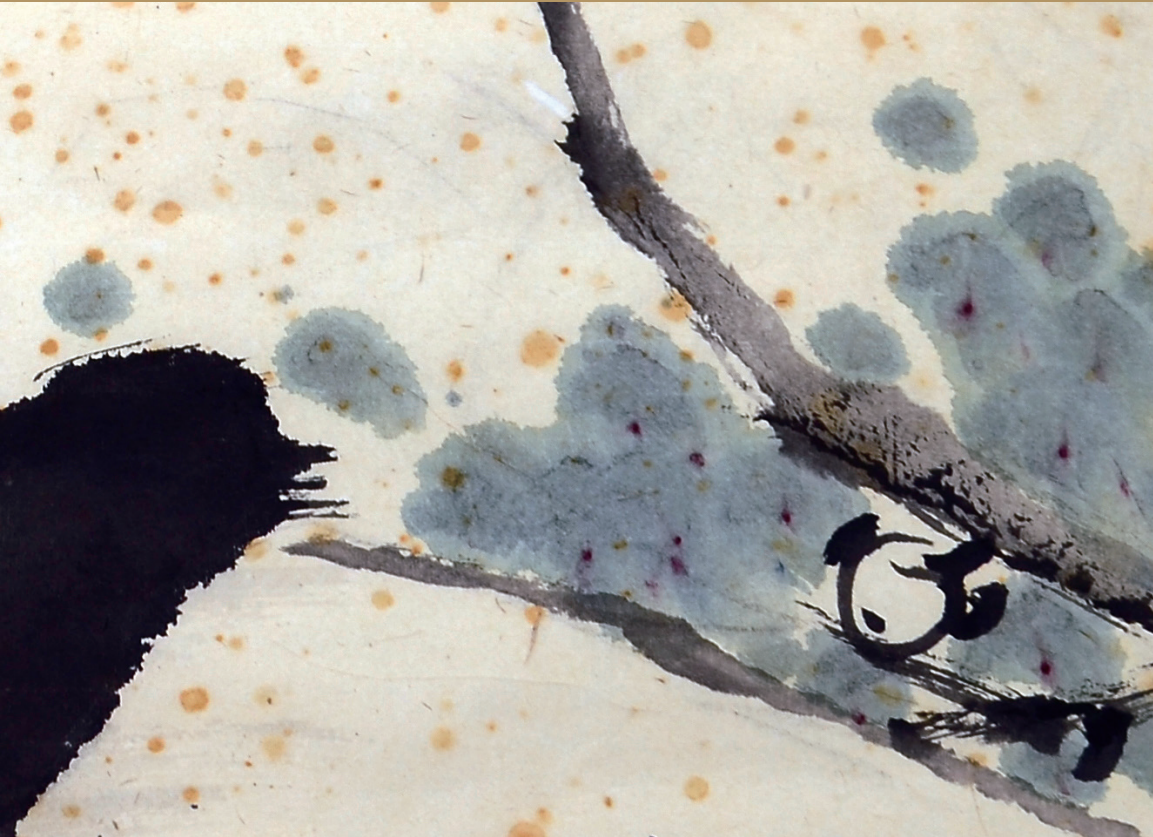


EMBRACING CULTURAL MATERIALS CONSERVATION IN THE TROPICS



APTC
CARN

ASIA PACIFIC
TROPICAL CLIMATE
CONSERVATION ART
RESEARCH NETWORK

EMBRACING CULTURAL MATERIALS CONSERVATION IN THE TROPICS

THE 4th APTCCARN MEETING IN 2015

Conservation Center
Cheng Shiu University, Taiwan

25-27
November
2015

APTCCARN Asia Pacific Tropical Climate Conservation Art Research Network] is supported by
The Grimwade Conservation of Cultural Materials Conservation,
The University of Melbourne Victoria 3010 Australia

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APTCCARN ASIA PACIFIC
TROPICAL CLIMATE
CONSERVATION ART
RESEARCH NETWORK

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COMMITTEE & ORGANIZERS

Embracing cultural materials conservation in the tropics: the 4th APTCCARN Meeting is being organized by:

Conservation Center, Office of Art and Culture, Cheng Shiu University
Grimwade Center for Cultural Materials Conservation, University of Melbourne



ORGANISING COMMITTEE

> ORGANISING COMMITTEE FROM APTCCARN

- Dr Ioseba Soraluze**, Conservation Center, Cheng Shiu University, Taiwan
- Dr Nicole Tse**, APTCCARN and the Grimwade Centre for Cultural Materials Conservation, University of Melbourne, Australia
- Amerrudin Ahmad**, Balai Seni Visual Negara, Malaysia
- Julia Brennan**, Caring for Textiles, Washington
- Anne Carter**, APTCCARN member- INCCA AP, Queensland Art Gallery- Gallery of Modern Art
- Professor Supanee Chayabutra**, Materials Centre for Art and Design, Silpakorn University, Thailand
- Dr Ana Labrador**, Assistant Director, National Museum of the Philippines
- Diana Tay**, Paintings Conservator, Singapore

CO-ORGANIZERS

Bureau of Cultural Heritage Ministry of Culture
National Palace Museum
National Science And Technology Museum
Taipei Fine Arts Museum
Kaohsiung Museum of Fine Arts



SPONSORS

The organizers gratefully acknowledge the financial support of:

Major Sponsor:
Chen Cheng-po Cultural Foundation



WELCOME MESSAGES

Embracing Cultural Materials Conservation In The Tropics The 4th APTCCARN Meeting

From the 4th APTCCARN
Organising Committee

Dr Nicole Tse

*The Grimwade Centre for Cultural Materials
Conservation, The University of Melbourne*

Dr Ana Labrador

*Assistant Director, National Museum of the
Philippines*

Diana Tay

Paintings Conservator, Singapore

Welcome to the 4th APTCCARN Meeting in Taiwan at the Conservation Center, Cheng Shiu University. APTCCARN was inaugurated in 2009 at the Balai Seni Visual Negara [National Visual Art Gallery in Malaysia] and has since held meetings at the University of Melbourne in Australia, and Silpakorn University in Thailand. It was established in recognition of the need to support a geographically focussed practice of cultural materials conservation in the Asia Pacific and a maturing discipline. Over six years APTCCARN has built a community of practice from which approaches are emerging and revealing important information about the culture and conditions in the region. Our APTCCARN meetings provide a space for reflexive thinking to share conservation experiences and test new concepts or ideologies within the geographic focus of the Asia Pacific.

As the title alludes to, 'Embracing Cultural Materials Conservation in the Tropics', the 4th Meeting intends to highlight how we are actively and productively interacting with cultural heritage and whether commonalities exist among us. In reviewing past conservation approaches in the Asia Pacific region, underpinning many of them are Western notions of heritage. Institutions, communities and conservation practices have struggled with a tension between an object centred approach and scientific methods versus ones that are

more value based and substantiated according to differences in institutional practices, development histories and each disciplinary leader's foci. The very existence of APTCCARN recognises the need to develop regional approaches, however recent case studies and discussions have shown that they vary in complexity, resources and capacity. How this translates to principles or a regional discipline of cultural materials conservation are worthy of discussion at the 4th APTCCARN Meeting.

In saying this, a significant aspect of cultural materials conservation relates to the physical requirements of collections and their material stability. Agreeably the success of materials conservation is centrally focussed on stakeholder and community contexts of decision making, however an understanding of deterioration processes and object materiality are important. The knowledge of such matters does exist, as vested in people, objects and documents, however it has not been fully captured for an improved understanding of material stability in the tropics. These are other points for discussion.

The 4th APTCCARN Committee is very pleased that Conservation Center of Cheng Shiu University in Taiwan is hosting this event. Dr Ioseba Soralueze and the local organising committee have worked tirelessly over the past year to arrange the event details to its perfection. Hosting an international event like this takes a lot of commitment, attention to detail and we deeply thank them. We thank Dr Rujaya Abhakorn, Director of SEAMEO SPAFA, for his opening speech and engaging vision of cultural heritage in the region. Further thanks is extended to invited scholar, Prof. Hsiao Chong-ru of National Cheng Kung University of Taiwan in uncovering the materiality of Chen Cheng Po's artistic practice. Lastly we thank the sponsors and particularly the Chen Cheng-po Cultural Foundation as a major sponsor. We hope you also enjoy the important exhibition on the artist's work.

Thank you to all speakers, chairs and participants for attending the 4th APTCCARN Meeting on 'Embracing Cultural Materials Conservation in the Tropics'.

4th APTCCARN Committee Meeting

From the Host Institution

Kung Jui-chang

President, Cheng Shiu University, Taiwan

The Conservation Center, Cheng Shiu University in Taiwan is pleased to host the 2015 4th APTCCARN Meeting in Taiwan. With a focus on Asia Pacific's diverse climate, history and future, the meeting aims to embrace cultural materials conservation in the region, our experiences and the future. Issues such as developing a regional practice of cultural materials conservation within the needs, resources, communities and geographic place will be addressed. This is in light of recent extreme weather events, the current reality of the environment and sustainable practices and crosses the themes of:

- The effect of tropical climates on cultural materials
- Their unique degradation mechanisms
- The environment and current realities of collections care
- Standards and principles of conservation practice in tropical climates
- The impact of Asia Pacific culture and geography on artists' material choices, techniques and artists' intentions

Cheng Shiu University is the professional polytechnic school in southern Taiwan. In 2005, we set up the Conservation Center managed by the Office of Arts and Culture, being engaged in the promotion of arts education and cultural heritage protection work. The Conservation Center integrates all the studies of conservation and restoration about national cultural heritage into the references, developing the professional investigation, with the result that the related departments enable to solve all kind of problems in the field of conservation and restoration of works of art.

The lack of proper concepts of conservation causes serious damages on art relics so that we keep "education" and "research" as faith to hold several conferences and exhibitions in relation to conservation and restoration. Through related seminars and activities we'd like to let people, no matter how young or old they are, experience and understand proper methods of conservation of each artwork and then spread the correct ideas that implement "Lifelong learning", "Anytime learning" and "Learning by chance".

The Center is willing to disseminate the right information about conservation and restoration and put up a bridge of mutual trust between collectors and art relics, and even use our profession for feedback on history and culture.

We would like to thank the major sponsor Chen Cheng-po Foundation. They have made a significant contribution to the development of cultural materials conservation in Taiwan and now internationally, with the support of APTCCARN. And other sponsors.

This meeting has been supported by staff of Cheng Shiu University, Taiwan and the Grimwade Centre for Cultural Materials Conservation (University of Melbourne, Australia) under the auspices of APTCCARN (Asia Pacific Tropical Climate Conservation Art Network). We thank you for your commitment and support in ensuring this meeting is a success.

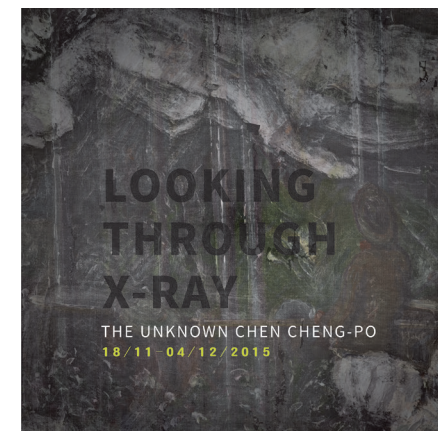
Cheng Shiu University welcomes participants to the 4th APTCCARN Meeting.

