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Dear Working Group Members

Welcome to the 2010 edition of the Sculpture, Polychromy, and Architectural Decoration Newsletter Working Group Newsletter. This edition will focus on a number of ongoing research projects and case studies carried out by both members of the Working Group and interested associates. A number of conference reviews have also been included as well as notifications of future meetings, conferences and exhibitions.

The activities of the Working Group have been extensive since last reported in the 2009 Newsletter. A very successful Joint Interim Meeting entitled Multidisciplinary Conservation: a Holistic View for the Historic Interior was held in Rome (March 2010) with four other ICOM-CC Working Groups (Textile; Wood, Furniture and Lacquers; Leather and Related Materials; and Murals, Stone and Rock Art). The conference was generously hosted by the Istituto Superiore per la Conservazione e il Restauro (ISCR) and the Ministero per i Beni e le Attività Culturali (MiBAC), with the support of the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) and the International Council of Museums – Italia (ICOM Italia). The entire conference proceedings can be downloaded by ICOM-CC members from each of the participating Working Group home pages on the ICOM-CC website ([www.icom-cc.org](http://www.icom-cc.org)). A further meeting will be held in Maastricht in October 2010 hosted by the Stichting Restauratie Atelier Limburg with a more specific theme: Polychrome Sculpture – Tool Marks and Construction Techniques. It is hoped that a report of this meeting will be included in the next Newsletter.

The Working Group has also expanded its on-line membership to 64 participants from more than twenty countries over the last year. Membership reflects the Working Group’s diverse interests with active participation from conservators of polychrome sculpture and those who work within the historic interior field. The strong links between these two aspects continue to be evident and strengthen over time. The increased membership numbers are a hopeful signal the new format ICOM-CC website and the Working Group home page are attractive and a popular internet destination. We hope that this continues and also to encourage members to contact and communicate with each other through the online forum. This is a fantastic medium to address specific issues, questions or even notify other members of interesting projects or meetings. Postings are now accessible to non-ICOM-CC members.

An unprecedented twenty-six abstracts were submitted in response to the call of papers for the forthcoming Triennial Meeting in Lisbon (19-23 September 2011). From these submissions ten have been selected to be written up as papers. There were a further nine submissions, of which five have been selected, for posters. The final selection will take place in March 2011. The selection process was difficult as the abstracts were of a high standard and unfortunately many authors had to be disappointed. The ICOM-CC Directory Board in conjunction with the Triennial hosts have decided to accept more papers for the next Triennial meeting than previous by reducing the time each author will have to present their material. Thus 225 papers will be put forward for the Pre-Print publication, which for the first time will be distributed in a three-volume digital format. This Newsletter has allowed a number of authors who regrettably were not selected to present their current research/projects. More information regarding the 16th Triennial Meeting can be found on the related website: [www.icom-cc2011.org](http://www.icom-cc2011.org).

We would also like to take this opportunity to welcome as an Assistant Coordinator Topsy de Guchteneire. Topsy is a practising freelance conservator who has a background in the conservation of easel paintings and painted surfaces. She has worked in the UK, Bahamas, and the Netherlands and will be an immense assistance to our already strong group which covers all aspects of the Working Group.

Lastly, we would like to thank all those who have contributed to this edition of the Newsletter. Your contributions have continued the high standard of this Working Group’s achievements. For the next Newsletter (expected publication August 2011) please send contributions, whether it be papers, conference reviews, notifications of exhibitions or meetings, tips and useful hints to k.seymour@sral.nl by June 2011.

