Tate AXA Art Modern Paints Project (TAAMPP)

Newsletter 3: January 2008

Welcome to the third Newsletter of TAAMPP!

We are now well into our second year of the project and this third newsletter provides an update on our activities since April 2007. The highlight of this period has been the surface cleaning treatment of the second of the five acrylic emulsion paintings in Tate's collection to be conserved as part of the TAAMPP: *Portrait of Brooke Hayward* (1973), by the American artist Andy Warhol.

Progress in other areas is also discussed, including details of TAAMPP presentations, upcoming events; an announcement for the *Caring for Acrylics: Modern and Contemporary Paintings* publication; and a preview of the third painting to be surface cleaned.

Changes to the Tate team

We are pleased to announce that Dr. Bronwyn Ormsby, former *AXA Art Research Fellow*, has replaced Dr. Tom Learner (now at the Getty Conservation Institute) as *Senior Conservation Scientist* at Tate. Bronwyn is responsible for research into 20th and 21st century artists' materials at Tate, including managing the TAAMPP to completion in 2009. Bronwyn started in her new position in May 2007 and has successfully carried the TAAMPP project forward into its second year.

Dr. Bronwyn Ormsby, Senior Conservation Scientist, Tate

Dr. Elina Kampasakali, AXA Art Research Fellow, Tate

We are also very pleased to announce that Dr. Elina Kampasakali was appointed as the new *AXA Art Research Fellow* at Tate from November 2007. Elina gained her doctorate from the University of Thessalonica in March 2007, and has research experience in the analysis of modern and contemporary works of art. Elina will be learning 'all things acrylic' from Bronwyn and looks forward to making a valuable contribution to the project.

In addition, Patricia Smithen, our TAAMPP conservator, has been promoted to *Lead Conservator, Paintings Conservation* at Tate, and will be continuing her vital input to the practical aspects of the TAAMPP case studies.

Treatment 2- Andy Warhol's *Portrait of Brooke Hayward*

Andy Warhol's painting *Portrait of Brooke Hayward,* painted in 1973, was selected as the second acrylic painting to be cleaned as part of the project and is on display at Tate Modern (Level 5, West 7) from mid January 2008. The painting consists of four separate pieces (the pink canvases is shown here) consisting of both silk screen ink and acrylic emulsion paints (as shown in the yellow canvas detail image) applied onto a white priming.

The painting was lightly soiled, with apparent scuff marks and some residual cotton fibres retained on the surface from a previous wet-cleaning treatment, that were not visible to the naked eye. The painting did not have as heavy a soiling layer, nor the fine white surface layer seen on the Jeremy Moon painting; but both the soiling and cotton fibres needed to be removed to prevent them possibly becoming embedded in the acrylic paint film over time.

The pink canvas from Andy Warhol's *Portrait of Brooke Hayward (1973).* The other canvases have blue, green and yellow backgrounds. Photo: Tate
Credit: © 2008 Andy Warhol Foundation for the Visual Arts/Artists Rights Society (ARS), New York/DACS, London

Detail from the yellow canvas showing a silk screened area (black), and acrylic emulsion paint passages (yellow, orange and pink). Photo: Tate
Credit: © 2008 Andy Warhol Foundation for the Visual Arts/Artists Rights Society (ARS), New York/DACS, London

As with the Moon painting, the initial examination involved the identification of the painting materials, documentation of Warhol's technique and an assessment of current condition. The four sections were examined using photography, microscopy and ultraviolet and infra-red light. Colour and gloss measurements of the surface were also taken prior to cleaning.

Warhol created this work by transferring a photographic image of Brooke Hayward to a silkscreen. The commercially prepared canvasses were laid flat and the acrylic emulsion paints were brushed onto the surface. A different colour was used for each of the main elements of the image: the background, skin, lips, irises, eyelids, and eyebrows. The paint was carefully applied within the outlines of these features, but loosely brushed in other areas, with variable thicknesses, incorporating some air bubbles. Next, the silkscreen was placed over the acrylic paint and a black printing ink was forced through the screen with a squeegee, transferring the image to the surface with characteristic dots. The screen was re-used for each of the four pictures and sometimes the positioning of the image did not coincide exactly with the paint (as seen in the detail of the yellow painting above). The use of silkscreen by Warhol was not a typical commercial technique.

This portrait shows tremendous variety due to the idiosyncratic application of media; too much ink obliterated the dots in some areas while thin applications resulted in a mere ghost of the image in others. A tell-tale streakiness across the lower third of the pink image in particular (above) draws attention to the method of manufacture and emphasises the presence of the artist.