EXHIBITION

LOOKING THROUGH X-RAY

THE UNKNOWN CHEN CHENG-PO
2015/11/18~12/04

Although X-rays were discovered in the 1880s by a German physicist it wasn't until the 1930s that they were used for the examination of paintings and since then X-ray technology has become an important tool for scientific research and the study of paintings. Art conservators, scientists and historians utilize X-rays to obtain information that helps them to authenticate paintings and find new clues about the artworks' creative process. X-rays applied to easel paintings show details of the canvas, such as if there is a hidden lining, paint loss that is not visible, painting's material composition, pentimenti and modifications, but most importantly if there is underlying painting.



Looking through X-rays – the unknown Chen Cheng-po is an exhibition organized by the Chen Cheng-po Cultural Foundation and the Conservation Center of Cheng Shiu University. The exhibition is the result of the collaboration project undertaken to research the artist's technique. More than 70 paintings were studied and analyzed, and the exhibition shows the most significant examples of this research. The exhibition also highlights the three most significant periods during the life of the artist those being; Japanese, Shanghainese and Taiwanese.

The exhibition of X-rays also intends to extend and develop the studies of Chen Cheng-po's way of work and is a good resource for scholars who are interested in gaining a deeper into the knowledge of the artist. This is seen in the case of Chiayi Park, where X-rays have revealed it to be the only canvas that Chen Cheng-po painted with two female nudes, whilst all the other existing paintings of the artist are composed with only one female nude.

The opening of *Looking through X-rays – the unknown Chen Cheng-po* is on 18 November 2015 and will run until 4 December. The exhibition has been organized to coincide with the APTCCARN 4th Meeting and a paper explaining the research and results of the project will be presented at this conference.

GENERAL INFORMATION

Venue

The 4th APTCCARN Meeting in 2015 will be held at Cheng Shiu University in Taiwan. No.840, Chengcing Rd., Niasong Dist., Kaohsiung City 83347, Taiwan

Getting Around

> MRT Orange Line

From [O10 Weiwuying Station] Exit from No.3, walk to SanDuo Rd. and take bus 70A to Kaohsiung Chang Gung Memorial Hospital then get off at [Cheng Shiu University], or from [O11 FengShan West Station] Exit from No.2, walk to QingNian Rd. and take bus 012 to Kaohsiung Chang Gung Memorial Hospital then get off at [Cheng Shiu University].

> MRT Red Line

From [R11 Kaohsiung Main Station]
1- Take bus 60 to MengLi and get off at [Cheng Shiu University].
2- Take bus R30 to Cheng Cing Rd. and get off at [Cheng Shiu University].

From [R14 Kaohsiung Arena Station] Exit from No.5, walk to XinZhuang First Rd. and take bus 217A to NiaoSong Dist. Office then get off at [Cheng Shiu University].

Registration Desk

Conference attendees to register at the Registration desk of the conference venue on Wednesday, 25th November at 8.30 am.

Name Badges

All delegates will be given a name badge on registration. We ask that you wear your name badge at all times. This name badge is also the official entry pass to all sessions, teas, lunches and included receptions.

Speakers

Please report to the Registration Desk for further details at the notified time in the morning of your presentation date.

Food & Drinks

Morning and afternoon tea and lunch is included as part of your conference registration.

Conference Dinner

The Conference Dinner will be on Wednesday, 25th November at the Grand Hotel Kaohsiung.

PROGRAM

Embracing Cultural Materials Conservation in the Tropics
the 4th APTCCARN Meeting in 2015

Wednesday, 25th November

8:30	Registration	
9:00-9:30	Opening Ceremony	Chair: Host Institution: Kung Jui-chang <i>President, Cheng Shiu University</i> Welcome: Dr Rujaya Abhakorn <i>Director, Southeast Asian Regional Centre for Archaeology and Fine Arts [SEAMEO SPAFA], Bangkok</i> APTCCARN Acknowledgment: Dr Nicole Tse <i>Grimwade Centre for Cultural Materials Conservation, University of Melbourne, Australia</i>

ARTISTS & MATERIALITY

9:40-10:00	Day One: Session chaired by: <i>Dr Ana Labrador</i>	Re-restoration of Chen Cheng-po's paintings and conservation field practice Dr Ioseba Soraluze and Li I-cheng <i>Conservation Center, Cheng Shiu University, Taiwan</i>
10:00-10:20		The Materials and Techniques of Singapore Pioneer Artist Georgette Chen: An investigation into painting practice and material availability Eliza O'Donnell and Dr Nicole Tse <i>Grimwade Centre for Cultural Materials Conservation, University of Melbourne, Australia</i>
10:20-10:40		Study of binders in ground layers of Thai mural painting Dr Nichanan Thepsuparungsikul, Pannaporn Pusomjit and Tanatat Saingam <i>Department of Chemistry, Silpakorn University, Thailand</i> Kwanjit Lertsiri <i>Thailand Archaeological Division</i>
10:40-10:55	Morning Tea	
11:00-11:20	Session chaired by: <i>Dr Rujaya Abhakorn</i>	Painting, Mirriwoong culture and learning through materials Sophie Lewincamp, Peggy Griffiths, Susie Collis and Elle Vallier <i>Grimwade Centre for Cultural Materials Conservation, University of Melbourne, Australia</i>
11:20-11:40		A Preliminary Study on the Effects of a Tropical Climate on the Chemical Ageing of Proprietary Artists' Oil Paints Clare Grech <i>Straus Center for Conservation and Technical Studies, Harvard Art Museums, USA</i> Dr Nicole Tse, Dr Augustine Doronila and Dr Alex Duan <i>Grimwade Centre for Cultural Materials Conservation, University of Melbourne, Australia</i>

11:40-12:00		Conservation of a French 18th century painted portrait in a tropical environment Sarah Davrinche <i>Painting Conservator, France</i>
12:00-12:55	Lunch	
13:00-13:20	Session chaired by: <i>Julia Brennan</i>	Looking through X-rays: The unknown Chen Cheng-po Dr Ioseba Soraluze and Li I-cheng <i>Conservation Center, Cheng Shiu University, Taiwan</i>
13:20-13:40		Analytical conservation research program for Asian Cultural Materials at the Heritage Conservation Centre NHB in Singapore Dr Hanna Szczepanowska, Cindy Lau, Sylvia Haliman, Sarah J. Benson, Miki Komatsu and Swee Mun Lee <i>Heritage Conservation Centre, National Heritage Board, Singapore</i>
13:40-14:00		Nineteenth-century Indonesian Islamic Manuscripts: A survey of the Michael Abbott Collection, State Library of Victoria Emily Keppel and Dr Nicole Tse <i>Grimwade Centre for Cultural Materials Conservation, University of Melbourne, Australia</i> Des Cowley <i>State Library of Victoria, Australia</i>
14:00-14:30	Afternoon Tea	
14:30-16:00	Invited Scholar Session chaired by: <i>Prof. Robyn Sloggett</i>	Reemerging Chen Cheng-po: Historical appearance of paintings under the conservation technologies Prof. Hsiao Chong-rui <i>National Cheng Kung University, Taiwan</i>
16:00-17:00	Site Visits:	Exhibition: Looking through X-Rays: The unknown Chen Cheng-po <i>Conservation Center, Cheng Shiu University, Taiwan</i>
18:00	Conference Dinner	Grand Hotel Kaohsiung

Thursday, 26th November

COLLECTION CARE & ENVIRONMENTAL REALITIES

9:00-9:20	Day Two: Session chaired by: <i>Dr Nicole Tse</i>	The current situation of collection environments in Thailand Chiraporn Aranyanark and Wanwisa Woraward <i>National Discovery Museum Institute, Thailand</i>
9:20-9:40		Re-assessing the condition of the local museum collections in Central Luzon, Philippines Prof. Angel S Recto <i>Bulacan State University, Philippines</i>

9:40-10:00	Day Two: Session chaired by: <i>Dr Nicole Tse</i>	Alternative Conservation Strategies for Hot and Humid Climates Dr Shin Maekawa, Vincent L. Beltran and Michael C Henry <i>The Getty Conservation Institute, USA</i>
10:00-10:20		The practical issues in developing risk management strategies for the protection of cultural material in tropical environments Prof. Robyn Sloggett <i>Grimwade Centre for Cultural Materials Conservation, Australia</i>
10:20-10:40		From Rescue to Training: Developing Local Skills to enable Conservation on the Ground Dr Ana Labrador, Roberto A Balarbar and Erline S Millar <i>Assistant Director, National Museum Philippines</i>
10:40-10:55	Morning Tea	
11:00-11:20	Session chaired by: <i>Lo Hung-wen</i>	The application of air bags and foam boards in the conservation of Chinese calligraphy and painting Lin Huan-shen <i>Department of Culture Heritage Conservation, National Yunlin University of Science & Technology, Taiwan</i>
11:20-11:40		From A Private Passion to A Public Celebration- a journey in preservation of Asian Puppet Theatre traditions Kim Siebert <i>Head of Collection & Conservation Department, Taiyuan Asian Puppet Theatre Museum, Taiwan</i>
11:40-12:00		Utilizing Local Materials to Construct Invisible Mounts for HMQ The Queen of Thailand's ball gowns Piyamon Oom Kingpratoommas and Joy Nuchada <i>Queen Sirikit Museum of Textiles Bangkok, Thailand</i>
12:00-12:55	Lunch	
13:00-13:20	Session chaired by: <i>Lin Huan-shen</i>	Innovation and Evaluation of Filling losses in Asian painting on paper-The application of Airbrush Technique and Microcrystalline Cellulose Powder Liao Hsin-kuan <i>Department of Registration and Conservation, The National Palace Museum, Taiwan</i> Tai Chun-shan <i>Conservation Center, Cheng Shiu University, Taiwan</i>
13:20-13:40		Research into improving backboards for framed Asian Paintings in Subtropical Climate Area Tai Chun-shan, Shu Miao-hung and Lin Wan-jen <i>Conservation Center, Cheng Shiu University, Taiwan</i>

13:40-17:00 Site Visits: Site Visit 1:
National Science and Technology Museum + The Pier-2 Art Center
Site Visit 2:
Kaohsiung Museum of Fine Arts + Lotus Pond

18:00 Conference Dinner Wo Hotel-Long Bar

Friday, 27th November

TROPICAL CLIMATES & MATERIALS

9:00-9:20 Day Three:
Session chaired by:
Anne Carter
Cultural materials conservation in the tropics: identifying limits, boundaries and values
Dr Nicole Tse
Grimwade Centre for Cultural Materials Conservation, Australia

9:20-9:40 Capturing and Sharing Traditional Methods of Textile Preservation in South East Asia: An ASEAN Textile Conservation Research Project
Julia Brennan¹
SEAMEO SPAFA and QSMT, Thailand
Caring for Textiles, Washington, USA¹

9:40-10:00 Salt Weathering of Mural Painting Located on Floodplain in the Lower Chao Phraya River Basin
Chiraporn Aranyanark, National Discovery Museum Institute
Chiraporn Aranyanark and Kwanjit Lertsiri
National Discovery Museum Institute, Bangkok and Office of Archaeology, The Fine Arts Department, Thailand

10:00-10:20 Deterioration assessment of Thai mural paintings suffering from the submergence of the Thailand's 2011 Great Floods
Dr Nuanlak Watsantachad
Faculty of Architecture, Silpakorn University, Thailand

10:20-10:55 Morning Tea

11:00-11:20 Session chaired by:
Diana Tay
Preservation of Tracing Paper: Case Study of TRA Archives
Chen Shu-mei
National Chengchi University
Dr Yen Su-fen
National Palace Museum, Taiwan
Tsai Fei-wen
Associate Professor, Graduate Institute of Conservation of Cultural Relics and Museology, Tainan National University of the Arts