We hope to see many members in Lisbon next September (2011). More details are available at [www.icom-cc2011.org](http://www.icom-cc2011.org)

Kate, Arnold, Line, Jonathan and Topsy
Conference Reviews

Interim Meeting of the ICOM-CC Working Group: Art Technological Source Research (ATSR)

Stefanie Litjens and Lidwien Wösten
Post-Graduate Students, University of Amsterdam (UvA)/ Stichting Restauratie Atelier Limburg (SRAL)

Vienna, Academy of Fine Arts
September 23rd – 24th, 2010

The fourth interim meeting, titled ‘Technology and Interpretation – Reflecting the Artist’s Process’, was held in the former State Theatre Scenery Store in Vienna. In this beautiful, characteristic building, the Institute for Conservation-Restoration at the Academy of Fine Arts hosted twenty five speakers from Europe with diverse working backgrounds but with a link to the Art technology. They gave the expert audience of approximately a hundred (art) historians, conservators, chemists and students a peak in their ongoing projects, which is in a broad field of researching in the conservation field. Fifteen posters were presented in the hall. An overview was given on all kinds of projects within the field of art technological source research.

The subject of the lectures ranged from studies of chemical compositions of raw painting materials, such as the analytical analyses of non-traditional oil in modern oil paints by Pedro Caetano Alves and the reconstruction of cinnabar by Catarina Miguel, to the more theoretical approaches of for example Mark Clarke, Nicholas Eastaugh and Ad Stijnman, who drew attention to the correct translation and interpretation of the described innovations written in these contemporary art technological sources. Case studies on Ernst Berger, Ernst Ludwig Kirchner and Edvard Munch, which were presented by respectively Kathrin Kinseher, Heide Skowranek and Hartmut Kutzke, point out that the artists each have used several sources in their own way. Not only paintings, but also pastels, polychromes, raised decorations and varnishes were discussed. Besides the use of historic written documents, such as treatises, letters, documentation on lawsuits and recipes, also the call emerged for recording the ‘living sources’ by Timea Tallian, in order to collect more sources for future research.

A high point of the meeting has been the contribution of Tamar Davidowitz, our colleague-conservator-in-training, who narrates about the so called cold-enamels, the translucent paints on a silver substrate, which are described in an anonymous French manuscript of the 16\textsuperscript{th} century.

At the end there was a discussion about the use of terms like ‘conservator’. This word is nowadays not appropriate anymore. This because most conservators have the skills to be more all round. So that they are conservator, art historian as well as scientist. Another subject for discussion was to redefine the objectives of the ATSR.

For further information see:

www.clericus.org/atsr
The 4th International Architectural Paint Research Conference 2010

Line Bregnhøi, ACO, Working Group Sculpture, Polychromy and Architectural Decoration

Lincoln, August 2010

Some very, very interesting days were spent in the world of APR (Architectural Paint Research) this summer in England. We were together more than 70 colleagues from more than 10 countries presenting and discussing themes from our field of architectural conservation. These APR conferences have really become a forum of discussing our profession and its capabilities. The program showed a variety of the problems we are dealing with in the profession, and below are some of the themes that the papers concentrated on, and which are amongst the very common everyday issues:

- knowledge of materials used. To get the best interpretation of our findings we have to get a greater knowledge of materials formerly used. Example of paper: *Alabastine-The finishing Touch to Decorating Walls*, Mary Jablonski, USA
- reporting and archiving. How are we reporting the best way, and how do we make the best archives? Example of paper: *Presenting the Information*, Ian Crick-Smith, UK
- revisiting restored buildings. Do our restorations last? Example of paper: *Restored Buildings revisited*, Tone Olstad, Norway
- new methods of analysis and research on site. How do we become better in research and analysis? Example of paper: *Temporary Transparency: Non-destructive Examination and Documentation of Distemper Paint by using Organic solvents and a Digital and Mobil Infrared Camera*, Barbro Wedwik, Norway
- decision making from research. Who are making the decisions? Conservators or? Example of paper: *Architectural Paint Researcher: Puppet or Decision maker?* Ann Verdonck and Marjolein Deceuninck, Belgium

Program and abstract of all the papers presented can be found at the conference Website: [http://www.lincoln.ac.uk/conferences](http://www.lincoln.ac.uk/conferences)

Proceedings with the papers from the conference will be published next year [2011].

