

2012 AICCM Paintings Group + 20th Century in Paint Symposium

The Meaning of Materials in Modern and Contemporary Art



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Cinema B, Gallery of Modern Art, Brisbane
10-11 December 2012



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Supporters

Jointly organised by 'The Twentieth Century in Paint' Australian Research Council (ARC) Linkage Project headed by The Centre for Cultural Materials Conservation at the University of Melbourne, the Queensland Art Gallery | Gallery of Modern Art Centre for Contemporary Art Conservation and the Australian Institute for the Conservation of Cultural Materials (AICCM) Paintings Special Interest Group.

The organizing committee would like to acknowledge the support of the Ian Potter Foundation. Tru Vue, the manufacturer of high-performance glazing for framing and display applications is also pleased to support this symposium. For more information on Tru Vue glazing products, contact Jared Davis, Megawood Larson Juhl at JDavis@megawoodlarsonjuhl.com.au or visit www.tru-vue.com/museums.



Welcome

With a focus on Australia and its region's diverse history and climate, *The Meaning of Materials in Modern and Contemporary Art* symposium aims to explore questions around artists' intentions towards the materials they use and subsequent effect on conservation decisions. For example, how are aspects of material choice framed by availability, geography, culture and artistic intent? How do contemporary art materials age and how does this influence relationships between artists, collectors and those involved in the care of artworks?

This symposium is jointly organised by the Australian Institute for the Conservation of Cultural Materials (AICCM) Paintings Special Interest Group, the Centre for Cultural Materials Conservation (CCMC) at the University of Melbourne (UoM) and the Centre for Contemporary Art Conservation (CCAC) Queensland Art Gallery | Gallery of Modern Art. It also constitutes the final year symposium for 'The Twentieth Century in Paint' Australian Research Council (ARC) Linkage Project.

This is the 13th AICCM Paintings Special Interest Group symposium, which as always, focuses on paintings but also includes discussions about other media. Such symposia have been an important mechanism for communication and capacity building amongst the relatively small group of Australian Paintings Conservators and their colleagues, and this year also includes contributions from heritage practitioners from abroad to widen our discussions. The theme for the Symposium extends the

traditional concerns of conservation practice to examine the underlying meanings behind the materials used in the production of modern and contemporary works of art.

In attempting to highlight the wider artistic and social meanings of the materials in works of art, the Symposium in no way endeavors to define them. Rather it acknowledges the diversity of choices acted out by artists and that material choices are often made as a result of their availability, chronology of uptake, location, cultural significance and related training opportunities. This occurred at a time when new materials were on offer, particularly modified oil paints and the introduction of synthetic polymers and colourants from the mid twentieth century. Artists were free to engage and experiment with such materials outside the traditional domains of painting practice, and as a result diversify their techniques and decision making.

Papers that discuss the Australian Modernists Sidney Nolan and Arthur Boyd, as well as Ian Fairweather and parallel studies from New Zealand, all explore such issues. Other papers explore how both the historical and more recent trade in materials influenced material usage in the context of Aboriginal and Torres Strait Islander communities, Malaysia, Tibet and Vietnam. By widening discussion on the diversity of materials used in production of works of art, the theme brings to the fore the artists' intent and aims to understand the significance of these choices and how this affects conservation decisions.

This is particularly interesting in contemporary museum practice. The processes by which artists transfer knowledge to institutions and collectors for the care of their works are discussed, as is the common conflict faced by conservators between maintaining artist's intent and finding solutions to the practicalities of this maintenance.

Also of prime importance is the chemistry responsible for the deterioration of modern and contemporary works of art, specifically the effect of the diverse climates in Australia and Southeast Asia. As art making materials have become more complex, detailed scientific and IT tools for understanding their characterisation and degradation is required. Collaborations with expert scientists from the ARC Centre of Excellence in Free Radical Chemistry, The Australian Microscopy and Microanalysis Research Facility and the Australian Synchrotron has enabled some of this research and is represented by a number of Symposium papers.

The theme of this Symposium is ambitious but also clearly demonstrates how conservators can contribute to theoretical and scientific discussions beyond conservation's core directive. Materials characterisation and understanding associated degradation, has long been part of our job description but by working in strong collaborative teams and increasing our skills base, we are able to contribute to relevant discussions outside the traditional domains of conservation.

Many of the papers presented at this Symposium are the result of a three year Australian Research Council (ARC) Linkage Project led by the CCMC on 'The Twentieth Century in Paint'. From 2008 to 2012, the project examined the introduction of new

painting media through revolutionary art practices in the 20th century in Australia and parts of Southeast Asia. The project concludes shortly and has involved a strong interdisciplinary team, including ten investigators, four PhD students and ten collaborative partners from Australia, Malaysia, Thailand, the Philippines, the USA and UK. The PhD students Gillian Osmond (QAGOMA, UQ), Paula Dredge (AGNSW, UoM), Melina Glasson (UoM) and Suleiman Odat (UQ), and Post-doctoral fellow Dr Nicole Tse (CCMC, UoM) have made a significant contribution to the project and ways to interpret art making in the twentieth century. The project would like to thank you for your commitment. A special thanks also goes to Associate Professor Robyn Sloggett who initiated the project and provided opportunities for all those involved.

Finally the committee would like to thank the presenters and participants for their involvement in the symposium. We particularly acknowledge the support of the University of Melbourne's Centre for Cultural Material Conservation, 'The Twentieth Century in Paint' Project and all its partners, the AICCM, The Queensland Art Gallery | Gallery of Modern Art's Centre for Contemporary Art Conservation, the Ian Potter Foundation and TruVue Optium Museum acrylic glazing. Thanks must also go to Suhanya Raffel, Acting Director, Queensland Art Gallery | Gallery of Modern Art for support of this symposium.

We look forward to the collaborations that can grow out of this event.

From the Organising Committee
The 2012 AICCM Paintings Group +
20th Century in Paint Symposium
*The Meaning of Materials in Modern
and Contemporary Art*

General Information

Symposium Venue

The symposium venue is Cinema B, Gallery of Modern Art, Stanley Place, South Brisbane. The Queensland Art Gallery (QAG) and Gallery of Modern Art (GOMA) are located 150 metres from each other, on the south bank of the Brisbane River. The symposium venue is located in the GOMA building.

Registration desk

The registration desk will be located at Cinema B GOMA, from 8.30am Monday 10 December. Entry will be through the front doors of GOMA.

Name Badges

All delegates will be given a name badge on registration. We ask that you wear your name badge at all times as this is the official entry pass to the symposium and its receptions.

Speakers

Please speak with a member of the symposium organising committee at the registration desk to arrange a time to upload your presentation.

Food and drinks

Morning and afternoon tea is included as part of your symposium registration. Lunch venues are located in the QAGOMA precinct or in nearby South Bank. A pre-dinner drink from 5-6pm Monday 10 December is also included in your registration fee.

Symposium Dinner

The symposium dinner will be held on Monday 10 December from 6.30pm at Granada Restaurant, 154 Melbourne Street, South Brisbane. Phone 3844 4757. The cost of the dinner is \$85 and requires pre-registration and payment.



Program

MONDAY 10 DECEMBER		
8.30–9.00	Registration	Cinema B GOMA
9.00–9.10	Introduction	
9.10–9.20	Welcome	Maud Page, Acting Deputy Director, Curatorial and Collection Development, QAGOMA
CONTEMPORARY MATERIALS AND CONTEMPORARY CONCERNS		
9.20–9.45	Keynote	Jeremy Barns (Director, National Museum of the Philippines) <i>Conserving an Artistic Treasure: Preventive Conservation and Treatment of National Artist Carlos Francisco's 'Progress of Medicine'</i>
9.45–10.10	Keynote	Ana Labrador (Assistant Director, National Museum of the Philippines) <i>The Paradox of Conserving the Paintings of Manuel Ocampo: Contemporary Issues of Traditional Concerns in Artists' Material Choices</i>
10.10–10.40	Morning Tea	
CONTEMPORARY MATERIALS AND CONTEMPORARY CONCERNS		
10.40–11.05		Sabine Cotte (Paintings Conservator, Private Practice Melbourne) <i>Materials in Tibetan Contemporary Art: Continuity and Contrast with the Local Painting Tradition</i>
11.05–11.30		Jenny O'Connell (Paintings Conservator, Centre for Cultural Materials Conservation, University of Melbourne) <i>Waringarri Aboriginal Arts Centre: Addressing conservation meaning through the needs of a community art centre</i>
11.30–11.55		Sharon Alcock (Paintings Conservator, National Gallery of Australia) <i>Painting Country: Australian Aboriginal Artists' Approach to Traditional Materials in a Modern Context</i>
11.55–12.20		Ljiljana Puskar (Beamline Scientist (IR), Australian Synchrotron) <i>Review of Data Analysis Methods for Synchrotron FTIR microscopy: Application to Twentieth Century Paints</i>
12.20–13.30	Lunch	

UNDERSTANDING MATERIALS OF THE MID TWENTIETH CENTURY: 1940–1970		
13.30–13.55		Paula Dredge (PhD Candidate, University of Melbourne, Head of Paintings Conservation, Art Gallery of New South Wales) <i>Sidney Nolan's Adventures in Paint: Ripolin®, DULUX®, DUCO® and Everything Else</i>
13.55–14.20		Vanessa Kowalski (Paintings Conservator, Centre for Cultural Materials Conservation, University of Melbourne) <i>Artist Materials during the 1940s, with a Focus on Arthur Boyd's Paintings in the Heide Museum of Modern Art Collection</i>
14.20–14.45		Anne Carter (Paintings Conservator, Queensland Art Gallery Gallery of Modern Art) <i>The Materials of Ian Fairweather: 1953–1974</i>
14.45–15.10		Sarah Hillary (Principal Conservator, Auckland Art Gallery Toi o Tāmaki) <i>Liberation Down Under: The Early Use of Synthetic Emulsion Paints by New Zealand Artists</i>
15.10–15.25		Helen Weidenhofer (Assistant Director, Paintings, Objects & Projects, Artlab Australia) <i>The Introduction of New Painting Materials in Adelaide in the Mid Twentieth Century</i>
15.25–16.00	Afternoon Tea	
TOOLS FOR UNDERSTANDING MATERIALS (10 minute presentations)		
16.00–16.15		Melina Glasson (PhD Candidate, ARC Centre of Excellence for Free Radical Chemistry and Biotechnology, University of Melbourne) <i>Radical Techniques and Investigations into Modern Materials</i>
16.15–16.30		Stefanie-Ann Alexander (PhD Candidate, ARC Centre of Excellence for Free Radical Chemistry and Biotechnology, University of Melbourne) <i>The Use of Nitroxides in the Control of Biofilm Formation on Cultural Materials</i>
16.30–16.45		Caroline Kyi (PhD Candidate, ARC Centre of Excellence for Free Radical Chemistry and Biotechnology, University of Melbourne) <i>From Test-Tube to Treatment: Conservation Considerations in the Development of an Alternative Approach in the Control of Biodeterioration</i>
16.45–17.00		David Thurrowgood (Senior Conservator Metals and Conservation Science at the National Gallery of Victoria) <i>The Continuing Development of Synchrotron based X-Ray Fluorescence Elemental Mapping Techniques for Understanding Paintings</i>