11:20-11:40 Session chaired by:
Diana Tay
Effect of colloidal silver nano particle in soluble starch stabilizer on antifungal property in traditional and novel primers for concrete wall of mural painting
Nawarat Kaew-On, Dr Pichayada Katemake and Kiattisak Suwannaphong
Department Imaging and Printing Technology, Chulalongkorn University, Thailand

11:40-12:00 APTCCARN Meeting and Working Program

12:00-12:55 Lunch

13:00-13:20 Session chaired by:
Chen Yu-chun
Defining investigation parameters in developing a sustainable approach to the treatment of biodeterioration using extracts of the *Azadirachta indica* plant
Dr Caroline Kyi, Sreekumar Menon, Dr Chris Donner, Graham Brodie, Karma Yeshay and Sharon Cather
Grimwade Centre for Cultural Materials Conservation, Australia

13:20-13:40 Severe termite infestation: conservation of the EDSA Shrine oil mural painting on canvas
Maria Bernadita Maronilla-Reyes
Museum of Arts and Sciences Conservation Laboratory, University of Santo Tomas, Philippines

13:40-14:00 Art Invisible Destroyer - Metal Artifacts Maintenance and Conservation under Tropical Climate in Taiwan
Lee Meng-ken and Chen Yi-tsen
Conservation Center, Cheng Shiu University, Taiwan

14:00-14:20 INCCA-AP: Highlighting Contemporary Art Conservation in the Asia Pacific.
Anne Carter
INCCA AP, Queensland Art Gallery-Gallery of Modern Art

14:20-14:40 Afternoon Tea

14:40-15:40 Panel Discussion 4th APTCCARN Meeting themes

15:40-16:00 Acknowledgments and Closing Ceremony

Re-restoration of Chen Cheng-po's paintings and conservation field practice

Ioseba I. Soraluze and Li Yi-chen

*Conservation Center, Cheng Shiu University
iosebasoraluze@yahoo.es*

This paper will discuss the complex process of conservation and how malpractice may affect paintings by altering the physical structure and aesthetic of artworks. Incorrect treatments that were carried out on a group of Chen Cheng-po's paintings resulted in negligent conservation. The application of a wax-resin lining, and retouching on original surfaces completely damaged the paintings. For that reason, a re-restoration project of Chen Cheng-po's paintings began with the aim to remove alterations and damage. Scientific analyses such as X-ray fluorescence (XRF), Scanning electron microscopy with energy dispersive X-ray spectroscopy (SEM-EDX), Fourier transform infrared spectroscopy (FTIR) and cross-sections were undertaken to gain a complete understanding of the paintings. A new way to remove the wax-resin lining without the need for solvents was developed with the use of the hot-vacuum table. Furthermore, colourimetric studies were carried out to understand and evaluate the effect of hot-vacuum treatment on the colours.

The retouching and varnish applied to the paintings in the first restoration totally modified the aesthetic of Chen Cheng-po's work. Large areas of original paint were covered by retouching, and the poor technique also reduced the quality of the paintings. Re-restoration was required to remove all the filling and retouching without affecting the original paint, with the aim of rediscovering the original colours and the artist's intention.

This project shows how negligent restoration treatment may produce alterations and damage in paintings. Critical thinking together with an understanding of the artist's intention may help to avoid damage to artworks during conservation, preserving them in a better way.

The Materials and Techniques of Singapore Pioneer Artist Georgette Chen: An investigation into painting practice and material availability

Eliza O'Donnell,¹ Nicole Tse¹ and Amerrudin Ahmad,²

*Grimwade Centre for Cultural Materials
Conservation, University of Melbourne¹ and
Balai Visual Seni Nagara (National Art
Gallery Malaysia)²
eliza.odonnell77@gmail.com*

The establishment of the Nanyang Academy of Fine Arts (NAFA) in 1938 in Singapore was synonymous with the emergence of a new artistic style and the rebirth of Chinese painting in Malaya and Singapore (Hsu 1999, p. 123). NAFA teachers and Pioneer artists' Georgette Chen (1906-1993), Chen Wen His (1906-1992) and Liu Kang (1911-2004) are widely recognized as influential figures in the early development of modern art in Malaya, however few studies have been undertaken on their painting materials and the availability of artist quality materials in Singapore following the end of the Second World War. While NAFA students, alumni and Pioneer artists of Singapore created a demand for trade and distribution of art materials, the outbreak of the Second World War in 1939 (ending in 1945), significantly affected material availability and artistic practice during this time. Two important distinctions in material availability can be considered; artist quality materials and non-artist quality materials, typically commercial household paints. The widespread availability of proprietary household paints at this time, largely facilitated by British paint manufacturer Imperial Chemical Industries (ICI) and local company P.A.R Malayan Paintworks LTD, highlights precedence for artist's use of commercially available household paints in the region.

The study contributes to an understanding of the Pioneer artist's material preferences throughout the mid twentieth century, and the availability of artist quality materials in Malaya from 1950.

A comparison of historical, archival and technical information focused on the availability and distribution patterns of artists' materials in Singapore when the Pioneer artists arrived in the years following the Second World War. Textual documentary sources included art historical literature, exhibition catalogues, newspaper articles, advertisements, trade directories and transcripts of oral history interviews, as there was limited direct written references to materials utilized. The documentary source research is augmented by an in-situ technical analysis and materials analysis of paintings by Liu Kang and Chen Wen Hsi. Evidence suggests that the availability of proprietary materials signaled a shift in artistic practices with the adoption of new synthetic paints. Furthermore, this study examines the suggested use of proprietary materials by other Pioneer artists with Synchrotron Radiation (SR) micro FTIR (μ FTIR).

Study of binders in ground layers of Thai mural painting

Nichanan Thepsuparungsikul,¹
Kwanjit Lertsiri,² Pannaporn Pusomjit,¹
Tanatat Saingam¹

*Chemistry, Silpakorn University, Thailand¹
and Office of Archaeology, The Fine Arts
Department²
tnichanan@hotmail.com*

Tamarind kernel glue has been reported as a binder in the ground layers of Thai mural paintings since the reign of King Rama I. This is due to its excellent adhesion property and the convenient availability of tamarind seeds in Thailand. However, there have been difficulties in its preparation and in preservation. At present, Thai mural painting conservators have also applied gum acacia as a binder with its convenient preparation. There has, however been no comparative study on the quality of tamarind kernel and gum acacia glues. In this study various types of glue, namely gum acacia glue, tamarind kernel glue and xyloglucan glue being common to Thailand, were characterized in terms of morphology, viscosity and adhesion with scanning electron microscope (SEM), viscometer and scratch adhesion tests. In addition, the denaturation of glue was tested at room temperature.

Painting, Mirriwoong culture and learning through materials

Peggy Griffiths,¹ Kenny Griffiths,¹ Catherine Cummins,¹ Sophie Lewincamp,² Elle Vallier² and Susie Collis²

Waringarri Aboriginal Arts Centre¹ and Grimwade Centre for Cultural Materials Conservation, University of Melbourne²
lews@unimelb.edu.au

Painting is an important method of teaching younger generations within Miriwoong culture of the eastern Kimberley in Western Australia. The paintings are the physical embodiment of lore stories and community, and through the practice of painting and younger people watching elders, knowledge is transferred. The tradition of story-telling is passed down to keep culture, community and paintings alive.

Collaboration with Waringarri Arts and the Grimwade Centre for Cultural Materials Conservation, revisited the value of cultural materials conservation in the context of Miriwoong artists and community. The sourcing of traditional ochres and mixing these with water and acrylic binders at various ratios and application techniques, strengthens a material understanding and informs future conservation of the works of art. This begins to fill the gap on Australian Indigenous ochre paintings that are held in public and private collections nationally and internationally.

A Preliminary Study on the Effects of a Tropical Climate on the Chemical Ageing of Proprietary Artists' Oil Paints

Claire Grech,¹ Nicole Tse,² Augustine Doronila³ and Alex Duan³
Harvard Art Museums, Straus Center for Conservation and Technical Studies,¹ Grimwade Centre for Cultural Materials Conservation, University of Melbourne² and School of Chemistry, University of Melbourne³
Claire.grech3@gmail.com

Significant holdings of oil paintings exist today in tropical climatic bands, however very little is definitively known about the long-term chemical ageing behaviour of paintings constructed and conditioned within these climatological zones. Although other studies have investigated the effects of simulated high relative humidity and temperature on oil paint films, there is a shortage of regionally relevant research. This paper presents a multi-analytical study on the chemical ageing behaviour of samples from two proprietary artists' oil paint brands, Winsor & Newton and Marie's, which were naturally aged in a tropical climate. These were compared to corresponding films that had been aged in a temperate climate, a set of baseline films and fresh samples, where available. GC-MS, FTIR-ATR and ESEM-EDS were used to establish an understanding of the composition of the proprietary formulations and the differences in chemical composition following ageing in the separate environments. Significantly, the presence of certain commonly included additives, such as aluminum stearate, were suggested to be linked to increased degradation in tropical climates. This research provides an important preliminary understanding of the differences in degradation mechanisms between the two climates, and the role of formulation on these processes.

Conservation of a French 18th century painted portrait in a tropical environment

Sarah Davarinche
Painting Conservator, France
sarahdavarinche@orange.fr

This study on the conservation treatment of the Portrait of Raoul de la Picardière by de L'Hospital, oil on canvas dated 1787, was undertaken at the Institut National du Patrimoine (French National Institute of Cultural Heritage) in 2013-2014 as final year project. The work is a classical painted portrait from the end of the 18th century, which was relocated to Reunion Island in the Indian Ocean a few years after it was painted. Since then it has been exhibited in a typical plantation mansion, almost without being modified and is a perfect example of the ageing of an 18th century painting in a tropical environment.

The examination of the painting revealed various degradations that justified a full conservation treatment, but the general state was surprisingly good. A simple climate study was conducted with the C2RMF (Centre of Research and Conservation of French Museums) in order to describe and understand the risks and the advantages of the climate in traditional architecture in a Creole sugar cane plantation (the study is still undergoing). The conservation treatment was undertaken in view of the features of an indoor tropical climate. Appropriate conservation materials and treatments were chosen: shear tests helped to check the behaviour of the common adhesives used in strip-lining (Plectol®B500 and Beva®371) by comparing the results in temperate and tropical environments. Finally, preventive conservation recommendation has been given considering the exhibition of the painting in its historical environment.

Looking through X-rays: The unknown Chen Cheng-po

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X-ray photography has become an essential tool for understanding artists' techniques as well as their individual creative habits. This paper presents the results of a scientific analysis of Chen Cheng-po's style of work and delves deeper into the knowledge of his artworks. Of the 74 oil paintings investigated, X-ray photography revealed underlying layers in 25 (34%) of them. As a result of this finding, Chen Cheng-po is shown to be one of the most nonconformist Taiwanese painters. The research also focused on the reasons for the artist's decision to modify the paintings either partially or, in some cases, completely. Paintings with the subject of a nude female were the most changed, compared with paintings of landscapes, which were almost unaltered. Economic and aesthetic considerations were the main reasons for changing the paintings during his Japanese, Shanghai and Taiwanese periods. This study also discusses the reasons why the canvases that Chen Cheng-po painted in the studio were more modified than those painted outdoors.