The composition of the paint media and chemistry of the paint surface were characterised using various forms of chromatography (PyGC-MS) and infra-red spectroscopy (FTIR). Pigments were identified using a combination of EDX (Energy Dispersive X-ray analysis), ED-XRF (Energy Dispersive – X-Ray Fluorescence) and infra-red microscopy. The coloured (non-black) paint layers were confirmed as an ethyl acrylate/methyl methacrylate (EA/MMA) acrylic copolymer, which is consistent with the earlier formulations of acrylic emulsion paint. The silk screen (black) areas were all identified as an alkyd medium - an oil-resin binding medium commonly used in house paints and inks. The white priming layer was also identified as an alkyd medium. Warhol's palette included: titanium white; cadmium yellow/orange with associated barium sulphate; cobalt blue; chromium oxide green; possibly Mars red; with calcium sulphate and chalk extenders. The black pigment used in the silk screen ink is probably carbon black and the pink and red pigments were identified as synthetic quinacridone reds, probably PR122 and PR207.

After a thorough examination and evaluation of the surface, it was decided that dry systems were preferable over wet systems for surface cleaning this painting. FTIR and Electro-Spray Ionisation Mass Spectrometry (ESI-MS) analysis confirmed that there was no accumulated surfactant on the surface (possibly due to the previous wet-cleaning treatment where it may have been removed) and tests showed that both the soiling layer and cotton fibres were removed using a combination of dry brushing and Groomstick® molecular trap. In addition, the scuff marks were examined and determined to be small areas of paint loss (abrasion) and/or paint accretions that would not benefit from surface cleaning. As was the case for the Moon painting, the final stage of the treatment involved reassessing the surface for changes, including colour and gloss measurement; both of which demonstrated that no significant change had occurred as a result of the cleaning treatment.

Several external collaborative partners were involved in the evaluation of this painting including the Getty Conservation Institute via their sponsorship of the Atomic Force Microscope (AFM) analysis carried out by the AXA Art Research Fellow at Imperial College London; *in-situ* non-invasive reflectance FTIR and portable AFM (made available through the transnational access MOLAB - 6th Framework Programme (Contract Eu-ARTECH, RII3-CT-2004-506171); and the ESI-MS analysis of cotton swabs by Frank Hoogland at the FOM Institute for Atomic and Molecular Physics (AMOLF), Amsterdam was supported by the approved FOM programme 49 granted by FOM (Utrecht), a subsidiary of the Dutch Organisation for Scientific Research NWO (The Hague).

Other research – progress update

Varnishing acrylics:

This section of the project has also been progressing. In the next months, the varnished canvases will be exposed to accelerated light ageing for a period of a few months - equivalent to about fifty years display exposure under museum conditions. Each canvas has now been evaluated for surface chemistry and once the canvasses have been aged, they will be re-assessed for colour and gloss change, as well as changes in surface chemistry, adhesion and how 'removeable' they are.

Dust accumulation on acrylics:

These model sample canvases (consisting of acrylics, oils, alkyds and water-mixable oils) have been naturally ageing since they were created in early 2007 and will soon be coated/cleaned and assessed prior to attaching them to walls to become dusty. Elina will be researching ways of assessing dust accumulation so that we can successfully monitor differences in dust deposition between the samples.

Other research:

The Getty Conservation Institute (GCI) has funded access to Atomic Force Microscopy (AFM) at

Imperial College, London which is being used to image the surface of acrylic paint films on a micro- scale. Research commenced in September 2007 and the images thus far are proving to be useful for observing surfactant layers. This research should be completed by March 2008.

Visit from MOLAB:

In November 2006, Bronwyn successfully applied to the transnational access mobile laboratory - MOLAB – made available through the 6th Framework Programme (Contract Eu-ARTECH, RII3-CT-2004-506171) to carry out *in-situ*, non-destructive analysis of the surfaces of the TAAMPP paintings. A team of scientists from the University of Perugia visited Tate in July 2006 and carried out portable AFM and reflectance IR spectroscopy studies on three paintings. The results (to be published in 2008) have furthered our understanding of the soiled surfaces of each painting and facilitated comparison of the surfaces of model samples with actual works of art.

Presentations – April 2007 to January 2008

- 1 June: ICOM-CC Paintings Working Group Interim Meeting, British Museum, London
- 8 June: Courtauld Institute of Art, London
- 28 June: British Association for Picture Conservator-Restorers (BAPCR), London
- 5 October: Institute for Conservation (ICON), London
- 18 October: Australian Institute for the Conservation of Cultural Materials (AICCM) National Conference, Brisbane
- 23 November: University of Applied Arts, Vienna

Publications and upcoming presentations

Caring for Acrylics: Modern and Contemporary Paintings

Caring for Acrylics: Modern and Contemporary Paintings is a joint Tate-AXA Art publication due to be launched at the AXA Art 'Dynamic Fragility' stand at The European Fine Art Fair (TEFAF), Maastricht, in March 2008. This publication is intended as a guide to the care of acrylic paintings aimed at collectors and owners interested in the latest best practice recommendations on the storage, handling, display, framing, transport and environmental considerations for acrylic paintings. The author team included several members of Tate's conservation department and Tom Learner of the Getty Conservation Institute.