17.00 – 18.00	Pre-dinner drinks	GOMA (included in registration fee)
18.30	Symposium Dinner	GRANADA Restaurant, 154 Melbourne Street, South Brisbane. Phone 3844 4757
TUESDAY 11 DECEMBER		
CULTURE, GEOGRAPHY AND CONSERVATION CHOICES		
8.30–9.00	Registration	Cinema B GOMA
9.00–9.25	Keynote	Marcia Langton (Professor and Chair of Australian Indigenous Studies, University of Melbourne) and Robyn Sloggett (Director, Centre for Cultural Materials Conservation, University of Melbourne) <i>A Conversation: Treppang – How the History of North-South Trade between Indonesia and Australia Continues to Exhibit in Contemporary Aboriginal Art</i>
9.25–9.50		Ruth McDougall (Curator, Pacific Art, Queensland Art Gallery Gallery of Modern Art) <i>Material Matters: Commissioning Contemporary Artworks from Papua New Guinea for the 7th Asia Pacific Triennial of Contemporary Art</i>
9.50–10.20	Morning Tea	
CULTURE, GEOGRAPHY AND CONSERVATION CHOICES		
10.20–10.45	Keynote	Bronwyn Ormsby (Senior Conservation Scientist, TATE) <i>Artists' Acrylic Emulsion Paints: Materials, Meaning and Conservation Treatment Options</i>
10.45–11.10		Michael Duffy (Paintings Conservator, MoMA, New York) <i>Contemporary Encaustic Techniques – Johns, Marden, Thek</i>
11.10–11.35		Gillian Osmond (PhD Candidate, University of Queensland, Paintings Conservator, Queensland Art Gallery Gallery of Modern Art) <i>Zinc Oxide Centred Deterioration in 20th Century Vietnamese Paintings by Nguyen Trong Kiêm</i>
11.35 – 12.00		Nicole Tse (ARC Post Doctorate Fellow, Centre for Cultural Materials Conservation, University of Melbourne) <i>Material Sources Before and After the Second World War in Malaysia: A Case Study of Yong Mun Sen's (1896–1962) Oil Paintings</i>
12.00–13.30	Lunch	

MATERIALS , INSTALLATION AND CONSERVATION		
13.30–13.55		Jane Hunter (Research Professor and Director of the eResearch Lab within the School of ITEE at the University of Queensland) <i>Providing Decision Support Tools for Art Conservators Through a Shared Knowledge Base</i>
13.55–14.20		Sherryn Vardy (Paintings Conservator, University of Melbourne) and Sophie Lewincamp (Paper Conservator, Centre for Cultural Materials Conservation, University of Melbourne) <i>Decision Making Strategies for the Long Term Preservation of Contemporary Art by Living Artists: Case Study – 'Made to Last: The Conservation of Art' touring exhibition</i>
14.20–14.45		Hanna Hölling (Ph.D Researcher, Conservator for Contemporary Art and New Media, University of Amsterdam) <i>Seeking the Authentic Moment: De- and Re-Materialisations in Paik's Video and Mixed Media Installations – A Conservation Inquiry</i>
14.45–15.15	Afternoon Tea	
MATERIALS , INSTALLATION AND CONSERVATION		
15.15–15.40		Tom Learner (Head of Modern and Contemporary Art Research, Getty Conservation Institute) <i>The Polyester Sculptures of De Wain Valentine: Meaning, Intent and Conservation Issues</i>
15.40–16.05		Tamar Maor (Sculpture Conservator, TATE) <i>The Artist's Role at the Point of Installation</i>
16.05–17.00		Discussion

Symposium Abstracts



Painting country: Australian aboriginal artists' approach to traditional materials in a modern context

Sharon Alcock

Traditionally, materials used by Aboriginal artists are sourced from the local environment. Rock, bark, wood and human skin are painted with ochres bound in material such as saliva, blood and plant gums.

In the 1970s, synthetic polymer paints were introduced to Papunya Tula artists. Its availability, ease of use and colour range have made acrylic paints a popular choice of material for many contemporary indigenous artists. Some artists, however, continue to use traditional pigments and binders. The reasons for this vary. Artists may choose these materials because they are familiar and close to hand, because they have a particular significance to the artist, or perhaps represent the country from which they are sourced. The materials chosen become, therefore, not only a vehicle for expression but an integral part of the artistic expression itself.

Contemporary indigenous artists often experiment with these materials and use them alongside acrylic or oil paints. The innovative use of these traditional materials and their interaction with layers of acrylic or oil media can result in unstable paint surfaces which are particularly challenging from the conservator's point of view. In

the case of some materials little is known about their long term stability. Different conservation approaches may need to be used for different areas of a painting and materials traditionally used in paintings conservation are often not suitable. Treatment decisions also need to take into account the artist's intention towards the materials, their significance and their aging characteristics.

The intent of particular artists towards their materials is discussed and the ethical and practical implications for paintings conservators are explored.

The use of nitroxides in the control of biofilm formation on cultural materials

Stefanie-Ann Alexander, Robyn Sloggett, Carl Schiesser

Aesthetic and structural damage can occur to culturally significant materials as a result of the growth and activities of micro and macro-organisms. This process is referred to as biodeterioration and embodies a complex series of interactions that in many cases are accelerated by the temperature and humidity of tropical climates. Biofilms are surface-associated assemblages of microorganisms that facilitate colonisation and infection. Damage to culturally significant materials can be initiated by the growth of biofilms and the production of harmful metabolites by microorganisms which additionally promote successive colonisation and damage by

organisms such as mould. Bacterial biofilms at times undergo regulated and coordinated dispersal events where sessile biofilm cells convert to free-swimming, planktonic bacteria. In a model organism, *Pseudomonas aeruginosa*, nitric oxide (NO), used widely as a signalling molecule in biological systems, has been identified as an elicitor of biofilm dispersal, its action linked to the generation of oxidative and nitrosative stress inside microcolonies.

Another class of molecule, the nitroxides (R(NO•)R1) have also been shown to promote oxidative and nitrosative stress upon bacterial cells. We demonstrate here the ability of certain nitroxides to behave in a similar manner to NO, and discuss possible biodeterioration treatment regimes utilising nitroxides as the active component. In addition, we investigate the formation of reactive nitrogen and oxygen intermediates and associated changes in redox states within microcolonies. These types of changes can be quantified and visualised using a sensitive technique involving spin-trapping with profluorescent nitroxides (PFN), molecules which incorporate a radical and redox-sensing nitroxide moiety. The ability of nitroxides to interconvert between three oxidation states: the nitroxide, the hydroxylamine and oxo-ammonium derivatives, allows the probe to monitor redox changes in both oxidising and reducing conditions. We report here the synthesis and use of a novel PFN within a biofilm system and its crucial role for determining the efficacy of potential biodeterioration treatments for cultural materials.

Conserving an artistic treasure: Preventive conservation and treatment of national artist Carlos Francisco's *Progress of Medicine*

Jeremy Barns

The Progress of Medicine in the Philippines comprises four oil paintings on canvas executed by National Artist Carlos 'Botong' Francisco in 1953, through a commission by four doctors. Upon completion, the paintings were installed in the main entrance hall of the Philippine General Hospital.

The Hospital's entrance, however, is widely open to the surrounding environment, and with exposure to air pollution and the traffic of people through the hospital together with termite infestation and minor incidents of vandalism, the paintings began to deteriorate, such that restoration was performed by Professor Tomas Bernardo in 1974 and again in 1991. Nevertheless, the paintings continued to endure rapid deterioration.

By the first decade of the 21st century, yet another restoration of the paintings was clearly needed, and a joint project was undertaken by the National Museum of the Philippines and the Philippine General Hospital, with financial support from the U.S. Department of State through the Ambassadors Fund for Cultural Preservation. The objective of the project was to restore and conserve the paintings and retard deterioration.

In July 2006, the National Museum conservators conducted detailed analysis and documentation and restored the paintings over fifteen months in a specially designated area of the Nurses Home at the Philippine General Hospital.

Upon completion of the treatment, the paintings were once again installed at the main entrance hall of the Hospital. The conservation of *The Progress of Medicine in the Philippines* was hailed as a significant achievement for Filipino conservators and restorers and for all supporters, workers and advocates of culture and history. However, concerns as to the environment surrounding the paintings remained, and the conservators of the Museum observed that deterioration would again accelerate and manifest itself if they were to remain in the same environmental conditions as before. Indeed, paintings displayed or stored in uncontrolled environments would invariably deteriorate over a period of time, no matter what precautions might be taken to arrest the process of damage.

This gave rise to the idea of transferring the original paintings to a gallery of the National Museum, in exchange for high-quality reproductions that would take their place. This would maintain the historical and institutional association of the paintings with the Hospital, for which they had been specifically commissioned and where they had prominently hung for over fifty years. Such an initiative would be unprecedented in the Philippines, but was made possible by the shared recognition of all stakeholders that the paintings were highly significant and clearly formed part of the nation's artistic and cultural heritage.

The materials of Ian Fairweather: 1953-1974

Anne Carter, Gillian Osmond

In 1957, artist James Gleeson (then art critic at the Sun newspaper) wrote that the paintings of Ian Fairweather would never last. Reputedly using whatever materials came to hand within his itinerant lifestyle, the paintings of Ian Fairweather (b.1891 d.1974) are renowned as much for their fragility as for their beauty.

During 2011-12, a small study of Fairweather's paintings was begun by conservators at QAGOMA. A donation of paintings through the Josephine Ulrick and Win Schubert Foundation had recently expanded the Gallery's collection.

The story of Fairweather's use of materials is complex. He formally trained at the Slade School in London, and his early works contain leached oil mediums on cardboard. He began to avoid using oil paint in the late 1930s due to an allergic reaction, probably to turps. War rationing and poverty also affected his material choices. Interviews and letters describe his use of unusual materials from the 1940s until 1958. These include, soap, casein, 'Clag' starch paste and 'Reckitts' blue washing agent. Paintings from the 1940s are among the most fragile of his oeuvre. In 1953 Fairweather settled on Bribie Island, near Brisbane, and developed his late style using 'plastic paints'. Murray Bail (*Fairweather*. 2nd edn., Murdoch Books, Sydney, 2009) theorises that Fairweather only started painting his larger late works from 1958 once synthetic polymer water-based dispersions were available to him.