Analytical conservation research program for Asian Cultural Materials at the Heritage Conservation Centre NHB in Singapore

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The Heritage Conservation Centre (HCC) of the National Heritage Board (NHB) in Singapore is embarking on establishing a research program dedicated to analysis and materials characterization of museum collections in the Asia Pacific Region. The process is three-pronged: first to establish the analytical laboratory, second to design a sustainable research program, and third to develop a training and regional outreach base. The research process is exemplified by the material characterization and analysis of deterioration of artefacts made in China, India and Singapore, dating from the early to mid-19th to the mid-20th century. Study of the morphology, surface topography and chemical composition of various materials used in making those artefacts employed SEM-EDS and FTIR-ATR techniques. The analyzed materials included pigmented glass in Peranakan/Chinese glass beaded slippers; clay with fillers in a Bengalese statue; and 'gold' printed textile in a Singaporean garment. The analytic results demonstrate the uniqueness of materials and techniques used in the Asia Pacific region and deterioration processes associated with the tropical climate. The pursuit and design of a sustainable outreach program adopts multidisciplinary and collaborative strategies by reaching out to the expertise of the existing regional resources, university research laboratories and heritage centers in the Asia Pacific Region.

Nineteenth-century Indonesian Islamic Manuscripts: A survey of the Michael Abbott Collection, State Library of Victoria

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The Michael Abbott Islamic Manuscript Collection was donated to the State Library of Victoria in 2012 and is comprised of 50 handwritten and printed items, in various languages including Arabic, Malay and Javanese. While mostly produced in Indonesia during the 19th and early 20th centuries, some manuscripts also originate from Turkey, Singapore and India. As the manuscripts have become detached from the society and culture in which they were originally produced and used, an object-based investigation was utilized to examine the manuscripts for material evidence of their historical record. A range of factors such as geography, culture, trade, religion and technological change were likely influences on the bookbinders' choice of materials and techniques. Acknowledging the limited cultural agency of the collection, a detailed survey was designed to collate existing information, as well as generate new knowledge of the manuscripts. A visual database was also created to provide non-text access points to the collection. Reflected and transmitted light photography and digital microscopy were used to reveal specific features of the manuscripts, such as watermarks, printing and binding techniques. Materials such as European papers, woven rattan and dluwang were observed in the manuscripts, as well as variations on the traditional Islamic bookbinding structure. The use of such materials and techniques in relation to the intended mobility and functionality of the manuscripts is also considered. Although not culturally-informed, this object-based research approach has offered a starting point for reinstating the intangible, cultural connections of the collection.

The current situation of collection environments in Thailand

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The problems of conserving cultural materials are very complex in hot and humid climates. Extreme climate, excessive light, insects, microorganisms, rodents, salts and pollutants are among the common factors that affect cultural materials in Thailand. Environmental conditions play an important role in controlling the deterioration mechanisms to which materials are susceptible, but standards developed for temperature and humidity levels are difficult to attain in tropical climates. At present, we are lacking in well-trained, experienced museum staff, architects and engineers who understand the implications of these requirements. As a result, buildings often have inadequate ventilation and airflow, with air-conditioners used in service areas for human comfort during working hours, while those in storage areas are restricted in use by energy saving policies.

During the last 20 years, large-scale outbreaks of fungi have caused serious problems in many air-conditioned buildings. In particular, a group of xerophilic fungi have physiological mechanisms that enable their biochemical pathways to function in environments where little water is available. Profuse growth of these xerophilic fungi was identified as *Penicillium*, *Aspergillus* and *Eurotium* species. Insects also cause irreparable damage. In addition to outdoor pollutants, collections are suffering from indoor-generated air pollutants from unstable materials. Therefore, a challenge remains for museum staff, librarians, archivists, architects and engineers to design more climate-responsive buildings. Environmental control in tropical climates requires consideration from the very beginning of the planning process, through design and construction, to the final installation of the equipment and objects.

Re-assessing the Condition of the Local Museum Collections in Central Luzon, Philippines

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The Philippines is situated in the tropics where climate has a strong influence on local museum collections. Central Luzon, also known as Region III, is located at the heart of the island of Luzon which consists of seven provinces: Aurora, Bataan, Bulacan, Nueva Ecija, Pampanga, Tarlac and Zambales. This region is noted for experiencing more than 20 typhoons per year, with temperatures during dry season reaching 38°C–40°C in the city of Tuguegarao in the province of Nueva Ecija. Other provinces experience flooding during rainy monsoon season (June–November), and very high heat and humidity in the months of April–May due to their proximity to coastal areas. The extreme variation of temperatures in the region where some provinces are situated in the mountains, while others are located near bodies of waters, may affect museum collections. There are four kinds of museums in Region III: city, municipal, ecclesiastical, and private museums. The city and municipal museums are managed and financed by the government, while ecclesiastical and private museums are administered by private individuals.

This paper will present an assessment of the current condition of museum collections (as results of curators' management and administration) that are continuously exposed to the changing climate, natural and artificial, in the Central Plain of Luzon.

Alternative Conservation Strategies for Hot and Humid Climates

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In recent years more cultural institutions in hot and humid climates have been installing air-conditioning systems to protect their collections and provide comfort for both employees and visitors. This practice, however, can pose complications, including problems of installation and maintenance as well as structural damage to buildings, while failing to provide collections with a viable conservation environment.

Recently a book was published that offers hands-on guidance to the specific challenges involved in conserving cultural heritage in hot and humid climates. Initial chapters present scientific and geographic overviews of these climates, outline risk-based classifications for environmental control, and discuss related issues of human health and comfort. The authors then describe climate management strategies that offer effective and reliable alternatives to conventional air-conditioning systems and that require minimal intervention to the historic fabric of buildings that house collections. The book concludes with seven case studies of successful climate improvement projects undertaken by the Getty Conservation Institute in collaboration with cultural institutions around the world. Appendixes include a unit conversion table, a glossary, and a full bibliography.

This book is an essential tool for cultural heritage conservators and museum curators, as well as other professionals involved in the design, construction, and maintenance of museums and other buildings housing cultural heritage collections in hot and humid climates.

The practical issues in developing risk management strategies for the protection of cultural material in tropical environments

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A major concern for countries in Southeast Asia, and across the Pacific and Indian Oceans region is how best to manage and mitigate these risks, and how best to respond to them when they occur. Natural disasters including cyclones, earthquakes, floods, landslides and fires occur annually and cause significant damage. Civil disturbance, economic interventions, and post-trauma reconstruction also affect the preservation of cultural material in tropical climates. Levels of responses vary and invariably include international, regional, national and local; each with its own particular mechanisms for dealing with the threat, mitigating the impact, and managing the effects of the disaster. Focusing on a number of case studies this paper describes these layers of responses. It examines how local cultural practice intersects and influences the efficacy of risk management strategies, and explores the role of local knowledge in understanding how to develop effective risk management strategies for the protection of cultural material in tropical environments.

From Rescue to Training: Developing Local Skills to enable Conservation on the Ground

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The challenge to any heritage site managers after a devastating incident of a natural disaster is to be able to retrieve as much as possible materials to enable reconstruction and gain, as soon as possible, a normal level of a heritage site's functional and social roles. The usual yardstick used by site managers is to restore what was in place before disaster struck. In communities in the island province of Bohol in the central Visayas, struck by a devastating earthquake on October 12, 2013 and in which discordant interests often slowed the pace of recovery among the churches that were declared National Cultural Treasures, different approaches have to be made from the top down, including responses from the Roman Catholic Church hierarchy. Most of the more dramatic changes on these churches were made in the 20th century, prompting the declarations before the earthquake to ensure their heritage values were preserved. In this paper, I will show the steps we have taken after getting past remedial first aid approaches to both built heritage and moveable heritage and was deemed by managers of sites as wanting. Regaining ruined heritage materials - and in the case of Bohol, living heritage - has become part of site managers and conservators' mainstream concerns in many parts of the world as a result of extreme weather patterns and our dynamic environment. The new Normal has come before us and the lessons we have learned from recent experiences should help us anticipate future risks.

The application of air bags and foam boards in the conservation of Chinese calligraphy and painting

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Mounting is an important component in the conservation and restoration of cultural heritage in the form of Chinese calligraphy and painting. In the modern era, framing with the plywood supports has become the mainstream form of mounting due to ease of handling compared to traditional scroll mounts. The high humidity and temperature in Asian climates, however often cause the artworks to fox or become distorted when mounted this way. The foxing and distortions are caused by the plywood support. Further plywood is acidic and readily absorbs the moisture in the air. This paper explains how to combine traditional air bags made from mulberry paper and the modern conservation material of foam boards, to replace acidic plywood supports in order to mitigate foxing and keep the artworks flat.

From A Private Passion to A Public Celebration – a journey in preservation of Asian Puppet Theatre traditions

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The Taiyuan Asian Puppet Theatre Museum (founded in 2000) is part of the Taiyuan Foundation, which includes the Taiyuan Puppet Theatre Company, the Nadou Theatre, Taiyuan Publishing and Taiyuan Film. The Museum works closely together with these organizations which results in gains in creativity, capacity, exchange and sustainability: a potent combination in the preservation and presentation of the art of Asian puppetry. Thus the Museum performs its museological duties, but it also cooperates with of a team of performers, technicians, educators and patrons with a loyal and expanding audience, to share a creative vision.

The Conservation Unit is the guardian of the unique collection of over 10,000 Asian theatre objects. We work on the preservation and interpretation of a unique cultural legacy with our sights on the future. This paper charts the evolution of the private collection of Dr Paul Lin into a museum with professional standards of practice and an international reputation, and the conservation challenges of the collection. We are situated in a beautiful 1920s building (with all its related problems), which is on a tropical island in a hurricane and earthquake zone. Puppet performances and temple celebrations still take place on the streets around the museum, so we are part of a living culture and share its vitality.

Utilizing Local Materials to Construct Invisible Mounts for HMQ The Queen of Thailand's ball gowns

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The mannequins developed by Historic Royal Palaces for living British royalty, are an apt prototype for the QSMT conservation team to replicate for the display of Her Majesty the Queen of Thailand's couture dresses. Through cross trainings between the two royal museums, the QSMT has experimented and sourced local materials in order to create a more bespoke approach to its mannequins. The multiple steps to create a viable conservation-grade invisible form will be reviewed and discussed.

The ideal Perspex (Plexiglas) UK form, is not feasible in Bangkok. The plexi crafters are unable to replicate the British forms in a highgrade plexi, or work on a one-to-one basis with the museum. The papier-mache prototype, while doable, is time consuming, and the material is difficult to fully dry in tropical climate. Similar difficulties are encountered with bukram, where the starch component has a tendency to mildew in high humidity.

The final solution is a fiber glass dress form, in the required size, and professionally cut down by the manufacturer. After sealing the raw edges with a paper coating, and off-gassing, the forms are buffered with imported or local materials. Then the visible interior cavity and outer surface can be customized and tailored.

The result is that fiberglass suits the needs and capacity of the QSMT best; it is more light weight than plexi or papier mache; it is strong enough to support heavy gowns; it is a readily available local product; cost effective; and the local manufacturers can modify the forms and collaborate on a form-by-form basis.

Innovation and Evaluation of Filling Losses in Asian painting on paper – the application of Airbrush Technique and Microcrystalline Cellulose Powder

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Conservation materials have become an important area of study in recent years. This paper discusses the treatment of filling losses with microcrystalline cellulose powder mixture by airbrush in paper conservation, as applied to severely damaged Asian paintings on paper. The technique of filling losses has been widely recorded by conservators since ancient Chinese literature. It is suggested that the infill paper needs to be of a similar thickness to the original, and must not cause damage to the object. It should be noted, however, that there have been few attempts to develop a technological approach to materials in the tropical Taiwanese climate. Since filling losses in paper is a time-consuming technique, this study attempts to find a new method for filling losses safely by using the reversible filling material, microcrystalline cellulose powder mixture.