For further details contact Frances Fogel of AXA Art UK (frances.fogel@axa-art.co.uk).

Published papers:

- Ormsby, B., Smithen, P., and Learner, T. (2007). 'Translating research into practice – evaluating the surface cleaning treatment of an acrylic emulsion painting by Jeremy Moon'. *Contemporary Collections*. Preprints of the Australian Institute for the Conservation of Cultural Materials (AICCM) National Conference, Brisbane, Australia, 97-109.
- Ormsby, B., Learner, T., Foster, G, Druzik, J., and Schilling, M. (2007) 'Wet-cleaning Acrylic Emulsion Paint Films: An Evaluation of Physical, Chemical and Optical Changes.' *Modern Paints Uncovered*, Tate Modern. Getty Conservation Institute, Los Angeles, 187-198.
- Ormsby, B., Foster, G., Learner, T., Ritchie, S., and Schilling, M. (2007). 'Improved Controlled Temperature and Relative Humidity Dynamic Mechanical Analysis of Artists' Acrylic Emulsion Paint Films: Part 1.' *Journal of Thermal Analysis and Calorimetry*, Vol. 90, 249-253.

Submitted papers:

- Ormsby, B., Hoogland, F., Smithen, P., Miliani, C and Learner, T. 'A scientific evaluation of surface cleaning acrylic emulsion paintings' Accepted for ICOM-CC Scientific Research group, ICOM-CC Triennial Meeting, New Delhi, September 2008.
- Ormsby, B., Kampasakali, E., Miliani, C., and Learner, T. 'An FTIR-based exploration of the effects of wet cleaning artists' acrylic emulsion paints.' Submitted to the 8th International of the Infra-red and Raman Users Group (IRUG), Vienna, March 2008.

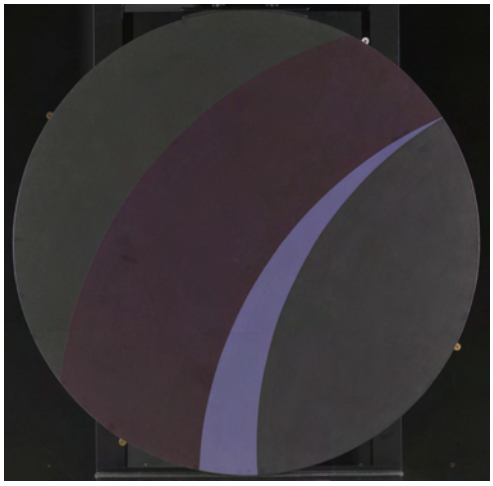
Upcoming presentations:

- 13 February 2008 (internal only): TAAMPP Update – Tate conservation, Tate Britain.
- March 2008: Infra-red and Raman Users Group (IRUG), Vienna (pending).
- September 2008: ICOM-CC Triennial Meeting, New Delhi.

Please contact Frances Fogel of AXA Art UK (frances.fogel@axa-art.co.uk) and/or visit the TAAMPP website for further details.

The third painting to be cleaned

Andromeda by Alexander Liberman (1912-1999).



Alexander Liberman's
Andromeda (1962).
Tate T00650
Image: Tate
Credit: © 2008
The Alexander Liberman Trust

The next painting to be surface cleaned is by Russian-American publisher, painter and sculptor Alexander Liberman, entitled *Andromeda* (1962), 1650 x 1650 x 40 mm. This painting is a large round canvas containing four areas of uniform colour – black, lilac, purple and dark green and it is currently the earliest confirmed acrylic emulsion painting in Tate's collection.

Andromeda was acquired in 1964 and loaned in 2002 where preparation involved dusting the surface with a soft brush. As yet, this work has not been wet or dry surface cleaned and as was the case for the Jeremy Moon painting, the surface has a disfiguring whitish surface layer (partly surface dirt), which is relatively visible due to the dark colours Liberman used.

The presence of accumulated surfactant on the surface of the paint (it migrates to the surface from within the paint film) has been confirmed by analysis, which suggests that this painting would benefit from a water-based wet cleaning treatment to recover the saturation of the paint film and to enable the efficient removal of surface dirt. However the paint layers differ from the Moon painting as they are darker, contain less/no titanium white, and consist of large areas of organic pigmented paint which may prove sensitive to water - possibly dictating a different approach to treatment to that of the previous two paintings.