Using Fourier Transform Infrared Spectroscopy (FTIR) for initial characterisation, the earliest use of synthetic polymer is found in a painting from 1956 in the form of an oil modified

alkyd paint. Industry research and material analysis so far supports Fairweather's predominant use of poly vinyl acetate based paints from 1959 (no works from 1957 or 1958 have yet been analysed). This study also reveals his continued use of alkyd and other as yet uncharacterised paint media into the 1960s. FTIR analysis of media from paintings dated before 1956 has proved difficult due to the small amounts of binder present. However, a significant finding is that Fairweather was not exclusively using water based paints in the late 1950s.

Fairweather's technique continues to elude a simple understanding. He was an artist whose work was directly influenced by the availability of materials. This paper explores how access to materials affected his technique, and of course, the stability of his paintings.

Materials in Tibetan contemporary art: Continuity and contrast with the local painting tradition

Sabine Cotte

Tibetan contemporary creative painting is not very well known. Parallel to a living tradition of thangka (religious scroll painting), maintained and promoted by the Tibetan Government in exile, contemporary artists are slowly emerging from the Tibet Autonomous Region of China (TAR). Born after 1959, these artists were trained in Chinese style art schools and were taught artistic vocabularies such as Socialist Realism. Operating in the controlled environment of the People's Republic's work units, Tibetan groups such as the 'Sweet Tea Artists Association' show original expressions of an identity torn between their Chinese education and their cultural heritage. The growing awareness of their cultural difference and the quest to

artistically represent identity are reflected in stylistic and technical choices. The use of materials that are radically different from the thangka tradition allow them to subtly comment upon their status as an ethnic minority. At the same time, the reappropriation of the traditional technique and iconography leads to its reinterpretation in a 20th century context. The career of artist Gongkar Gyatso, spanning from TAR to London via Dharamsala, illustrates how both technical and iconographic tools are used to produce statements of cultural, political and philosophical value. The successive choices of materials in Gyatso's work, together with the evolution of his artistic style, reflects his exploration of a fractured identity intimately connected to many different cultures (Chinese, European, Tibetan, Indian) and various images of his own cultural authenticity.

Sidney Nolan's adventures in paint: Ripolin®, DULUX®, DUCO® and everything else

Paula Dredge

The results of the analysis of a large collection of paint products from Sidney Nolan's Wahroonga studio has provided a critical reference collection for the analysis and study of paint materials used by the artist. This reference collection has enabled the positive analytical identification of oil-based Ripolin® paint on his works and its distinction from Australian-made alkyd paints such as DULUX® which Nolan also used from at least 1942. To our knowledge, this is the earliest use of alkyd by an artist that has yet been reported.

There have also been unexpected findings for nitrocellulose-based paints on several paintings by Nolan dating from 1941. Although Nolan's commitment to ready-

mixed commercial paints was exceptional, additional evidence has been uncovered to suggest that Nolan was also engaged in processing oils and using driers to manipulate the properties of his paints. And just as we are beginning to unravel the extent of Nolan's engagement with these commercial ready-made paints, we also find evidence of artist's tube oil paint on a number of early paintings. These findings have outcomes for the cataloguing of medium descriptions for his paintings and their future conservation treatment. The reference materials obtained from Nolan's studio are a useful analytical dataset for future studies of these types of materials.

Contemporary encaustic techniques: Johns, Marden and Thek

Michael Duffy

This paper focuses on the materials and techniques of three American artists working in wax-based mediums: Jasper Johns (born 1930), Brice Marden (born 1938), and Paul Thek (1933-1988). As early as the 1930s, artists such as Arthur Dove, Hilaire Hiler, Diego Rivera and David Alfaro Siqueiros were embracing this medium and praising wax for its pleasing brightness and clarity. In the mid 1950s Jasper Johns used encaustic techniques almost exclusively for his paintings of maps, flags, and targets. Johns directly influenced artists such as Paul Thek to follow suit in the 1960s. By the 1970s Brice Marden exploited a molten wax and oil medium to produce the lustrous surfaces of his monochrome paintings.

While the incorporation of wax has its optical advantages it may result in a surface that is susceptible to marring or abrasion. Since the encaustic surfaces are not compatible with surface coatings,

they remain vulnerable unless glazed or somehow protected. Some solutions to the problems encountered when dealing with encaustic and oil-wax paint films will be offered, based on the author's experience with the Jasper Johns Retrospective (Museum of Modern Art, New York, 1997) and recent research into Paul Thek's methods and materials. Examples where artists or the artist's assistant have restored their own works will be noted. Materials and methods from past treatments of encaustic works from MoMA's collection will be discussed as well as more recent treatment strategies.

The re-emergence of encaustic technique as a contemporary art medium has been the subject of several recent books and exhibitions. While wax-based techniques were used by a variety of artists throughout the 20th century, it wasn't until the '50s and '60s that the medium came to be exploited for its versatility and compatibility with a wide range of techniques, methods and materials.

Encaustic Methods and Materials, published in 1949 by Frances Pratt and Becca Fazel, helped spur interest in the technique. They described encaustic as a "burning in" process "wherein the heat from the action of the fire is used to fix or seal the quality of the painting, both during the progress of the work and after completion as a final preservative against the inroads of time."

Artist and educator Karl Zerbe (1903-1972) was one of the first adherents of the encaustic technique. His formula consisted of 8 parts beeswax, 1 part dammar and 1 part Venice turpentine. He would apply pigment in this medium in thin layers and then fuse them with a final burning in process with an electric heat lamp.

In the '50s encaustic paint began to be offered in a more user-friendly format. This advertisement from Joseph Torch in New York City appeared in Art News in November 1950: "Encaustic Paints, previously difficult to obtain and laborious to use, now offered in stick form along with an electrically heated palette, a combination which promises to simplify greatly the process of working with this ancient and permanent medium."

Radical techniques and investigations into modern materials

Melina Glasson, Carl Schiesser, Robyn Sloggett, Stephen Best

The twentieth century saw the creation of many novel synthetic materials. Some of these new materials were taken up by artists and conservators and have consequently found their way into modern collections. However, as these synthetic materials are relatively new, there is often uncertainty in how they will behave over time. As such, understanding their fundamental chemistry is crucial as it can provide valuable insight into their stability. Moreover, by observing the chemical changes that occur during controlled degradation, important information can be gained rapidly. Utilising profluorescent nitroxide technology, the stability of polyvinyl acetate (PVAc) based materials has been investigated. The results of these studies will be presented.

Liberation down under: The early use of synthetic emulsion paints by New Zealand artists

Sarah Hillary, Katherine Campbell, Melanie Carlisle, Herant Khanjian, Tom Learner

A new approach to painting in the 1960s in New Zealand was linked to an exploration of new materials and ways of using them. New synthetic emulsion paints had become available with properties quite distinct from those of traditional oils. These were taken up with gusto as their versatility and ease of use appeared to provide further liberation from past methodologies.

The approach to materials was conditioned by availability, as New Zealand is a small country that is relatively isolated geographically and manufactures few supplies for artists. Import restrictions in the 1960s were intended to encourage local production, but instead resulted in art materials being scarce and expensive, or of poor quality. Since the war years, New Zealand artists had been forced to supplement their art supplies with home-made paints and commercial products, so innovation during times of scarcity was not new, but by the 1960s an experimental approach to materials was much more widespread, and was done with a certain amount of revolutionary pride.

The greater acceptance of innovation was based on an increasing confidence by the local art community. In the 1960s, public art galleries had become professionalised and dealer galleries had begun to open in the main centres. Contemporary New Zealand art was being taken seriously for the first time, and artists had an infrastructure to support their careers. In addition, a new exploration of the cultural dimension of arts

and crafts propagated by the Government's Education Department contributed to a revitalisation of Māori art. There was a strong sense had by the emerging avant-garde that a new art required different approaches, and this included new materials.

This paper presents the findings of a study looking at the early use of PVA and acrylic paints by New Zealand artists in the collections of Auckland Art Gallery and Museum of New Zealand, Te Papa Tongarewa.

Seeking the authentic moment. De- and re-materialisations in Paik's video and mixed media installations – a conservation inquiry

Hanna Hölling

In recent decades, the discussion of ephemeral, mixed-media artworks in museum collections and on temporal displays has become increasingly widespread. As the theoretical discourse turned towards the incorporation of art into life, the museum still remained a representation of static and historical construction. However, the ubiquitous presence of transient, fugitive and contingent artworks that are understood as ongoing processes rather than completed objects, has provoked the opening of static regulations within the museum domain. The preservation and conservation of art objects has become a process constructed by the multidisciplinary collaboration of different specialisations.

The contingent, variable character of mixed-media artworks is mostly attributable to the changing character of their constituents. This challenges the classical understanding of the conservation pursuit - namely to

preserve art objects in their original state in the best way possible. At a time when art objects, by their very nature, have more than one identity and the notion of authenticity can have multiple meanings, we still have to struggle with conventions that 'freeze' an artwork in its one particular condition. On the other hand, our understanding of the original artwork in the field of technology-based art and mixed media installations appears to be increasingly flexible in comparison to in traditional art. This allows more freedom in the re-execution and replacement of an artwork's elements, but has inevitable consequences for the integrity of an art object and its meaning.

My paper shall discuss the questions of re-installation, exhibition and conservation and their impact on the meaning of artworks, with examples from a number of selected installations by the Korean artist Nam June Paik, which constitute a large part of my doctoral research at the University of Amsterdam. As I shall demonstrate, Paik's oeuvre is particularly interesting to our inquiry due to his versatile attitude towards the medium - his installations being technological and performative entities on the one hand, and traditional sculptural elements, occasionally painted in an autographic gesture, on the other. When it comes to the moment of their conservation, the dualism of their allographic and autographic character is revealed, posing the most challenging dilemma in decision-making. Can historical evidence be replaced for the sake of functionality?

Further, I shall problematize and juxtapose the notion of conceptuality in early media art with a material-bound approach in conservation. How far may installations be changed during their re-executions, following which regime of values, and who is

entitled to allow for these changes? Should artistic intention which interferes with the life of the artefact after it has entered a museum collection still be considered?

What is the relationship between material change and the change of the meaning of the object?

Providing decision support tools for art conservators through a shared knowledge base

Jane Hunter, Suleiman Odat

Painting conservation has evolved into a highly multidisciplinary research topic that requires the integration of knowledge about art history (artworks, artists, artistic techniques), the physical and chemical properties of paint and pigments, paint conservation treatments and sophisticated characterisation techniques that can help determine the precise cause of the degradation that is occurring.