A two phase approach was developed to explore the design and application of microcrystalline cellulose powder mixture as an infilling material. The experiment sought to determine the appropriate formulation and viscosity of microcrystalline cellulose powder mixture, and then to use an airbrush to spray the mixture to cover areas of loss on the paper object. Two different conservation case studies were undertaken: the conservation of a xuan paper hand scroll affected by mold and rot, and the inpainting of improperly conserved Chinese religious painting.

To conclude, this study offers an alternative resource-saving method for filling losses and inpainting areas of loss on paper by using a reversible method to avoid causing irreversible staining to the original. We are hopeful that future research will provide more detailed results which may further develop this new treatment technique.

Research into improving backboards for framed Asian Paintings in Subtropical Climate Area

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Asian paintings are still frequently mounted in the form of framing. A major problem of this mounting style is that the wooden backboard is in direct contact with the painting's paper substrate. As we know, in an environment of high temperature and humidity, wooden backings can easily produce acidic by-products, which cause foxing on the paper. Nevertheless, these materials cannot easily be replaced in the framing of Asian paintings by many mounting studios. The wooden board is not only inexpensive and lightweight, but easily available. Most importantly, the wood and the painting's paper fibre have a similar expansion and shrinkage rate in response to moisture, thus helping to keep the painting flat. However, if the wooden backboard is stored in an environment of severe temperature fluctuations and exposure to light, it can release various acidic by-products and cause deterioration of the paper substrate. Conservators at some museums have gradually been selecting acid-free materials to make backboards. However, due the possibility of distortion, inaccessibility, and high cost, collectors would prefer the wooden backboard instead of choosing an acid-free material. This research will focus on the comparison of different materials for backing boards in subtropical climate areas. We will look into developing a new way to mount and frame Asian paintings by using safer and less expensive materials as backing boards to protect the integrity of the artworks.

Cultural materials conservation in the tropics: identifying limits, boundaries and values

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The preservation of works of art in tropical Southeast Asia presents many challenges. There are vast traditional and modern collections, yet the guidelines for preventive care and conservation treatment are yet to be fully realized. The increasing risk of natural disasters such as the recent earthquake in Bohol and Typhoon Haiyan in the Philippines, have had devastating effects on cultural collections. Further, issues of sustainability and responsible museum governance are issues for cultural material conservation to engage with in the area of education; operations particularly in terms of environmental controls and microclimates; and Asian focused capacity building and community participation. Lastly regionally relevant cultural materials conservation measures and practices are continually evolving from dominant international approaches and re-contextualized in various geographic locations. In engaging with these issues, there are opportunities and boundaries. This paper reports on the feasibility of frameworks for the collections care and conservation of works of art located in tropical Southeast Asia, whether as local practices or regional alternative approaches. It focusses on interactions and outcomes from case studies in the Philippines, Malaysia and Thailand to explicate discussions.

Capturing and Sharing Traditional Methods of Textile Preservation in South East Asia: An ASEAN Textile Conservation Research Project

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The objective of this twelve-country Southeast Asian project is to collect and study the use of indigenous plants, cleaning techniques, and knowledge in traditional textile care. Textiles have long been an integral part of Southeast Asian culture and identity. With increased commercialization, technology, and urbanization, age-old preservation practices are disappearing. Without the systematic collection of these stories, practices and customs, a rich and broad tradition of textile preservation techniques that could inform and benefit current and future generations will be lost forever. These practices can guide conservation stewards to better care for the textile heritage (both tangible and intangible) in each of the participants' respective countries. Moreover, many of these methods are low cost, equal or better than chemical solutions, and are locally sustainable. This project, aims to collect physical data, stories and recipes on three topics: cleaning, stain removal and traditional knowledge. After the four-month research period, participants will attend a regional forum in Bangkok in 2016, to present and compile their stories and research, share their data, and make traditional recipes, with the final output being a publication edited by the organizers (SEAMED SPAFA and QSMT).

An important part of this project is the analysis of the materials; their chemical properties and active ingredients as compared with standard synthetic and natural products used in textile conservation practice today. The identification of plant biology and their correlation to modern chemical products is paramount to the project. A scientific advisor, will oversee the analysis of the plant based materials, and direct experiments to replicate and test them. Thereby, commonalities between traditional and modern practices will be quantified through analysis and testing, and supported by a publication.

Salt Weathering of Mural Painting Located on Floodplain in the Lower Chao Phraya River Basin

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The Chao Phraya River is a major river in Thailand, with its low alluvial plain forming the centre of the country. This area has a wet monsoon climate, and heavy rains cause significant flooding every year. The worst flooding occurred in 2011 when 65 provinces were declared disaster zones. After investigation of mural painting located on floodplain in the lower Chao Phraya River Basin, the authors found that salt weathering is the major cause of deterioration. The decay of mural painting is attributed to the action of soluble salts present in the walls. The repeated crystallisation and dissolution of the salts causes the wall to disintegrate and the soluble salt to effloresce, with damage visible both on the surface and within the porous structure of the wall.

After the 2011 flooding, it was observed that most mural painting in this area is increasingly disintegrating. Chemical and physical analysis of salt efflorescence and subflorescence revealed the presence of halite, thenardite, mirabilite, gypsum, calcite, hexahydrate and epsomite, soda nitre, and several other complex salts. The extent of deterioration corresponds to rising moisture. The walls, built of brick and lime mortar/plaster, are porous, hydrophilic and permeable by water and vapour. The effect of salt weathering is most obvious in the dry period (November–April) as evaporation increases levels of super-saturation of solution in confined spaces. In addition, high temperatures increase evaporation rates and crystallization pressure. It was also found that the critical relative humidity point for dissolution of these salts falls within the typical ranges of relative humidity observed in this area. These salts can cycle frequently between solution and solid.

This problem requires urgent and appropriate interventions with collaboration between different disciplines. Research projects and training programs are necessary to solve this problem. All restorers should have special training to understand the deterioration mechanisms and remedial actions.

Deterioration assessment of Thai mural paintings suffering from the submergence of the Thailand's 2011 Great Floods

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Thailand suffered dramatically from the great floods in 2011. Ancient temples in the flooded areas were significantly damaged. Wat Pa Klang Thung, located on the west bank of the Chao Phraya River within the Province of Pathum Thani, was submerged in the floods for four months with apparent damage. The mural paintings and walls of its ordination hall were critically deteriorated. This presentation aims to discuss the results of the qualitative and quantitative assessment of the deterioration problems occurring on the mural paintings and walls after the floods. The assessment was carried out with: 1) photographic surveys and manual condition assessment over existing architectural drawings and/or printed rectified photographs; 2) digitisation of the recorded deterioration problems using AutoCAD computer program; and 3) quantitative assessment of deterioration degrees using AutoCAD and Microsoft Excel programs. The assessment yields two sets of accurate deterioration data, including a set of maps of the mural and plaster deterioration sorted by types of problems, and a set of quantitative assessment of the deterioration. The maps could be used to identify the locations where each deterioration problem occurred, while the quantitative deterioration assessment could be used to compare the degrees of the mural and plaster deterioration, and to rank the susceptibility to deterioration of the walls. In accordance with other collected environmental data, both assessment data sets could be helpful for further investigating the actual causes of deterioration.

Preservation of Tracing Paper: Case Study of TRA Archives Preservation of Tracing Paper: Case Study of TRA Archives

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Taiwan is located in subtropical regions. Its high humidity and temperature is a challenge to archives preservation. Even though National Archives Administration (NAA) provides repositories with controlled environment for national archives, some archives were already degraded before transferred due to poor management in their original organizations and fragile materials. NAA's archival holdings of Taiwan Railways Administration (TRA), MOTC date back to 1895 when TRA was 'The Railway Department of the Traffic Bureau of the General Governor of Taiwan' and belonged to the Japanese Colonial government. This collection, including thousand pieces of engineering drawings, contains varied types and a large number of archives with date range from approximately 1895 to 1997. To preserve these degraded archives, NAA implemented traditional mounting methods to repair. This article notes down tracing papers' conditions before and after repair to study if the mounting materials and methods are suitable and whether or not the engineering drawings remain authentic afterwards in NAA's preservation conditions.

Effect of colloidal silver nano particle in soluble starch stabiliser on antifungal property in traditional and novel primers for concrete walls of mural painting

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Traditional primers for mural painting and traditional preparations of the concrete wall are sometimes used nowadays for conservative reasons. Along with the traditional primers and preparations, in many temples, the non-traditional preparation is regularly used because it is more convenient and more durable to climate change. This research investigated an effect of silver nanoparticle as an additive in the traditional and novel primers for the concrete wall surface used for mural painting. Traditional primers that use plant components as a binder were selected for study, and prepared with 5 different ratios of natural pigment (clay from Lopburi province) to binder (tamarind glue from Petchaboon province). Two optimised formulations were chosen by considering viscosity, opacity and levelling properties by painting on dried primer applied on a concrete slab (15 x 21cm). A survey of artists from the Fine Art department, the Ministry of Culture, was also used to measure satisfactory application.

In addition, we optimized the novel primer, which consists of commercial pigments (titanium dioxide and aluminium silicate) and acrylic binder, in the same way as the traditional one. Subsequently, the silver nanoparticle was added to both types of optimized formulations and antibacterial properties were tested with bacteria found on the mural painting surface from Dusidaram temple in Bangkok, Thailand. The growth of the bacteria was effectively inhibited by the presence of silver nanoparticle in the novel primer mixture.

Defining investigation parameters in developing a sustainable approach to the treatment of biodeterioration using extracts of the *Azadirachta indica* plant

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To seek sustainable alternatives in the treatment of biodeterioration of immovable heritage, we have undertaken preliminary investigations to evaluate the suitability of extracts of *Azadirachta indica*. The plant species *Azadirachta indica*, more commonly known as the neem or margosa tree, is native to India and the Indian sub-continent. Properties attributed to various parts of this plant have seen its use as a topical antifungal treatment and an insect repellent in traditional forms of medicine [Koul 1990; Biswas 2002]. Recent investigations to evaluate the commercial properties of neem in integrated pest management (IPM) have isolated compounds and fractions with insect treatment effects. These have since been made commercially available [Gahukar 2000].

For the researchers involved in these current investigations, it is important that the approach adopted is conservation-relevant and scientifically sound. As a result, contributions from conservation practitioners, conservation scientists, chemists and specialists in biodeterioration and forestry have been welcomed. In addition, the opportunity to evaluate locally available and unprocessed forms of neem plant extract on site at Ahichhatragarh fort and palace complex, Nagaur, Rajasthan, India, has provided us with direct access to conservators with local knowledge of the uses and properties of neem. Working with this group, and other contributing researchers, has played a significant role in informing the developing research pathway. This paper reports on the experience, findings and discussions that have been influential in guiding further investigations into neem-based approaches in the treatment of biodeterioration of immovable heritage.

Severe termite infestation: Conservation of the EDSA Shrine oil mural painting on canvas

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Severe termite infestation resulted in the loss of around 80% of the canvas in one of the four panels of the EDSA Shrine's oil mural painting mounted on plywood. Eight colonies of termites were discovered tunnelling into the concrete walls from plant boxes outside the building. Initial work required eradication of the termites' source and reduction of moisture from the exterior wall. Preparation of the interior wall behind the panels included waterproofing, polyester insulation and application of a lime-based plaster. Several layers of RK-0 tissue, Chiang-mai tissue, gauze and cheesecloth were used as facing prior to de-installation.

