN and Thomas J KEEP **Conservation in social media - why are we doing it? [lightning]** Alayne ALVIS **Creating conservation videos: curating content for non-conservation audiences [lightning]** Lucilla RONAI
	Conserving the essence of an artist's studio Analiese TREACY **Clarice Beckett** Jocelyn EVANS **A whale of a time: the care and management of hot air balloons *Skywhale* and *Skywhalepapa*** Carmela MOLLICA
17.00	**CONFERENCE CLOSE**

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