The challenge is that relevant data and metadata is highly heterogeneous and distributed across databases, scholarly publications and the Web. Expertise, also, is distributed across art galleries, conservation centres and universities around the globe. Although it is possible to find some concentrated authoritative collections of information on this topic on the Web (e.g., Journal of the American Institute of Conservation, Smithsonian Museum Conservation Institute (MCI), Getty Conservation and Research Institutes, CAMEO materials database and Forbes Pigment database), the information is often embedded within databases or within highly unstructured textual documents and the relevant information is difficult to extract, re-use, interpret, correlate or compare. Moreover, it is often the case that conservators are reluctant to admit

to mistakes or to share case studies that document errors and help to prevent future similar mistakes being made.

This paper describes information technology research undertaken at the eResearch Lab at the University of Queensland as part of our collaboration within the ARC Twentieth Century Paint Project. We firstly describe the common ontology or data model that we have developed to integrate relevant cross-disciplinary data on the Web – the OPPRA Ontology for Paintings and PReservation of Art.

We then describe the services that we have developed, based on this ontology, that have been designed to support decisions made by painting conservators: a Web Portal that provides an integrated search interface to related online collections and databases of relevance to paint preservation including: INCCA Database for Artists' Archives, Winsor and Newton Archive, NIST Chemistry WebBook, IRUG Spectral Database; an Experimental Data Repository that enables experiments and data (characterising changes in microstructure, chemical reactions and other properties), associated with art conservation research to be documented, discovered, shared and re-used; a Publication Repository that provides a metadata store that links publications distributed across many sites on the Web, and extracts structured knowledge from publications so that the implicit knowledge can be easily discovered, re-used and correlated; an online Wiki that can be used to submit and collaboratively discuss case studies about specific paintings, genres or conservation issues.

Artist materials during the 1940s, with a focus on Arthur Boyd's paintings in the Heide Museum of Modern Art Collection

Vanessa Kowalski

The Heide Museum of Modern Art collection essentially began in 1934, when John and Sunday Reed opened their home to like-minded individuals, such as artists Sidney Nolan, Albert Tucker, Arthur Boyd and Danila Vassilieff. The 1940s were a period of change and development in art in Australia, and Heide was the hub for avant-garde artists and writers in Melbourne throughout this period. Since that time, the Heide collection has continued to evolve and is now considered one of Australia's most important cultural collections, representing a broad range of mid-century art genres from figurative to abstract, expressionist to realist. Many of the artists represented in the Heide collection are now regarded as central figures in Australian modernism.

Recent conservation treatments of key paintings from the Heide collection, specifically Arthur Boyd's *South Melbourne* series, dating from the early 1940s, raised questions regarding materials the artists were using. The conservation treatments, largely focusing on grime and varnish removal, presented various challenges. These challenges led paintings conservators at the Centre for Cultural Materials Conservation to consider whether the materials being used by Boyd and his contemporaries related to their access and availability, especially through the period of World War II, or whether the materials were chosen for a desired effect and particular finish. Their use of non-traditional materials has consequently resulted in the paintings from the Heide Collection exhibiting a wide

and diverse range of ageing characteristics which now require conservation attention.

Using conservation treatments undertaken at the CCMC as case studies, together with primary source evidence from the Heide archives, this paper draws attention to circumstances which might have influenced the selection of painting materials used by artists in Melbourne during the mid-twentieth century, with a focus on Arthur Boyd.

From test-tube to treatment: Conservation considerations in the development of an alternative approach in the control of biodeterioration

Caroline Kyi, Carl Schiesser, Robyn Sloggett

To facilitate the successful alignment of scientific endeavours in a cultural materials conservation context, an understanding of an object across all levels of its physical, chemical and cultural significance is required. Therefore, when looking to a scientific discipline such as chemistry to contribute to a conservation treatment, the requirements of the object should direct the intervention response and application methodologies.

This review discusses the approach currently adopted — and insights gained — in the merging of a range of conservation practices and scientific techniques in the investigation of an alternative approach to the treatment of biodeterioration.

The paradox of conserving the paintings of Manuel Ocampo: Contemporary issues of traditional concerns in artists' material choices

Ana Maria Theresa P. Labrador

A work in progress, this paper looks into using an ethnographic approach in conservation decisions that are made for contemporary art. Cases could be argued for getting the artist involved especially since contemporary art making increasingly involves little-studied materials and techniques. This approach would include documenting from interviews and observations, the artists' style and media, as well as their social and cultural contexts. The production, distribution and consumption of their art would be considered.

An example would be the works of Manuel Ocampo and his colleagues, whose art most often slips categories despite the form (in his case, painting) being seemingly conventional. Besides Ocampo, I will be discussing briefly the works of Gerardo Tan, Ringo Bunoan, Geraldine Javier, Gaston Damag and Juan Alcazaren. These artists are now considered mid-career in the streams of contemporary art. I have worked with them variously as a curator and art writer from the 1990s to early 2000s, learning the value of engaging with them in understanding their creative processes and other intangible information that serves as background for considering their artworks. These modes could prevent the consequence of one Philippines-based art dealer's ignorance about Ocampo's painting, looking for a 'restorer who could clean a painting she is about to sell because it was dirty from paint dripping on it.' In this case

the drips were intentionally added by the artist and are vital to his work. There is a lot to be said for encouraging conservators and others in the art world to take advantage of artists being able to articulate about their practice. Conservators could take heed of tendencies to insist upon traditional methods in caring for them and may be judicious in treating these as they would collections classified as ethnographic art.

A conversation: Treppang — how the history of north-south trade between Indonesia and Australia continues to exhibit in contemporary aboriginal art

Marcia Langton and Robyn Sloggett

Documented trade routes have existed across the continent of Australia for tens of thousands of years. These trade routes have resulted in innovative art practice and theory in Aboriginal and Torres Strait Islander communities. The innovation resulting from the more recent trade in Western artists' materials is well understood and well documented. Less well understood is the innovation that developed as a result of another important and much earlier international trade route that brought cultural material and commodities traded from China through the Indonesian archipelago to and from the northern coastline of Australia. This paper examines how these two important trade routes from the West and the East have introduced the materials and the content for artistic practice that is still used in contemporary art making today.

The polyester sculptures of De Wain Valentine: Meaning, intent and conservation issues

Tom Learner, Rachel Rivenc, Emma Richardson

De Wain Valentine (born 1931) was one of a number of artists during the postwar era in Los Angeles who adopted new materials and highly innovative fabrication processes for their work, many of which were being developed locally for use in the aerospace, boat, automobile, and even surfboard industries. However, none of the commercially available polyester resins could be cast in large volumes — anything more than a thin layer of resin would crack badly during the curing process due to the high levels of heat released. Unwilling to accept this limitation, and with much trial and error, Valentine was able to develop a new polyester resin with a local resin company that would allow him to create, with a single pour of resin, luminous artworks of much larger proportions. One of the largest polyester pieces he made was *Gray Column* in 1975-6, which measured over 3.5 metres in height and 2.4 metres in width, and weighed over 1500 kilos.

Although polyester appears to be a relatively stable material, Valentine's sculptures are easily marked and scratched, and the resin itself continues to move after curing, so the pristine surface of his work — which is so crucial to its function — is difficult to maintain. In fact, the usual procedure for conserving his work would be to re-sand and re-polish the surface prior to display, thereby regaining the work's original appearance, but at the expense of removing its surface; as such, it offers an excellent example of the common conflict faced by conservators between an artist's intent and

the responsibility to preserve the integrity of the original materials.

This paper describes the technical story behind *Gray Column*, as well as the complex conservation challenges it faces.

The artist's role at the point of installation

Tamar Maor

The acquisition process in many museums currently involves an approach which aims to obtain all information necessary for the ongoing installation of artworks while avoiding the commitment and necessity of long term artist involvement. There are more and more artworks in museum collections and being made which are challenging this protocol. These are works where the artist or artist assistant's input and presence is needed for the optimal installation of the acquired artwork. These artworks by nature require the artist to either recreate the work to suit each gallery or perform or be involved with a performance, or require the artist's hand or touch for each installation. These works do not fit into the current acquisition framework and at the moment museums and galleries are either at risk of installing them incorrectly and not to the artist's standards, or they are requiring the artist's continued involvement but currently without a clearly defined plan or approach for sustainability and the inevitability of mortality.

This paper will focus on those artists where a specific artistic technique, such as the careful application of pigment in Anish Kapoor's pigment sculptures or the mud application to a wall in Richard Long's paintings, is ideally (or only) performed by

the artist or an artist appointed assistant. The question arises as to whether conservators should be changing or shifting the acquisition process to allow for an ongoing artist relationship where knowledge and technique is gradually transferred. The risks and long term commitment of such a change will be discussed alongside the challenge of documentation of these artist techniques, with possible solutions also addressed.

Material matters: Commissioning contemporary artworks from Papua New Guinea for 'The 7th Asia Pacific Triennial of Contemporary Art'

Ruth McDougall, Kevin Apsepa

In July 2011, the Queensland Art Gallery | Gallery of Modern Art embarked on a project looking at contemporary art created in Papua New Guinea. A particular focus was to look at performative and architectural structures created out of ephemeral materials. As well as collecting a number of masks, which would customarily be destroyed at the end of a ceremony, the Gallery commissioned two major architectural structures from artists based in the East Sepik. In both Abelam and Kwoma villages the men's spirit house is the main focus of artistic production. Yet these structures are created out of unstable organic materials, and in the case of the Abelam Korumbo are left to rot after completion of the initiation cycle for which the house was created.

After many discussions between Conservation, Exhibition and Curatorial staff at the Gallery and return visits to talk with the artists in Brikiti and Tongwinjamb villages, a decision was made for the artists to travel to Australia and to work with

more stable, non-traditional materials. This paper will explore this process and the artists' responses to these new materials. In doing so the paper will engage with cultural differences that exist in aesthetic appreciation as well as the tensions between the process of collecting objects created from organic materials and ideas of permanence which lie at the heart of western collecting practices.

Waringarri Aboriginal Arts Centre: Addressing conservation meaning through the needs of a community art centre

Jennifer O'Connell, Robyn Sloggett, Lyndon Ormond-Parker

The conservation profession has well established methods and practices for addressing preservation needs. The practicality of these, however, can be called into question when they are applied outside an institutional environment, particularly in a different cultural context. This paper will explore the meaning of conservation through the experience of addressing the needs of an Aboriginal community art centre.