Treatment of the damaged artwork followed the five basic steps: 1] cleaning, 2] chemical stabilization, 3] physical stabilization, 4] aesthetic unity and 5] protection with ultraviolet-stable varnish. After cleaning the back of the painting where most of the canvas was eaten by termites, the paint layer soiled with frass was swabbed with peroxide, flattened with tissue, brushed with cellulose fibre reinforced plaster and relined with de-acidified canvas. The restored painting exhibited shrinkage in size with wrinkling of paint. It was mounted on a customized stretcher in lieu of the plywood and reinstalled with a spacer from the wall provided for ventilation.

Art Invisible Destroyer – Metal Artefacts Maintenance and Conservation under Tropical Climate in Taiwan

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In tropical Taiwan, humidity, high temperatures and a monsoon climate characteristic of an island environment create several conservation challenges for works of art from large-scale outdoor metal sculptures to indoor historical metal artefacts. These metal objects can be divided into patina, painted and pure metals. The patina metal is usually a copper alloy, which can protect and enhance the aesthetic appeal of the metal material. But as the patina compound belongs to the surface layer, it is affected by biological excrement, acid rain, water and sunlight, causing the appearance of uneven colour. We have found the best conservation approach to be repatination and the application of wax coating.

Painted metal is very complex and difficult to maintain, with ferrous metal a typical material for protection. Under strong ultraviolet radiation and rain, the paint will peel off and adsorb water vapour, causing damage to the metal body. In addition to regular checks and documentation, re-painting is necessary from time to time in line with conservation ethics to improve the appearance and to protect the metal. Pure metals such as copper and aluminium form an oxide and a thick mineral deposit on the surface at a very high humidity, and then corrosion of the metal. Ongoing maintenance of the metal is necessary; otherwise it becomes difficult to reverse the deterioration. This article discusses the damaged condition of metal objects in several types of weather in Taiwan, and explores the difficulties and processes of maintaining and conserving metal artefacts.

INCCA-AP: Highlighting Contemporary Art Conservation in the Asia Pacific

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In late 2014, the International Network for the Conservation of Contemporary Art-Asia Pacific (INCCA-AP) was established as a regional group of the international group INCCA. This presentation describes the aims and digital presence of INCCA-AP over the past year. It asks questions of the audience about their experiences and challenges with contemporary art conservation in the region.

AMERRUDIN AHMAD

Amerrudin Ahmad is the Chief Curator [Conservation] at Balai Visual Seni Negara [National Visual Arts Gallery] of Malaysia since 1997. He has a Masters in Conservation from the UK, 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. Amer has curated many exhibitions at BVSN, abroad and with private galleries.

CHIRAPORN ARANYANARK

Chiraporn Aranyanark has had a long and distinguished career in conservation. Her career began in 1972 after graduation with a degree in chemistry from Chulalongkorn University, and she went on to earn a MEng in nuclear technology from Chulalongkorn University. She has also attended several training courses on conservation and scientific examination of cultural property. For over 36 years, she served with the Conservation Science Division of the Fine Arts Department, Ministry of Culture. In addition to conservation intervention, teaching, organising workshops, conferences and training programs, she also contributed to numerous books, conference proceedings, manuals, and articles. She has been involved with several international organizations, such as ICCROM Council member [2003–2007], member of the Scientific Committee for Conservation of Stone [ICOMOS], and member of the International Council for Biodeterioration of Cultural Property [ICBCP].

After her retirement from the Fine Arts Department in September 2008, she continued her career as an expert in conservation at the National Discovery Museum Institute. She has developed numerous training courses, workshops and publications to increase the competence of museum staff all over the country. She is also a visiting lecturer for the MA in Conservation of Fine Arts and MA in Architectural History. In keeping with her commitment to the profession, she is still active in numerous organizations and committees. In 2013, the Senate awarded her for distinguished achievement in the field of applied science.

ROBERTO A. BALARBAR

Roberto A Balarbar holds a degree in Bachelor of Science in Chemical Engineering and Masters in Business Administration. He is the Officer-in-Charge of two Divisions at the National Museum of the Philippines: Arts and Conservation Laboratory. He supervises the preservation of its moveable heritage collections and special conservation projects, including those retrieved from sites devastated by the October 2013 earthquake in Bohol. As a conservation scientist, he conducts materials analyses for appropriate conservation methodologies and formulation requirements.

VINCENT L BELTRAN

Vincent L Beltran is an assistant scientist at the Getty Conservation Institute. His research interests include the examination of mechanical properties of historic materials and assessments of the transportation environment for cultural heritage objects.

SARAH J. BENSON

Sarah J. Benson, Assistant Conservator, Textiles, joined the NHB, Heritage Conservation Centre (HCC) in April 2014 and is a graduate from the Centre for Textile Conservation at the University of Glasgow. Before coming to Singapore she worked with a private conservator in Scotland focusing on textiles used in historic houses and did a placement at the fashion museum: Musée Galliera de la Mode in Paris.

JULIA M BRENNAN

Julia M Brennan has worked in the field of textile conservation for thirty years. Her Caring for Textiles company, founded in 1996, is based in Washington DC. She does a full range of textile treatments, display, installations, storage and survey work for institutions and private clients. She lectures to collector stakeholders on textile preservation and is passionately committed to the protection of cultural property in countries of origin. A degree and specialization in the protection in cultural heritage has forged collaborations and trainings with antiquities, legal and law enforcement, and the conservation community to augment security and art issues.

Julia's advocacy for preservation outreach, has taken her back to South East Asia, a most beloved region, where she grew up. From 2000 to 2008, she led five multi-month textile preservation workshops in Bhutan, and helped establish the National Textile Museum. Since 2008, she has been training a new generation of textile conservators in Thailand, establishing the conservation lab, storage and exhibition standards at the Queen Sirikit Museum of Textiles in Bangkok, and leading preservation trainings in Jakarta, Indonesia and Taiwan. Julia Brennan is a Professional Associate of the American Institute for Conservation, a Director of the Washington Conservation Guild, APTCCARN, and founder of the Collections Care Network CCN.

CHEN SHU-MEI

Shu-mei Chen is studying at the Graduate Institute of Library, Information and Archival Studies, National Chengchi University as a doctoral student. Meanwhile, She is also the Senior Executive Officer of the National Archives Administration, National Development Council. The National Archives Administration is the central competent authority in Taiwan, responsible for the management of all governments' records, as well as the management of archives, such as acquiring, transferring, organizing, preserving, and making them available to the public. She is charged of the records preservation counseling, as well as supervision of the National Archives repository-building, archives maintenance, duplication and other related operations.

DES COWLEY

Des Cowley is the Rare Printed Collections Manager at the State Library of Victoria, and co-curator of the Library's permanent exhibition, Mirror of the World: Books and Ideas. He has more than twenty years experience working with rare books and is co-author of *The World of the Book* [2007]. Des was a judge for the Victorian Premier's Literary Awards in 1998, 1999, 2003 and 2010, and is on the editorial panel of *Script & Print* and the *La Trobe Journal*.

CATHERINE CUMMINS

Cathy is the Waringarri Arts Centre Manager. She has extensive experience working in project management in the arts and cultural industries - delivering community programs, business and strategic development and have engaged extensively with Indigenous communities. Cathy is committed to supporting communities to achieve success and sustainability through balancing cultural and economic values.

SARAH DAVRINCHE

Sarah Davrinche is a French painting conservator. After a Master of History of Art at the Ecole du Louvre in Paris, she graduated with honours in 2014 in Paintings Conservation at the Institut National du Patrimoine by presenting her final year project on the study and the conservation treatment of a painting exhibited in a tropical environment.

DR AUGUSTINE DORONILA

Augustine is a research fellow with the analytical and environmental chemistry research, School of Chemistry at the University of Melbourne. He is involved in ecochemical research in Southeast Asia of the Washington Conservation Guild, APTCCARN, and founder of the Collections Care Network CCN.

DR ALEX DUAN

Dr Alex Duan is part of the Surface & Chemical Analysis Network, School of Chemistry at the University of Melbourne.

CLAIRE GRECH

Claire Grech is the Australian Conservation Science Fellow at the Straus Center for Conservation and Technical Studies, Harvard University. She graduated from the University of Melbourne with a Bachelor of Science [Chemistry] and a Master of Cultural Materials Conservation. Her current research interests include the chemical analysis of modern paints, the technical study of Persian lacquerwork, and the identification of pigments in Islamic manuscripts.

KENNY JUNIOR GRIFFITHS

Kenny was born in Kununurra and raised in Roeburne and Hall's Creek. He started living in Kununurra in my mid teens and have been here ever since. Kenny did some work experience at TAFE before starting at Waringarri Arts. He started in 2010 because of his grandparents and because the rest of my family are close by. Kenny learns from all the artists and he learn different skills to make things and how to use equipment. As an art worker Kenny prepares materials and canvases for the artists and supporting senior artists. He has also been involved in supporting public art commissions and have learned skills in mold making, wood carving and casting as well as a little bit to do with art conservation.

PEGGY GRIFFITHS

Peggy Griffiths arts practice reflects her strong commitment to her Miriwoong culture. Her elegant imagery resonates with references to cultural performance of which she is a renowned dancer. The winding of waterways are the sinuous and graceful body movements of a dancer; the outlining dotting reflects a performer's body painting. Her works document the traditional country of her mother and grandfather and her recent works capture the movement of wind through the spinifex country which for the artist is evidence that the spirit of culture is alive.

Born on Newry Station to Dinah Dingle and Frank Moore, Peggy lived and learned about her family and bush life. "I grew up on Newry Station and learnt my culture from the old people. Peggy saw my old people being taken away from the camp with chains around their necks and she was hidden once when Welfare came so that they would not take me away. Peggy learnt to dance all the traditional dances and has taught all my children and grandchildren these dances. She went to school at the Kimberley Research School and later at Beagle Bay Mission before she got married at 16 to my promised husband Alan Griffiths. We have been together ever since." Peggy began working with Waringarri Aboriginal Arts in 1985, carving and painting boab nuts and boomerangs. She progressed to painting on canvas and working with limited edition prints. She is the first indigenous artist to win the prestigious Fremantle Print Award.

Committed to keeping the stories of her grandfather, Charlie Mailman, alive and maintaining her connection to culture Peggy and her husband Alan are often found painting side by side. They are key performers and teachers of traditional dance for their community. They have travelled widely, performing at arts festivals and events. Peggy is a highly respected senior artist at Waringarri Aboriginal Arts, teaching other artists as well as contributing to leadership of Waringarri Aboriginal Arts in a Director role. Peggy and her husband have 5 children, 27 grandchildren and a growing number of great grandchildren. "What is important to me is to carry on my grandfather and my mother's stories. It is important to show my younger generation what I have learned about our stories and our culture. When I paint my mind has an idea and I do that to show people how I see things."

SYLVIA HALIMAN

Sylvia Haliman holds an MSC in Conservation in Archaeology and Museums and an MA in Principles of Conservation from University College London (UCL), UK. Trained as an objects conservator, she has worked in Museums in UK, Hong Kong and Singapore. She joined the objects conservation team at Heritage Conservation Centre (HCC), National Heritage Board (NHB), Singapore, in 2013.

MICHAEL C HENRY

Michael C Henry is Principal Engineer/Architect at Watson & Henry Associates and Adjunct Professor of Architecture at the University of Pennsylvania. He is guest lecturer in the University of Delaware/ Winterthur Program in Art Conservation.