The next APR conference will probably be held in Sweden, and other proposed countries are The Netherlands, Israel and Singapore.
The buildings and their interiors consist of multiple facets and materials often altering dramatically throughout their life spans due to change imposed by society, their environment and use. The proper care for historic interiors draws from many conservation specialisations as well as from many other fields. Therefore it is essential to approach each project in a holistic manner using a multidisciplinary collaborative approach. The posters and papers that were presented at the Rome 2010 conference outlined collectively the key issues relevant to this topic: conservation policy, methodology, protocol, diagnosis, scientific analysis, education, preventive measures, historical and aesthetical aspects as well as practical treatments including restoration, reconstruction, and replication.

From almost ninety abstracts, which were submitted for this meeting, forty-six papers and thirty-three posters, all peer reviewed, were presented by authors from twenty-five countries over a period of three intensive days. The conference was attended by 245 delegates from all over the world. The 20-minute lectures were divided into 8 different themes: “Historic interiors and wide ranging conservation projects”, “Museums and private residences: principles of conservation”, “Interdisciplinary issues”, “Preserving original context while maintaining a functional role”, “Preventive conservation, care and maintenance”, “Cultural property: changes in the original context”, “Composite material artefacts: conservation projects” and “Materials and artefacts: technical and scientific update”. Each 3-to-5 papers session was followed by a discussion engaging the audience. The poster sessions took place before lunch and afternoon coffee breaks. Each author had 3 minutes to make a presentation inviting the delegates to a more attentive view of the posters on display during the 3 days of the conference. The forth day was devoted to visits of conservation laboratories and museums in Rome and Florence.
The papers and posters presented conservation issues related to varied interiors: palaces, castles, historic houses, theatres, villas, museums, temples and churches. Most papers emphasized the needs for holistic treatment of interior and preserving its historical context and function of the building, although it was stressed that a balanced strategy is often necessary in order to achieve this task. The collaboration between curators, surveyors, architects, conservators, caretakers, end-users, stakeholders, and the public (to name but a few) is vital and communication between these professionals and experts from varied fields must be open and transparent. Many speakers highlighted the role of the public as interactive viewers, who can be continually engaged and often offer support in maintaining integrity of a historic interior.

Regardless of this emphasis into the collaborative approach for conservation of historic interiors, the statement was made that not enough papers were devoted directly to the degradation of materials, its causes and potential solutions. The criticism has been made that “the presentations were quite ‘empirical’ ” and that the conference showed “the lack of well based scientific methodology to conservation issues and how to solve certain environmental problems and degradation processes.” (Ana Bidarra, May 2010)

In response, one can obviously riposte that the conference can only be as informative as submitted papers. Yet, with over ninety abstracts submitted for this meeting by professionals working at many recognised institutions all over the world, papers and posters were selected to present a global overview of the historic interior conservation and the treatment of objects and decorative elements contained within. Hence, one can just wonder whether there has been sufficient research being conducted on “environmental problems and degradation processes” in relation to conservation of historic interiors. However, this critical assessment confirms also complexity of this broad subject and demonstrates that maybe there is a need of the follow-up conference that would focus, in particular on degradation of materials in historic interiors and varied approaches to their treatments.
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Proceedings of this conference are available at: http://www.icom-cc.org/
Enter the site and follow the link to one of the five involved Working Groups.


Current Projects:

Patrimonio e identidad cultural: Mapeo y documentación de las pinturas murales del theatro Guarany, Pelotas, RS, Brasil

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Hasta a mediados del siglo XX, la pintura mural ha sido muy practicada en Brasil, apareció principalmente como elemento decorativo con función complementaria a la arquitectura [MORAES, 1996]. Actualmente, sin embargo, la gran mayoría de los ejemplares está oculta, no sólo por los repintes, sino también por el desconocimiento de su existencia. Las paredes del Teatro Guarany, ubicado en Pelotas al sur de Brasil, también sufrieron el fenómeno de las repinturas que cubren la mayor parte de las pinturas parietales existentes en sus cuatro pavimentos.