Aboriginal community art centres hold significant art collections, which require conservation care for their long-term preservation. Following documentation of the community collection at the Waringarri Aboriginal Arts Centre, Kununurra, Western Australia, a method is presented for the assessment and care of permanent collections at community art centres. Background research examined the history of the area and the collection. A literature review assessed available conservation and documentation methodologies.

To establish conservation issues, deterioration factors of Aboriginal art in the region of the East Kimberley were considered. It was found that limited documentation was one of the key conservation issues. In addition, the issues related to problems such as lack of infrastructure, resources and funding. A database was designed and created as part of this research and provides a template for collections in art centres. Short term recommendations relate to a significance assessment, preventive conservation program and detailed documentation in the form of an extension of the database that was created as part of this research.

In addition to these recommendations, a much larger strategy is recommended that involves a national approach to conservation documentation of Indigenous art from a body such as the Australian Institute for the Conservation of Cultural Material (AICCM) in the form of a Special Interest Group, much like the Archives Society of Australia's Indigenous Issues Special Interest Group. This would involve collaboration with representatives from art centres and develop a framework for training, resources and funding.

Artists' acrylic emulsion paints: Materials, meaning and conservation treatment options

Bronwyn Ormsby, Tom Learner

Conservation issues surrounding the use of artists' acrylic emulsion paints have now been investigated - largely from a scientific perspective - for more than 10 years. As a result, we have a better understanding of several important aspects pertaining to the care and understanding of works of art made with these paints including typical paint constituents, physical properties and

how these properties may change with age, the risks associated with conservation treatments such as surface cleaning, the risks associated with applying more invasive protective measures such as varnishing, and the risks associated with inappropriate preventive conservation measures.

We also have a more pragmatic understanding of the potential ethical and aesthetic issues associated with the use of (primarily wet) cleaning systems on these paint films, and in particular, changes occurring at the paint surface - on both model test films and case study works of art - such as the removal of original migrated surfactant material from paint surfaces, the extraction of original material from paint films and more recently, preliminary investigations into cleaning system residues.

Recent collaborative efforts between the conservation community and industry have begun to produce new cleaning systems designed to minimise these inherent risks, including aqueous-based and non-polar solvent options and recently developed water-in-oil micro emulsions. This paper summarises each of these aspects, and broadly introduces both the new methodological approaches and cleaning system options now becoming available to (and evaluated by) conservators, while also presenting case study works of art where possible and highlighting areas requiring further investigation.

Zinc oxide centred deterioration in 20th Century Vietnamese paintings by Nguyen Trong Kiem

Gillian Osmond, Bettina Ebert, John Drennan

The paintings of Nguyen Trong Kiem (1933-1991) reflect the mid-20th century practices evident in Northern Vietnam, encompassing influences of French modernist painting technique, traditional indigenous 'folk' traditions and socialist realism. Although art education and the exhibition and sale of paintings during the war years in Vietnam was controlled by the Việt Minh and directed towards production of paintings with nationalist themes or as socialist propaganda, the influence of French salon techniques which had dominated Vietnamese art education during the Colonial period from 1923 remained strong. Trong Kiem was a loyal and respected member of the Government controlled Arts Association, but he also maintained connections with non-sanctioned artists and found opportunities to experiment with modern art styles.

Two of Trong Kiem's paintings from the 1960s have been the subject of detailed investigation within the University of Northumbria Conservation program in 2007-8. This paper describes further investigation of these paintings and others by Trong Kiem now in the care of Witness Collection, an important collection of modern and contemporary Vietnamese art. It forms part of a broader study into deterioration of paintings linked to the presence of zinc oxide. The deterioration described in Trong Kiem's paintings to date is reassessed and deterioration observed in paintings from the 1960s is compared with that evident in works from the post-Vietnam War period (late 1970s-1980s).

The presence of zinc oxide in the paintings remains ubiquitous, despite Trong Kiem's stated preference for titanium whites. Widespread flaking and structural instability is an ongoing concern.

This paper draws on close physical examination and detailed technical investigation of 5 paintings by Trong Kiem. Optical microscopy, electron backscatter imaging and energy dispersive X-ray analysis, synchrotron Fourier transform infrared (FTIR) mapping and conventional FTIR of paint samples are used to elucidate details of Trong Kiem's materials and the deterioration occurring in his paintings. Of particular interest are the presence of zinc carboxylates, zinc carbonate and zinc sulphate as products of deterioration. The competing reactions involving zinc oxide which lead to the formation of these compounds are discussed. Trong Kiem's materials and techniques show many parallels to early 20th century French painting practice, however, the limited availability of painting supplies in Vietnam, exacerbated by decades of communist isolation, has inevitably resulted in material substitutes. The hot, humid conditions and high pollution levels in Vietnam, coupled with Trong Kiem's use of lithopone-based ground layers, paints containing zinc oxide of different grades and in varying pigment combinations and the presence of water-based size layers and hygroscopic fillers, are all significant factors in the current condition of these paintings.

Review of data analysis methods for Synchrotron FTIR Microscopy: Application to twentieth century paints

Ljiljana Puskar, Stephen Best, Robyn Joyce Sloggett, Nicole Andrea Tse, Paula Dredge, Gillian Osmond, Mark Tobin

The twentieth century saw the uptake of industrial paints in modern works of art in both Australia and Southeast Asia. Composed of new media, pigments, dyes and additives in varying proportions, industrial paints are complex in structure. Now some fifty years later, identification methodologies to serve conservation practice are being developed.

Synchrotron techniques, including Fourier transform infrared (FTIR) microscopy have increasingly been used in the analysis of complex materials of cultural heritage. The high brightness of the synchrotron beam allows chemical investigation of very small sample areas (3-5 square microns in mid IR spectral region) often without compromising data quality. In addition, raster scanning of a sample allows for generation of 2D "chemical maps" which provide information on the lateral distribution of molecular functional groups and therefore of different components. Preparation of paint samples for FTIR microscopy is often very challenging and plays a large role in the data quality.

The limitations and advantages of different sampling and measurement techniques will be reviewed on several paint samples recently studied at Australian Synchrotron IR beamline. These include samples of the Silpakorn paint range from Thailand studied by the Centre for Cultural Materials Conservation and University of Melbourne and Ripolin® paint samples from the Nolan

Studio Archive at the Art Gallery of New South Wales. The emphasis is on the best data analysis to reveal information of the components of heterogeneous mixtures and even the trace components, particularly if they are present in an apparently 'homogeneous' paint film. These include chemometric methods such as PCA, PLS and MCR and also Unsupervised Hierarchical Cluster Analysis (UHCA) and Artificial Neural Network (ANN) classification for spatial localisation of specific components.

The continuing development of Synchrotron based x-ray fluorescence elemental mapping techniques for understanding paintings

David Thurrowgood

This paper details advances in the use of x-ray fluorescence mapping of paintings made since the work presented at the AICCM Paintings Special Interest Group symposium in 2010. Substantial advances have been made in the technique, and published at international forums in the intervening period. Researchers at the Australian Synchrotron (AS) are now able to generate the world's highest resolution elemental maps and false colour representations of complete painted surfaces and underlying earlier paintings. The paper details recent results obtained at the AS and outlines advances made in the development of pigment identification and interpretation. It outlines the areas of applicability for the technique, and details successful outcomes. It will be proposed that the technique is sufficiently advanced that it has become a viable option for undertaking high level studies on important artworks and for revisiting questions where conventional techniques have been unsatisfactory.

Material sources before and after the Second World War in Malaysia: A case study of Yong Mun Sen's (1896-1962) oil paintings

Nicole Tse, Amerrudin Ahmad, Claire Heasman, Musrizal Mat Isa

The pioneer Malaysian artist, Yong Mun Sen (1896-1962) painted in oils from the 1920s until his death in 1962. He produced paintings before and after Malaysia's Second World War (1939-1945) and Japanese occupation (1941), at a time when there were massive changes and interruptions in material production, trade and distribution practices. This paper reports on the examination of eight Yong Mun Sen paintings belonging to the National Visual Arts Gallery of Malaysia and investigates their materiality to consider how supply impacts on artistic choice and production. These paintings are of particular interest as their dates of production, between 1935 and 1955, correspond to the advent of the Second World War. Consequently war time restrictions on trade and painting supplies may have affected the artist's choice of materials.

An examination of Yong Mun Sen's works highlighted the re-use of artists' colourmen supports and the use of a thickly woven cotton fibre support, characteristic of a proprietary source rather than artists' colourmen. A study of the materiality of the ground layer found inert fillers across all, and lead white in only the 1935 and 1941 paintings. The media layers were identified as oil, and efforts were made to distinguish commercial from artists' colourmen sourced paints through an investigation of their white pigments.

These results are correlated against the technological and business history of material supply and production in Malaya from 1935 to 1955 to determine the impact of the war on artistic production. Paint supply in Malaya was dominated by ICI (Malaysia) from when it was established in 1930. Paints were imported from the UK until local production commenced in 1959. From 1931 there were also two art supply distributors in Penang and Kuala Lumpur, who mainly stocked Winsor & Newton and Rowney materials. Yong Mun Sen himself supplied artists' materials at his photo studio. These materials were obtained from 'Straits Commercial' in Singapore. The trade concessions provided to English products under British colonial rule also meant these products dominated the market, but were restricted during Japanese occupation, until they were re-instated again after the war. Lastly, the availability of local hard woods and fabrics through the Chinese retailers were material options for artists. These wide ranging sources highlight the material choices available to Yong Mun Sen and are used to assess the impact of war and the wider social, economic and cultural influences on his practice.

Decision making strategies for the long term preservation of contemporary art by living artists. Case study — *Made to last: The conservation of art touring exhibition*

Sherryn Vardy, Sophie Lewincamp

Contemporary artists use traditional, modern and sometimes unconventional materials, chosen because they are an integral part of their conceptual practice, workable or readily available. This paper highlights the significance of the artist's

original intent and the importance of tangible and intangible concepts to assist in the long-term preservation of their practice. This can then inform treatment or preventive conservation decisions regarding the storage and display of contemporary work.

This research aims to determine decision making strategies for the long term preservation of contemporary art by living artists, using the case study of the National Exhibitions Touring Support (NETS) Victoria touring exhibition 'Made to last: The conservation of art'. An interdisciplinary approach to decisions regarding preservation is required and reaches beyond information from the artist. The artist's intent is foremost when considering the preservation and conservation of contemporary art, but there are other stakeholders in the decision making process: artists, directors/curators, conservators and the public. To what extent do these stakeholders have influence or can assist in developing appropriate decision making strategies?

This paper will collect and review information surrounding the chosen artist's practice, materials and intent. Also discussed are the outcomes of recent liaisons with artists, professionals and the viewing public, which focussed on questioning knowledge of conservation approaches to contemporary art. Through further research and a greater knowledge of the expectations of gallery professionals and visitors regarding the appearance and longevity of work by living contemporary artists, informed decision making strategies for long-term preservation can be developed. Indicative of the venues to which *Made to last* will tour, small and regional galleries are referred to in this research.