NAWARAT KAEW

Nawarat Kaew-on is currently a doctoral student in Imaging Technology at the Chulalongkorn University, Thailand. She received her MSc in Imaging Technology from the Faculty of Science, Chulalongkorn University, where she also graduated with her Bachelor of Imaging and Printing Technology. After she completed her Master's, Nawarat worked in the printing and packaging industry for 14 years, with three years in an Asian packaging company and 11 years at Target Corporations. In addition to her experience in the professional field, Nawarat has a strong interest in art and studies acrylic painting. She teaches decorative painting class at her home studio. Since 2014, Nawarat has been awarded a fellowship by the Thai Research Fund for the Doctorate of Philosophy in Imaging Science. She decided to pursue her education to merge her background in science and her skillset in art to support Thai traditional art conservation. Nawarat is now researching Thai traditional colours.

EMILY KEPPEL

Emily Keppel recently completed the Master's program at the Grimwade Centre for Cultural Material Conservation at the University of Melbourne, specialising in paper conservation. She was a Preservation Technician at the State Library of Victoria from 2013-2015, and a recipient of the AGL Shaw Summer Research Fellowship. Emily recently undertook an internship with the National Museum of the Philippines and has also worked on several conservation projects for the University of Melbourne Special Collections and community museums around Australia. She is currently an intern at Book Conservation Services in Castlemaine, Victoria. Her research interests include preventive conservation, bookbinding, the materials and techniques of Islamic manuscripts and the preservation of paper-based artefacts in tropical climates.

PIYAMON KINGPRATOOMMAS

Piyamon Kingpratoommas (Doom) graduated from the Faculty of Archaeology, Silpakorn University, Bangkok, Thailand. She started her career as an editor for fashion magazine. Her passion for textiles and interest in the field of conservation led her to join the staff of the Queen Sirikit Museum of Textiles in 2008. She has been trained by professional textile conservator, Julia M. Brennan. In 2013, she completed a textile conservation internship at the Heritage Conservation Centre in Singapore.

Piyamon helped establish and set up the lab at the QSMT into its current functioning capacity. She conducted condition reports and treatment proposals for all the textiles and artifacts currently on display. She is engaged full time as a textile conservator, executing treatments, installation, exhibition preparation, and an active preservation outreach program at the museum.

MIKI KOMATSU

Miki Komatsu, Senior Textile Conservator, joined the Heritage Conservation Centre in 2008, and has headed the Textiles Conservation Section since 2009. She obtained her Master's degree in Textile Conservation from the Textile Conservation Centre, UK, through the sponsorship of the Japanese Government Overseas Study Programme.

DR CAROLINE KYI

Dr Caroline Kyi is a Post-doctoral fellow at the Grimwade Centre for Cultural Materials Conservation based at The University of Melbourne. She has a Post-Graduate Diploma in Wall Paintings Conservation from the Courtauld Institute of Art, London as well as a PhD (Chemistry) from The University of Melbourne, Australia. Her research focuses on the conservation of wall paintings as well as the biodeterioration of cultural materials. She has worked on, and undertaken research into, conservation issues presented by a range of moveable and immovable forms heritage in Australia and internationally. She is also an assistant co-ordinator for the ICOM-CC Murals, Stone and Rock Art working group.

DR ANA LABRADOR

Dr Ana Labrador is a social anthropologist and Assistant Director of the National Museum of the Philippines, managing its interdisciplinary research and collections. She is also its chief curator. In 2008, she was a Visiting Scholar at the University of Melbourne's Centre for Cultural Materials Conservation, continuing her work on traditional knowledge and preventative conservation from the University of the Philippines at Diliman where she was Associate Professor of Art and Museum Studies.

CINDY LAU

Cindy Lau, currently working as an Assistant Conservator, Objects, obtained her Bachelor of Science (Honours) in Materials Science from the National University of Singapore, followed by a Master of Arts in Conservation from the University College of London. She joined HCC as an assistant object conservator in 2010.

LEE MENG-KEN AND CHEN YI-TSEN

Lee Meng-ken and Chen Yi-tsen are conservators who serve in the Object Group of the Conservation Center of Cheng-Shiu University in Taiwan. They have MA degrees of Cultural Heritage from the Conservation department of National Yunlin University of Science and Technology, and several years' experience in sculpture and object conservation (especially for metal). Lee and Chen are interested in cleaning, repatination, coating, preventive treatment and conservation ethics of outdoor sculptures, contemporary and public art. Their clients include government institutes, museums, galleries, auction companies and private collectors, and they help owners to conserve objects, survey condition, manage collections and give preservation suggestions.

LEE SWEE MUN

Lee Swee Mun, ACR [ICON Accredited Conservator Restorer] is currently Senior Objects Conservator and Senior Assistant Director of Conservation Services, Department of Heritage Conservation Centre (HCC). She joined HCC in 1997. In the span of her conservation career, Swee Mun has been heavily involved in remedial and preventive conservation work, exhibition work, as well as professional development of the department.

KWANJIT LERTSIRI

Kwanjit Lertsiri graduated with a bachelor degree in Traditional Thai Art from The Rachamonkol Institute, Bangkok. She has participated in several training courses, for example Japanese Paper Conservation, Conservation of Palm leaves and Paper, and Preventive Conservation. She worked on the conservation of painting and art on paper at the Conservation Science Group, the Office of National Museums for 19 years, and then transferred to the Office of Archaeology in 2008. At present, she is a painting conservator at the Mural Painting and Sculpture Conservation Group, Office of Archaeology, The Fine Arts Department, Bangkok, Thailand. Her duties and responsibilities include providing conservation for mural painting, and providing lectures and advice on conservation measures for mural paintings. Her area of specialization is the materials and techniques of traditional Thai painting.

LI I-CHENG

Li I-Cheng has been director of the Conservation Center of Cheng Shiu University since 2005. He has a Master's degree in Fine Arts from Universidad de Salamanca in Spain. Now he is a PhD candidate at the Universidad Politécnic de Valencia. He is in charge of the research, education extensions and administrative developments of the Conservation Center.

LIAO HSIN-KUAN

Liao Hsin-kuan has been a Research Assistant in the Department of Registration and Conservation at the National Palace Museum in Taiwan since 2012; participated in the ICOM-CC Graphic Document Working Group Interim Meetings [2012] and undertook practical training in the Nishio Conservation Studio; and in 2012 graduated from the Institute of Conservation of Cultural Relics and Museology [formerly Conservation of Cultural Relics], Tainan National University of the Arts.

LIN HUAN-SHEN

In 1994 Lin Huan-Shen received a Master Degree in Chinese Art History from National Taiwan University. Following that he spent ten years studying conservation of East Asia paintings at the Usami Shokakudo studio in Kyoto, Japan [a studio that has been in existence for two hundred years] and then at the Palace Museum in Beijing, China. From 2004 to 2006 he worked in the Conservation Department of Tokyo National Museum.

After returning to Taiwan in 2006 he set up inprivate practice at the Taipei Conservation Center where he undertakes conservation works for museums and private collections. Mr. Lin also began to be concerned with the Taiwanese mounting history and with culture heritage conservation in general. From 2010 onwards he has taught East Asia painting conservation un the Graduate School of Cultural Heritage Conservation at National Yunlin University of Science and Technology. In 2011 he was registered as a preserver of traditional techniques by the Taiwanese government.

LIN WAN-JEN

Lin Wan-jen has been a Paper Conservator with the Conservation Center, Office of Arts and Culture, Cheng Shiu University since 2014, after graduating from the Graduate Institute of Conservation of Cultural Relics and Museology at Tainan National University of the Arts in 2011, and working as a Paper Conservator with Yunshiu Conservation Ltd from 2012-2013.

MA SI-YUAN

Ma Si-yuan (Alex), the Conservation Assistant, joined the Conservation and Collection Management Department of Taiyuan Asian Puppet Theatre Museum in 2013. After graduating with MA in Art Studies, Alex Ma participated in publication projects recording oral histories of Taiwan. He Now works alongside Kim Siebert in the department with specific interest in monitoring and maintaining the storage environment, and assisting with preventive conservation duties. Additional responsibilities involve fundamental research and fieldwork of puppetry, editing museum publications and maintenance and development of archival systems for collection management.

DR SHIN MAEKAWA

Shin Maekawa, Ph.D. is a senior scientist at the Getty Conservation Institute, conducting research on environmental technologies for conservation of cultural objects and built environments of heritage buildings since 1989.

ERLINE S. MILLAR

Erlin s. Millar is the National Museum's conservator for textiles and paper, caring for the extensive the National Ethnographic Collection and the National Fine Arts Collection. She is also involved in its preventive conservation, ensuring that objects made of biodegradable materials are maintained in the course of exhibitions and transportation. Her experience includes conducting conservation training and giving lectures, both in local and international meetings. Along with Robert Balarbar, she is responsible for the retrieval, conservation and training of moveable heritage from the October 2013 earthquake-affected sites in Bohol.

ELIZA O'DONNELL

Eliza O'Donnell is a recent paintings conservation graduate from the Grimwade Centre for Cultural Materials Conservation (GCCMC), at the University of Melbourne. Eliza's experiences to date have focussed on the conservation of oil paintings in the Asia-Pacific region, and the use of technical art history and interdisciplinary methodologies to gain knowledge about painting materials, techniques and degradation mechanisms. Eliza has recently completed a graduate contract with International Conservation Services (ICS) and will be publishing her research paper 'Material Availability and Painting Practice: a case study of Singapore Pioneer Artist Georgette Chen' in the upcoming AICCM Bulletin Volume 36.2.

NUCHADA PIANPRASANKIT

Nuchada Pianprasankit 'Joy' received a Bachelors Degree from the Faculty of Archeology, Silpakorn University, Thailand in 2011. She then commenced her career at The Queen Sirikit Museum of Textiles as a visitor service officer and in 2013, as a conservator under the museum's senior conservation consultant, Julia M Brennan. In the field of textile conservator, she works on preserving and conserving the museum's collections. She also is a key researcher in the conservation department. Being a part of the 4th APTCCARN in Taiwan, is an opportunity to represent the Queen Sirikit Museum of Textiles as an institute and museum known for preservation in Southeast Asia.

PANNAPORN PUSOMJIT

Pannaporn Pusomjit is a graduate student of Analytical Chemistry in the Department of Chemistry, Faculty of Science, Silpakorn University, Thailand. She has a Bachelor of Science from Silpakorn University.

DR ANGEL S. RECTO

Dr Angel S. Recto is Professor of the Department of Philosophy and Humanities of the Bulacan State University (BuSU) where he has served as Consultant of the Center for Bulacan Studies from 2013 to present. He was the former Faculty President of the College of Social Sciences and Philosophy of BuSU. He is currently conducting research and study on pre-colonial and colonial arts and religion, archaeological material culture, and museology in the Philippine islands and Southeast Asia. Specialising in Sacred Space Archaeology, his expertise includes cultural heritage conservation and management, ceramic and stone preservation, religious rituals and Franciscan spirituality. He has done several archaeological explorations and excavations in the Philippines and practiced conservation techniques and methods for ceramic, metal and stone in Southeast Asia. His proficiency comprises curriculum and instruction management and planning. Currently, he helps one of the state universities in Central Luzon, Philippines, in establishing a new museum of natural history and cultural heritage.

Dr Recto earned his Bachelor of Arts in Philosophy from Adamson University, Manila; Bachelor in Sacred Theology [Magna cum Laude] from the Pontifical College of Saint Bonaventure in Rome, Italy; Diploma in Archaeology from University of the Philippines; Master of Arts in Education from Manuel L. Quezon University, Manila; Doctor of Philosophy in Education from Philippine Normal University, Manila; PhD in Archaeology [second doctorate degree, in progress] from the University of the Philippines.