The introduction of new painting materials in Adelaide in the Mid-Twentieth Century

Helen Weidenhofer, Eugene Taddeo, Chris Payne, Tim Ould

The impact of new painting materials introduced in the 1950s and 1960s in Adelaide is examined through the work of artists active in the South Australian School of Art. The mid-twentieth century was a period of rapid change in contemporary art practice and the availability of new materials allowed artists to push the boundaries. In the small Adelaide art scene, a core group of local artists eagerly experimented with the new ideas emanating from Europe and New York, and influenced the next generation of artists through their teaching.

Author profiles

Amerrudin Ahmad has been working as a Curator for Conservation at the National Visual Arts Gallery (NVAG) of Malaysia since 1997. He has a Bachelor in Art and Design (Fine Art) from the University Teknologi MARA, Shah Alam, Malaysia (1994) and undertook conservation studies at the National Research Laboratory for Conservation of Cultural Property, Lucknow, India in 1999. He is currently undertaking his Masters in Conservation in the United Kingdom. Amer has curated many exhibitions at NVAG, abroad and with private galleries.

Sharon Alcock graduated from the University of Canberra in 2004 with a Master of Applied Science in the Conservation of Cultural Materials, specialising in paintings conservation. From the beginning of 2005 until October 2008 she worked in various contract positions as a conservator with Museum Services Australia Pty Ltd, the Australian War Memorial and the National Gallery of Australia. Since October 2008 Sharon has worked as a paintings conservator at the National Gallery of Australia.

Stefanie-Ann Alexander began her PhD candidature in 2011 after an unusual journey from Science to Conservation and back again. She completed a Bachelor of Biomedical Science with Honours in Chemistry in 2007 and a Masters of Cultural Materials Conservation in 2010, both at the University of Melbourne. Her Master's thesis, entitled *Controlling the Biodeterioration of*

Cultural Materials Using Free Radical-based Treatments looked at the effect of bacterial microorganisms on the biodeterioration of cultural material and investigated new treatment methodologies involving free-radicals. Over the last two years she has worked at the Centre for Cultural Materials Conservation as an assistant paper conservator where she has participated in many exciting treatments. Since commencing her PhD she has received the Melbourne Abroad Travelling Scholarship, the Bio21 Institute Postgraduate Student Travel Award and the T.W. Healy Award that have allowed her to travel most recently to the 11th International Symposium on Organic Free Radicals in Berne, Switzerland, and the 2nd International Conference on Chemistry for Cultural Heritage in Istanbul, Turkey. Earlier in 2012 the outstanding academic excellence in her Master's degree was recognized with a Dean's List Honours Award, presented by the Dean of Arts at the University of Melbourne.

Kevin Apsepa is a member of Tongwinjamb's Wanyi (cassowary) clan. A dedicated spokesperson for Kwoma culture, Papua New Guinea, Apsepa has created his own company, Kwoma Primitive Arts. He regularly exhibits work as part of the Ambunti puk puk (crocodile) festival and has been commissioned with his elder brother Daniel Kouminja to create works for organisations such as the Department of East Sepik, Division of Education. Apsepa's work is represented in numerous private collections.

Jeremy Barnes is Director (Director IV) and Trustee ex officio at the National Museum of the Philippines. He has worked as Assistant Secretary at the Office of the President, Director at the Malacañang Museum, Office of the President and at the Presidential Museum, Office of the President. He completed a Master of Science in Economics (De La Sale University, 2002), a Bachelor of Arts (Russian and Chinese) and a Bachelor of Commerce (University of Queensland, 1995). Publications include *The SSS Legacy: Fifty Years of the Social Security System in the Philippines: 1958-2008* (2008), *Assembly of the Nation: A Centennial History of the House of Representatives of the Philippines: 1907-2007* (2007) and *Malacañan Palace: The Official Illustrated History* (2005). He was awarded The Presidential Medal of Merit, conferred by the President of the Philippines, 2010 and The Order of Isabel la Católica, with the rank of encomienda, conferred by the Minister of Foreign Affairs and Cooperation of the Government of Spain, 2007.

Dr Stephen Best is a senior lecturer in the School of Chemistry at the University of Melbourne and has a long term interest in cultural materials conservation. He is a Chief Investigator on the ARC Linkage Grant 'The Twentieth Century in Paint' and has been the key driver in the application of vibrational (IR) spectroscopy to twentieth century paint films at the Australian Synchrotron. While at University College London Best, together with Professor R.J.H. Clark (Chemistry Department, UCL), led a research team conducting some of the early investigations using Raman microscopy to identify pigments on mediaeval manuscripts.

Katherine Campbell is a paintings conservator at Te Papa Tongarewa Museum of New Zealand. She graduated from the University of Canberra with a Bachelor of Applied Science in Materials Conservation in 2000, after which she worked both in private practice and at the Art Gallery of New South Wales. In her work at Te Papa since 2005 she has undertaken many major treatments on both historical and contemporary paintings in the national collection, including technical examination, with Sarah Hillary, to contribute to the Rita Angus catalogue.

Melanie Carlisle graduated from the University of Canberra with a Bachelor of Applied Science specialising in the Conservation of Cultural Materials in 2002. She has worked at the Australian War Memorial in Canberra and the National Gallery of Victoria (NGV) in Melbourne in Paintings and Exhibitions Conservation. In 2006 Melanie began the 2-year H.D.T. Williamson Foundation Paintings Conservation Fellowship at NGV which focused on the treatment and technical examination of Australian paintings. Upon completion of the Fellowship, Melanie became a Paintings Conservator at Te Papa Tongarewa Museum of New Zealand in Wellington.

Anne Carter has worked as Paintings Conservator at the Queensland Art Gallery | Gallery of Modern Art, Brisbane since 2000, undertaking the role of Head of Conservation from 2002-2006. Anne studied a Bachelor of Applied Science in Conservation of Cultural Materials (Paintings) at the University of Canberra (1996), after completing a Bachelor of Art (Art History) from the University of Queensland (1988) and a Diploma of Art (Illustration) from Queensland College of Art (1986). Anne undertook a two year

internship at the Museum of Modern Art, New York in 1997-9 where she studied the devarnishing of modern oil paintings. Her interests continue to include the conservation of modern and contemporary paintings. QAGOMA is a participant in the ARC-funded 'The Twentieth Century in Paint' research project.

Sabine Cotte has degrees in conservation of paintings from the Institut Français de Restauration des Oeuvres d'Art (Paris, France), ICCROM (Italy) and University of Melbourne (Australia). Since 2001 she has been working as a freelance conservator in Melbourne after working ten years in Paris, both on Western and Himalayan art, for museums, institutions and private clients. Since 1992 she has completed various missions for UNESCO and private foundations in Bhutan and Nepal, and trained a number of regional people in heritage conservation. She has published several articles and posters on Himalayan thangkas in international journals and conferences. She recently completed her Masters in Conservation at Melbourne University on *Tibetan paintings: conserving a living religious heritage in Australia*.

Paula Dredge is Head of Paintings Conservation at the Art Gallery of New South Wales. This research formed part of her PhD thesis undertaken in 2009-2012 on the subject of *Sidney Nolan and paint: A study of an artist's use of commercial ready-made paints in Australia from 1938-1953*. This project was undertaken under the auspices of the research group 'The Twentieth Century in Paint' which was funded under the Australian Research Council Linkage grant program. The Art Gallery of NSW partnership funding was provided by the Art Gallery of NSW Conservation Benefactors.

Professor John Drennan is Director of the Centre for Microscopy and Microanalysis, University of Queensland, and Node Director and Scientific Chair of the Australian Microscopy and Microanalysis Research Facility.

Michael Duffy received his Bachelor of Arts in Art History from Rutgers College and a Master of Science in Art Conservation from the University of Delaware / Winterthur program in 1988. As of 1993 he is a conservator at The Museum of Modern Art where he specializes in the treatment of modern and contemporary paintings. In 2004 he conserved Picasso's *Les Demoiselles d'Avignon* for the reinstallation of the MoMA galleries. The treatment is presented on MoMA's website and in the IIC publication *Modern Art, New Museums* and was featured in the Smithsonian and *The New Yorker* magazines. Michael has interviewed artists including Lee Bontecou and Brice Marden on their materials and techniques. He is a professional associate of the AIC was recently elected a fellow of the IIC.

Bettina Ebert is Senior Paintings Conservator at Asiartha Foundation in Kuala Lumpur, Malaysia, where she is in charge of collections care and conservation of the Witness Collection, a comprehensive collection of modern and contemporary Vietnamese art. Bettina holds a Master of Arts in Conservation of Fine Art from Northumbria University, and specialises in the treatment of Southeast Asian paintings.

Melina Glasson graduated from the University of Melbourne in 2009 with a Bachelor of Science with Honours in Chemistry. She is currently a doctoral candidate at The University of Melbourne investigating the chemical degradation of

twentieth century artist materials as part of the ARC Linkage project 'The Twentieth Century in Paint'.

Claire Heasman completed her Masters in Cultural Materials Conservation in 2010 and is currently employed as an Assistant Paintings Conservator with International Conservation Services in Sydney. In 2010 she completed her Minor Thesis on the materials and techniques of Yong Mun Sen's oil paintings.

Sarah Hillary is the Principal Conservator at the Auckland Art Gallery Toi o Tāmaki. She graduated with a Masters in Applied Science in the Conservation of Paintings from the University of Canberra and her first degree was a Bachelor in Art History from the University of Auckland. Sarah's first 14 years at the Auckland Art Gallery (AAG) were focused on the outreach program providing a conservation service for regional museums and art galleries, and eventually, the general public. Her work has been more focused on the AAG collection since she became Principal Conservator in 1998. Sarah has specialised in the technical examination of paintings and has published work on the techniques of New Zealand artists Colin McCahon, Rita Angus, Frances Hodgkins and Gottfried Lindauer, as well as international artists James Tissot and Guido Reni.

Hanna Hölling is a conservator and a researcher in the field of contemporary art and new media. She trained at the Academy of Fine Arts in Warsaw, University of Applied Science in Cologne and Central Institute for Conservation in Rome. Until 2009 Hölling was Head of Conservation at the ZKM Centre for Art and Media in Karlsruhe. She has lectured at the State Academy of Art and Design in Stuttgart, Department

of Conservation of New Media and Digital Information in the Collection Management program at the Rheinwardt Academy, and at the University of Amsterdam in the program 'Material Art History' as well as in 'Preservation and Presentation of the Moving Image'. She was a research group participant at the Courtauld Institute of Art project 'The Material Life of Things' and a guest researcher at the Netherlands Media Art Institute NIMk in Amsterdam within the project 'Obsolete Equipment Packed'. Currently she is a PhD research fellow in the interdisciplinary project 'New Strategies in the Conservation of Contemporary Art' at the University of Amsterdam, Maastricht University and Dutch Cultural Heritage Agency, working on Nam June Paik and new media.

Professor Jane Hunter is a Research Professor and Director of the eResearch Lab within the School of ITEE at the University of Queensland. She is Deputy Chair of the National Academy of Sciences Committee for Data in Science (NCDS) and Deputy Chair of the Academy of Humanities – Executive Committee for Australasian Association for Digital Humanities (AADH). She is also on the Editorial Boards of IEEE Multimedia, the Elsevier Journal of Web Semantics and the International Journal of Digital Curation. She has published over 100 papers in the fields of digital libraries, Semantic Web and e-Research.

Musrizal Mat Isa has a postgraduate degree in Art and Design Study, Mara University of Technology Malaysia (2002). He undertook a short training course for 6 months at the National Research Laboratory for Conservation, Lucknow, India on wall painting conservation. He has worked as a Curator for Conservation at the National Visual Arts Gallery, Malaysia. Recently,

he completed the conservation of the mural painting of Ibrahim Hussein at Malaya University, Malaysia and is involved in the research of Mural Painting at Old Machap Mosque and Stadhuys Gallery, Melaka with Science University of Malaysia, Penang as part of his Masters study.

Herant Khanjian received his degree in chemistry from California State University, Northridge. His research interests involve the detection and identification of organic media found in historical objects including paintings, photographs, sculptures and decorative art pieces. He has investigated the composition of wall paintings from King Tutankhamen's Tomb in Egypt and Buddha caves in China. He has also examined the makeup of 3.6 million year old hominid footprints in Africa and the first photographic image created in 1826.

Caroline Kyi completed a combined Arts/ Science Degree at Deakin University, Geelong (1997). She then commenced a degree in wall painting conservation at the Courtauld Institute of Art, London (2000). She has since worked both in Australia and overseas on the conservation issues presented by this form of immovable heritage. Caroline has been involved in the teaching of conservation science at the Centre for Cultural Materials Conservation and is currently pursuing her research interest in biodeterioration of cultural materials by undertaking a PhD at the ARC Centre of Excellence for Free Radical Chemistry and Biotechnology. Her thesis topic is *Controlling biodeterioration of cultural materials: The use of free radical-based treatments to inhibit communication pathways of microbial biofilms*.

Vanessa Kowalski graduated from the University of Canberra in 2002, with a Bachelor of Applied Science degree (Conservation of Cultural Materials), specialising in the conservation of paintings. She also holds a BA in Creative Arts from the University of Melbourne (1998). Vanessa initially joined the Centre for Cultural Materials Conservation in 2003, as a post-graduate intern, and has subsequently continued working with the Centre as a paintings conservator. Vanessa also assists with the academic and training programs. Vanessa's main research interest is the conservation of contemporary and modern art. Her past research projects include a study into the use of pyrolysis-gas chromatography-mass spectrometry for analysing alkyd resin paint binders, and investigations into the materials and techniques of a number of twentieth century artists. Vanessa was a Helena Rubinstein intern at the Museum of Modern Art in New York (2006) and a Samuel H. Kress Fellow at the Solomon R. Guggenheim Museum in New York (2007-08). While in New York, Vanessa continued to focus on the analysis, preservation, conservation and presentation of contemporary and modern art.

Dr Ana Maria Theresa P. Labrador is Assistant Director of the National Museum of the Philippines. She was formerly associate professor of anthropology at the Ateneo de Manila University, lecturing on economic anthropology and visual anthropology. She also taught for 20 years in Art Studies at the University of the Philippines and was Director for seven years at the University Museum, the Jorge B. Vargas Museum and Filipiniana Research Center. The University of Cambridge, UK, awarded her an M.Phil and Ph.D. in Social Anthropology, focusing on ritual, museology and material culture. She

also holds an Master of Arts in Museum and Gallery Management from the City University London, UK. She is the vice president of South and Southeast Asian Studies for Culture and Religion (SSEASR) and is a member of the Board of Editors of the Journal of Museum Management and Curatorship (Routledge). She has written and edited a number of books and international journals on anthropology, art and museology. Her most recent contribution is in the 2011 UNESCO publication *Community-based Approach to Museum Development in Asia and the Pacific for Culture and Sustainable Development*. Dr Labrador was a Fellow of the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) in Rome, Italy in 2007 and has been involved with the CollAsia 2010 programme since 2005, which ICCROM runs jointly with SEAMEO-SPAFA based in Bangkok, Thailand. From February 2008, she took up a three-month Visiting Scholarship at the University of Melbourne's Centre for Cultural Materials Conservation (CCMC). She was also the recipient of the Australian Leadership Awards Fellowship in 2010 for which she was able to conduct 6-months field research in Australia, investigating the impact of mineral resource extraction to local communities.

Professor Marcia Langton AM is Professor and Chair of Australian Indigenous Studies at the University of Melbourne. Her doctoral fieldwork was conducted in Eastern Cape York Peninsula during the 1990s, and her experience of the statutory land claim and native title system in this region was informed by a decade of administration and fieldwork in the Northern Territory. She was awarded a PhD from Macquarie University in 2005. She is a Fellow of the Academy of the Social Sciences of Australia, a member

of the Australian Institute of Aboriginal and Torres Strait Islander Studies and patron of the Ngaanyatjarra Pitjantjatjara Yankunytjatjara (NPY) Women's Council. She has published widely across academic fields including texts on Indigenous rights and justice, the representation of Aboriginal people in film, and the production of Aboriginal art in the face of globalization and cultural difference.

Dr Tom Learner is Senior Scientist and Head of Modern and Contemporary Art Research at the Getty Conservation Institute (GCI) in Los Angeles. He has a PhD in chemistry (University of London, 1997), a Diploma in conservation of easel paintings (Courtauld Institute of Art, London, 1991), and an Master of Arts in Chemistry (Oxford University, 1988). At the GCI, he oversees a number of research projects on modern art materials, including how modern paints, plastics and outdoor painted surfaces can be scientifically analysed, how they will alter with time, and how to best conserve them. Before joining the Getty in 2007, he was Senior Conservation Scientist at Tate in London, where he worked for 14 years. Learner sits on the advisory committees for INCCA (the International Network for the Conservation of Contemporary Art), RPM (Rescue Public Murals), and is coordinator for the Modern Materials and Contemporary Art working group of ICOM-CC.

Sophie Lewincamp has a Bachelor of Applied Science majoring in Conservation of Cultural Materials from The University of Canberra. She is a paper conservator and lecturer with the Centre for Cultural Materials Conservation, University of Melbourne and is currently undertaking PhD research of the Middle Eastern Manuscript Collection at the Baillieu Library. Sophie has worked in many of Australia's leading

cultural institutions including the National Library of Australia and the Australian War Memorial. In 2005/06, Sophie was awarded the Harper-Inglis paper conservation fellowship at the Library of Congress, Washington DC.

Tamar Maor is an ICON accredited conservator working at Tate in the sculpture conservation department. Her role focuses on the conservation of sculptures from the Tate collection prior to loan to national and international institutions. She has worked closely with Anish Kapoor's Studio on developing pigment substitutes for works within the Tate Collection. This research and ongoing relationship with the artist's studio has raised research questions involving the artist hand and long term artist involvement with collection works. Tamar is also a guest lecturer at the Royal Academy of Arts where she lectures on artist materials and techniques, as well as providing ongoing advice to students regarding the construction and longevity of their work.

Ruth McDougall is Curator, Pacific Art at the Queensland Art Gallery | Gallery of Modern Art. In this role she curated the exhibition 'Threads: Contemporary textiles and the Social Fabric' (2011). She has also worked on the development of the exhibitions: 'Unnerved: The New Zealand Project' (2010), 'Paperskin: Barkcloth from across the Pacific' (2009) and the 'Pacific Textiles Project' for the '5th Asia Pacific Triennial of Contemporary Art' (2006). Prior to this she was curator of the exhibitions 'Readymade' (2003) and 'Fresh Cut' (2001) at the Institute of Modern Art, Brisbane, as well as the University of Queensland Art Museum touring exhibition 'Close Ties: Kay Lawrence and Marcel Marois' (1999). McDougall has a Master's Degree in Visual Arts from Goldsmiths College, University of

London and was a recipient of the inaugural round of Samstag Visual Arts Scholarships in 1994.

Suleiman Odat is currently undertaking a PhD degree in Information Technology - Semantic Web at the University of Queensland. During his candidacy, he has been building a scalable and secure knowledge base and Information Technology services for the teams within 'The Twentieth Century in Paint' project. His prior qualifications include Master of Information Technology (Professional) from the University of Southern Queensland, and Bachelor of Computer Science from Irbid National University, Jordan.

Jenny O'Connell is a recent graduate of the Masters program at the Centre for Cultural Material Conservation, University of Melbourne, specialising in paintings. She also completed the Postgraduate Certificate in Photographic Materials Conservation. Jenny recently won the ADFAS Student Conservator of the Year (University of Melbourne) for achievements in academia, community outreach and support of the Australian Institute for the Conservation of Cultural Material (AICCM). Jenny is currently assisting at the Centre for Cultural Material Conservation and concentrating on a flood damaged collection of Aboriginal Art. Throughout her studies, Jenny gained a variety of conservation experience by working at the National Archives of Australia, visiting two Aboriginal art centres in Western Australia and by undertaking her University internship at the Museum and Art Gallery of the Northern Territory (MAGNT) in Darwin. Jenny's research project was based on conservation documentation in remote Aboriginal community art centres.

Lyndon Ormond-Parker is Researcher at the Centre for Cultural Materials Conservation and Centre for Health and Society, MSPH at the University of Melbourne. Lyndon has worked nationally and internationally on Indigenous cultural heritage and human rights issues for Aboriginal communities and organisations. He has undertaken research, published and lectured on issues in relation to curation, storage and return of indigenous human remains and cultural materials. His current academic interest is in the application of multimedia as a tool for preservation of social and cultural histories.