MARIA BERNARDITA MARONILLA-REYES

Maria Bernardita Maronilla-Reyes, or 'Maita', is a Conservator of Paintings, Paper and Stone-built Heritage, and an Associate Professor at the Graduate School of the University of Santo Tomas (UST) Manila. She studied Chemistry and Geology, and pursued Masters Studies in Museography and specialization courses in Heritage Preservation. She is presently Consultant at UST Museum and Library, Roberto M. Lopez Conservation Center and the Diocese of Pasig for the restoration of stone churches. A pioneer head of the conservation Laboratory of the National Historical Institute (NHI) in the 80s, she is behind the conservation of the oldest document [1573] at the Archdiocesan Archives of Manila, the oldest money bill [1852] in Southeast Asia and has treated paintings of great Filipino Masters Juan Luna, Hidalgo, and Amorsolo, and foreign artists such as Claudio Bravo, Joan Miró, Picasso and Damien Hirst. She is the founding President of the Philippine Association for Scientific Conservation; was a recipient of Quill and Anvil Awards for excellence; and was commended by the Senate of Guam for her contribution to the Chamorro Heritage preservation. Her most recent article, 'A History and Development of Conservation in the Philippines', is featured in Lumina Pandit II [2015], a publication by UST.

TANATAT SAINGAM

Tanatata Saingam is a Graduate student of Analytical Chemistry in the Department of Chemistry, Faculty of Science, Silpakorn University, Thailand. He has a Bachelor of Science from Silpakorn University.

DR IOSEBA SORALUZE

Dr Ioseba Soraluze is a contemporary art conservator and Head of the Painting Department at the Conservation Center of Cheng Shiu University. He received his PhD from the Polytechnic University of Valencia and has worked in several contemporary art museums in Spain. Since 2006 he has been based in Taiwan and has carried out conservation and research projects with different museums, galleries and institutions in the country. He also does consulting related to acquisitions and conservation of contemporary Chinese art for auction houses in Hong Kong.

KIM SIEBERT

Kim Siebert, Head of the Collection & Conservation at the Taiyuan Asian Puppet Theatre Museum, Taipei, has an almost unbroken international record of museum professional work since 1986, followed her graduation with a Masters in Fine Art at the University of Cape Town. Among other museums, she worked for over a decade at the South African National Gallery in Cape Town, until 1999. Then Curator of African Art, she was the national selectee for the ICCROM: PREMA '95 Collection and Conservation Management Diploma in 1995 through the University of London. She has since worked at the UNESCO World Heritage Site Robben Island Museum, in several African countries, the USA and Taiwan, and has given numerous university and professional courses and training in preventive conservation. She has a specific interest in the small museum, training, and upgrading professional practice.

SHU MIAO-HUNG

Shu Miao-hung has been a Conservator with the Conservation Center, Office of Arts and Culture, Cheng Shiu University since 2009, and has previously worked in the Department of Traditional Arts, National University of Kaohsiung [2004-2006] and the National University of Kaohsiung Program of Promoting Teaching Excellence Universities [2007-2008].

DR ROBYN SLOGGETT

Robyn Sloggett, Professor and Director of the Centre for Cultural Materials Conservation, the University of Melbourne. The Centre's post graduate programs include the Masters by Coursework in Cultural Materials Conservation and research higher degree programs. The Centre also delivers conservation consultancy and treatment programs to a large range of clients across Australia and the Asia-Pacific. Robyn's research interests include attribution and authentication of cultural material, materials conservation in the Asia-Pacific, collection development and history, studies in materials and techniques, and the preservation of cultural material held in regional and remote communities. In 2015 Robyn was recognized as a Member of the Order of Australia-General Division.

DR HANNA M SZCZEPANOWSKA

Hanna M Szczepanowska, PhD, is currently working as Senior Conservation Scientist at the National Heritage Board, Heritage Conservation Centre in Singapore. During the past 10 years, she was Research Conservator at the Smithsonian Institution, Washington DC, and as a Fulbright Scholar she worked in Malta and Egypt assisting with environmental issues in museums. Her area of research is biodeterioration of paper-based collections, surface metrology and analysis of materials degradation. Her recent book is Conservation of Cultural Heritage: Key Principles and Approaches [Routledge, UK].

TAI CHUN-SHAN

Tai Chun-shan has been a Paper Conservator at the Conservation Center, Office of Arts and Culture, Cheng Shiu University since 2011; was previously Conservator in the Department of Registration and Conservation at the National Palace Museum in Taiwan; and in 2011 graduated from the Institute of Conservation of Cultural Relics and Museology [formerly Conservation of Cultural Relics], Tainan National University of the Arts.

DR NICHANAN THEPSUPARUNGSIKUL

Dr Nichanan Thepsuparungsikul is a Lecturer in the Department of Chemistry, Faculty of Science, Silpakorn University, Thailand. He teaches analytical chemistry and has a research interests in Thai mural paintings, particularly their binders and microbial degradation with the use of microbial fuel cells as an investigatory pathway. With a PhD from the National University of Singapore investigating the 'Development of carbon nanotube-modified electrodes for microbial fuel cell application', he is extending his expertise to cultural heritage at Silpakorn University.

TSAI FEI-WEN

Fei-Wen Tsai received a MS in Library Science and a Certificate in Conservation from Columbia University [1992]. She undertook advanced internships and additional training at the Library of Congress and the Smithsonian Institution. In 1993, she was awarded a Paper Conservation Fellowship at the Conservation Analytical Laboratory [CAL, presently Museum Conservation Institute] and worked for the CAL for several years before taking a teaching position at the Tainan National University of the Arts [TNNUA] in 1999. She is presently an Associate Professor at the TNNUA.

DR NICOLE TSE

Dr Nicole Tse is part of the research and teaching team at the Grimwade Centre for Cultural Materials Conservation, The University of Melbourne. Tse's research has focused on the development of regionally relevant conservation solutions for works of art in tropical Southeast Asia. She recently completed an ARC Postdoctorate Fellowship investigating 'The Twentieth Century in Paint' and earlier completed her PhD, focusing on 'The Characterisation of Oil Paintings in Tropical Southeast Asia' with collaborating partners in Malaysia, the Philippines, Thailand and Singapore. Nicole is a co-founder of the Asia Pacific Twentieth Century Conservation Art Network [APTCCARN] and Editor of the AICCM Bulletin.

ELEANOR VAILLER

Eleanor has recently completed her studies in the Master of Cultural Materials Conservation at the University of Melbourne. Her last year of study revolved around a research project into paint formulation at Waringarri Aboriginal Arts Centre, with a focus on primary source material collection. She has fostered her interest in conservation through fieldwork and research conducted in Indigenous arts centers in Australia. Participation in numerous volunteer projects has enabled Eleanor to gain practical experience working on easel paintings, wall paintings, large-scale paintings, bark paintings, as well as working with community groups and engaging with the public in a range of conservation related projects. Eleanor hopes to continue her engagement with community-based conservation projects in the future.

DR NUANLAK WATSANTACHAD

Dr Nuanlak Watsantachad is an Assistant Professor and the former Head of the Related Arts in Architecture Department in the Faculty of Architecture, Silpakorn University, Thailand. After her BArch graduation from Chulalongkorn University, Thailand, she received a Thai Government scholarship to complete her MS degree in Historic Preservation from the University of Pennsylvania, USA and her PhD in Conservation Studies from the University of York, UK. Her Masters and PhD theses focused on sandstone and laterite conservation, while her previous and current research is related to brick and lime plaster deterioration. She has also carried out condition assessments of materials and buildings of several historic places such as Cliff Palace, Mesa Verde National Park, Colorado, USA and Mrigadayavan Palace, Thailand. With her specialisation, Dr Nuanlak has lectured, either as a faculty member or as a guest lecturer, in architectural and material conservation classes at various institutes including the University of York [UK], Silpakorn University, Chulalongkorn University, Thammasat University and Kasetsart University in Thailand.

WANWISA WORAWARD

Wanwisa Woraward graduated with a BA in art history from Silpakorn University, Bangkok. She has participated in several projects on registration and storage of museum collections. She is currently a knowledge management officer at Museum Siam, National Discovery Museum Institute. Wanwisa is very much interested in the conservation of museum objects. She attended several training courses on museology, museum registration, preventive conservation and the identification of Chinese ceramics. She became one of the instructors in the training courses and other activities organised by National Discovery Museum Institute to provide assistance to small museums to improve conditions of museum collections. She also takes an active role in disseminating information to the members of museum networks.

DR YEN SU-FEN

Su-Fen Yen graduated with a PhD in Biochemistry degree from National Taiwan University. She has been working in National Palace Museum since 1992. Now she is the director of Department of Registration and Conservation. Most of her efforts is focusing in the preventive conservation and conservation management.

LOCATION MAPS

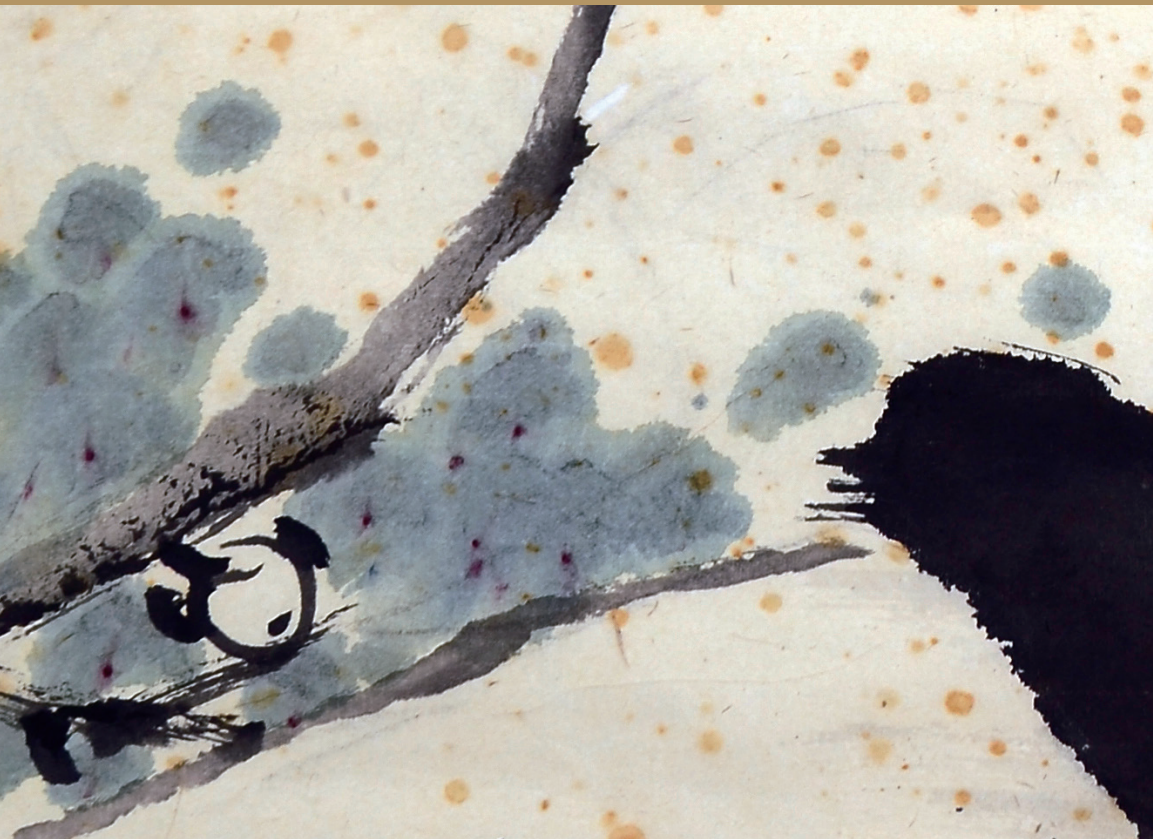
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