Dr Bronwyn Ormsby has been employed as a Senior Conservation Scientist at Tate since 2007, specialising in the scientific analysis of works of art and the evaluation of conservation treatments on modern and contemporary art. From 2003, Bronwyn held the AXA Art (2006-2007) and Leverhulme Trust (2003-2006) postdoctoral Research Fellowship positions at Tate, carrying out research into the effects of surface cleaning treatments on acrylic emulsion paint films. Bronwyn and her team won the 2010 ICON Anna Plowden Trust Award for Research and Innovation for the Tate AXA Art Modern Paints Project (2006-2009). Bronwyn has published over thirty papers, newsletters and journal articles and is currently an Assistant Coordinator for the International Council of Museums – Conservation Committee (ICOM-CC) Scientific Research Working Group (2008 -). Prior to embarking on her career in heritage science through a doctorate at Northumbria University (2002), Bronwyn was employed as a painting conservator at the National Gallery of Australia (1993-1998) during which time she completed a 2-year conservation science internship at the Hamilton Kerr Institute, Cambridge, UK (1995-1997). Bronwyn

graduated in paintings conservation from the University of Canberra in 1992, having first studied biochemistry and been employed in paper conservation.

Gillian Osmond has been a Paintings Conservator at the Queensland Art Gallery | Gallery of Modern Art since 1988. She has a degree in Applied Science - Paintings Conservation from the University of Canberra (1988). During 1991-92 she was a research intern at Tate, London, using fluorescence microscopy of paint cross sections to investigate the influence of different exposure environments on oil paint ageing. Gillian has had a long term interest in the technical investigation of paintings and is currently completing a PhD at the University of Queensland on the topic of zinc oxide centred deterioration of oil based paints. Her research forms part of the Australian Research Council Linkage Project 'The Twentieth Century in Paint'.

Tim Ould works as a research officer and tutor at the Centre for Cultural Materials Conservation, The University of Melbourne. He is currently completing his PhD on Jacopo Zucchi's frescoes in the Palazzo Ruspoli in Rome. He is also one of the founding co-editors of *emaj* (electronic Melbourne art journal), which is the only online, refereed art history journal published in Australia.

Chris Payne is Senior Paintings Conservator, ArtLab. He has worked at ArtLab for many years and has a long standing interest in artistic practice in South Australia.

Dr Ljiljana Puskar is Beamline Scientist for Infrared Microspectroscopy beamline at the Australian Synchrotron and is key contact for Cultural Heritage activities at the facility. She has undertaken beamtime

at other synchrotron facilities including Soleil and the SRC Wisconsin and has presented work from the Australian Synchrotron IR beamline at conferences in Italy, Croatia, Canada and Japan. She is experienced in high resolution gas-phase far-IR spectroscopy, Raman microscopy with acoustic levitation, and mass spectrometry. She has been responsible for the development of data handling and processing at the IR Microscope beamline, in particular multivariate statistical analysis training for beamline users.

Rachel Rivenc is Assistant Scientist at the GCI, with the Modern and Contemporary Art Research group. She holds a Master of Arts in paintings conservation (Paris I Sorbonne, France, 2001). She has been a paintings conservator in private practice and taught paintings conservation with the University of Malta before joining the GCI in 2006, where she studies paints and plastics used in contemporary art. She is currently assistant coordinator for the Modern Materials and Contemporary Art Working Group of ICOM-CC.

Dr Emma Richardson is currently a lecturer in the History of Art Department at University College London. At the time of this project, she was a postdoctoral Research Fellow at the GCI. She has a PhD in conservation science (University of Southampton, UK, 2009) and an Master of Science in analytical chemistry (Sheffield Hallam University, UK, 2004). In recent years her research has included the non-invasive characterisation of polymers by near infrared spectroscopy, the in situ monitoring of tensile stresses in textile artifacts, and the effects of plasticiser migration on the mechanical properties in cellulose acetate based film.

Professor Carl Schiesser is Professor of Chemistry in the School of Chemistry at the University of Melbourne and Director of the Australian Research Council Centre of Excellence for Free Radical Chemistry and Biotechnology. He received his PhD in 1987 from the Australian National University and a DSc in 2000 from the University of Adelaide for his contribution to knowledge. Professor Schiesser is a major international player in the field of free radical chemistry with expertise that ranges from synthesis through to molecular modelling. In 2007 he was awarded the A J Birch Medal of the Royal Australian Chemical Institute. Professor Schiesser leads a team of researchers that is currently working on the development of new pharmaceutical products that combat the damaging effects of free radicals, the development of new reagents for the detection of free radicals, and the understanding of the role that free radicals play in the deterioration of cultural materials. Professor Schiesser is a Fellow of the Royal Australian Chemical Institute and the Royal Society of Chemistry.

Associate Professor Robyn Sloggett is Director of the Centre for Cultural Materials Conservation (CCMC) at the University of Melbourne where she teaches into the Masters Program in Cultural Materials Conservation. CCMC delivers one of Australia's largest commercial conservation programs. Robyn is a member of a number of government committees. She is an Expert Assessor under the Protection of Movable Cultural Heritage Act, and a member of the Australian Commercial Galleries Association Forgery Focus Group. At the University of Melbourne she is a member of the Cultural Collections Advisory Group, Associate Investigator in the ARC Centre of Excellence for Free Radical Chemistry & Biotechnology, and a member of the Centre

for Accounting and Industry Partnerships Advisory Board. In 2003 she was awarded the AICCM's Conservator of the Year Award for 'Services to the Conservation Profession'.

Eugene Taddeo is Principal Conservator Paintings, ArtLab. He has worked at ArtLab for many years and has a long standing interest in artistic practice in South Australia.

David Thurrowgood is Senior Conservator Metals and Conservation Science at the National Gallery of Victoria (NGV). For the past four years he has been working collaboratively with Australian and international colleagues to advance the application of synchrotron studies to the understanding of cultural heritage, by making use of one of the world's newest synchrotrons located in Melbourne. David is a Graduate of Deakin University, followed by the University of Canberra Conservation of Cultural Materials program. He worked in Canberra at the National Museum of Australia for ten years, prior to commencing work at the NGV five years ago. David has consistently undertaken and published technical studies during this period, and, for any students in the room, is particularly open to supporting student research projects.

Dr Mark Tobin is Beamline Scientist at the Infrared Beamline of the Australian Synchrotron. He has a background in cell biology and imaging and has developed capabilities for experiments in this field at the Australian Synchrotron, and previously worked at the Daresbury Synchrotron Radiation Source in the United Kingdom.

Dr Nicole Tse is an Australian Research Council Postdoctorate Fellow at the Centre for Cultural Materials Conservation, the University of Melbourne investigating 'The Twentieth Century in Paint' that includes ten collaborating institutions across six countries and nine researchers. On the project Nicole is continuing to investigate research questions raised as part of her doctoral thesis on *The Characterisation of Canvas Paintings in Tropical Environments* (submitted in 2008).

Sherryn Vardy has a Bachelor (1998) and a Graduate Diploma (1999) of Visual Arts majoring in painting from Monash University and is completing her Master of Cultural Material Conservation at The University of Melbourne. As part of her studies she completed a three week internship with the Queensland Art Gallery Paintings Conservation Department in 2011. Sherryn has a diverse background in the gallery sector gained through over 10 years experience in regional galleries, and is currently Exhibitions Manager at National Exhibitions Touring Support (NETS) Victoria where she assists in the delivery of their extensive touring exhibition program.

Helen Weidenhofer is an Assistant Director at Artlab Australia, where she has worked for 23 years as a paintings conservator and conservation manager, and is currently responsible for the Paintings, Objects and Projects (large objects/site conservation) programs. Helen completed her conservation studies at the University of Canberra and worked for 5 years at the National Library of Australia before moving to Artlab. Artlab is the South Australian Government's conservation agency, and is a participant in the ARC-funded 'The Twentieth Century in Paint' research project.

Acknowledgments

Symposium Organising Committee

Anne Carter, Conservator, Paintings, Queensland Art Gallery | Gallery of Modern Art
Jocelyn Evans, Conservator, Paintings, Queensland Art Gallery | Gallery of Modern Art
Gillian Osmond, Conservator, Paintings, Queensland Art Gallery | Gallery of Modern Art
and PhD candidate 20th Century in Paint
Tim Ould, Research Assistant, Centre for Cultural Materials Conservation,
The University of Melbourne
Katherine Rosenthal, Paintings Conservator David Stein & Co, Sydney
Nicole Tse, ARC Post Doctorate Fellow, Centre for Cultural Materials Conservation,
The University of Melbourne

Australian Institute for the Conservation of Cultural Materials

Andrew Durham, AICCM Paintings Special Interest Group Convenor and Director,
ArtLab Australia.

Queensland Art Gallery | Gallery of Modern Art

Suhanya Raffel, Acting Director
Maud Page, Acting Deputy Director, Curatorial and Collection Development
Russell Storer, Curatorial Manager, Asian & Pacific Art
Ruth McDougall, Curator, Pacific Art
Amanda Pagliarino, Head of Conservation
Jenna Hoskin, Senior Graphic Designer
Steve Gooding, Cinema Technical Co-ordinator
Danielle Hastie, Conservation Administrator/Technician
Mandy Smith, Conservation Technician, Paintings

Australian Research Council Linkage Project (2008-2012) 'The Twentieth Century in Paint'

Chief Investigators: Associate Professor Robyn Sloggett, CCMC, UoM; Dr Nicole Tse, ARC Post Doctorate Research Fellow, CCMC, UoM; Professor Carl Schiesser, ARC Centre of Excellence for Free Radical Technology and Biochemistry, UoM; Dr Stephen Best, School of Chemistry, UoM; Professor John Drennan, Centre for Microscopy and Microanalysis, UQ; Professor Jane Hunter, ITEE, UQ.

Partner investigators: Dr Tom Learner, Head of Modern and Contemporary Art Research, Getty Conservation Institute, USA; Andrew Durham, Director, ArtLab Australia; Amerrudin Ahmad, Curator, National Visual Arts Gallery, Malaysia.

Industry partners: Art Gallery of New South Wales, AGNSW; Andrew Durham and Helen Weidenhofer, ArtLab Australia; David Thurrowgood, National Gallery of Victoria; Anne Carter, Queensland Art Gallery | Gallery of Modern Art.

International partners: Amerrudin Ahmad and Musrizal Mat Isa, National Visual Arts Gallery Malaysia, Balai Visual Seni Negara; Associate Professor Supanee Chayabutra, Silpakorn University, Thailand; Dr M R Rujaya Abhakorn, Southeast Asian Ministers of Education Organization Regional Centre for Archaeology and Fine Arts (SEAMEO-SPAFA); Dr Bronwyn Ormsby, Tate Modern, UK; Dr Tom Learner, Getty Conservation Institute USA.

PhD students: Gillian Osmond, QAGOMA, UQ; Paula Dredge, AGNSW, UoM; Melina Glasson, UoM; Suleiman Odat, UQ.

Research Assistant: Tim Ould, CCMC, UoM.

Location map