El Curso de Conservación y Restauración de la Universidad Federal de Pelotas, por medio del proyecto de extensión "Estudio sobre las pinturas murales del Theatro Guarany", está realizando el estudio pormenorizado y la documentación de las pinturas existentes en el teatro, por medio de la abertura de sitios de prospección, de la elaboración de los planos arquitectónicos y del registro fotográfico. Estas acciones servirán de base para el desarrollo de la propuesta de intervención que forma parte del Proyecto de Revitalización del teatro.

Las Pinturas Murales

El Theatro Guarany fué inaugurado en 1921 en la ciudad de Pelotas, Rio Grande do Sul, Brasil. Construido en estilo ecléctico con influencias neoclásicas y del art nouveau, figuró en la época como uno de los mayores cine-teatros del país, en el presente aún funciona como una importante casa de espectáculos de la ciudad. En la época de su inauguración, pinturas murales decorativas y artísticas[1] revestían todo su interior (Figure 1), sin embargo, debido a varias reformas, la gran parte de las pinturas fue encubierta y hoy se encuentra ocultada por sucesivas capas de pintura [BACHETTINI, 1997].

Documentos de la época confirman la existencia de pinturas artísticas y decorativas en todo el teatro, sobresaliendo aquellas existentes en el techo sobre la platea, actualmente ocultadas por una cubierta en fibra de madera, como también las del techo del salón (foyer) donde quedaron pocas pinturas aparentes, algunas en buen estado de conservación y otras presentando los daños causados por las infiltraciones de la escorrentía del agua de lluvia de los techos y terrazas. Aún son también aparentes las pinturas artísticas en el vestíbulo del teatro, situadas en los
Los estudios de prospección fueron iniciados en las paredes del vestíbulo. Las pinturas del techo, todavía visibles, muestran elementos geométricos en forma de líneas paralelas y perpendiculares, también medallones figurativos con ilustraciones de grandes compositores, liras, partituras y hojas de laurel. Las paredes del salón, sin embargo, se encuentran cubiertas con dos capas de tinta que ocultan pinturas decorativas de estándar geométrico, como un papel de pared. A pedido de la dirección del teatro, la pintura mural de la pared abajo de las escaleras del vestíbulo fue consolidada y reintegrada por el equipo (Figure 2) para promover la iniciativa de restauración de las pinturas en la festividad del lanzamiento del Proyecto de Revitalización.

En las salas laterales del vestíbulo se identificaron dos estándares de pintura decorativa. En la sala de la lateral izquierda fueron encontradas tres capas de pintura: 1) lisa de color gris; 2) patrón verde con diseño de hojas y líneas rectas estilizadas; 3) patrón repetitivo floral en tonos de rosa y burdeos [2]. En la sala de la lateral derecha también fueron encontradas tres capas: 1) lisa de color gris; 2) lisa beige con friso en la parte superior; 3) Verde con frisos, decorado con guirnaldas estilizadas y frisos geométricos en la parte superior y verde liso en la inferior (Figure 3).

Actualmente, se llevan a cabo prospecciones en las paredes de los camarotes y de las escaleras de acceso a estos, está prevista la abertura de nuevos sitios de prospección en las paredes del techo de la platea y en el techo del teatro. Las pinturas murales son identificadas y mapeadas en los planos arquitectónicos de la edificación (Figure 4) con el fin de crear la documentación necesaria para el futuro proyecto de intervención, en el que se prevé el restauro de algunas de esas pinturas.

Los trabajos de lavantamiento y mapeo de las pinturas decorativas del Theatro Guarany están en sus primeras etapas, pero ya es posible ver las pinturas que fueron cubiertas a lo largo de su historia, lo que borró parte de la memoria de las artes decorativas en la ciudad de Pelotas.

La restauración de la pintura mural de la pared de la escalera (Figure 5) del vestíbulo se caracterizó como un incentivo para la restauración de las demás pinturas murales del teatro, además de servir como base metodológica para las futuras intervenciones.

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Aun serán realizadas aberturas de otros sitios de prospección en las demás dependencias del teatro para el mapeo de las categorías de pinturas encontradas, como también el análisis del estado de conservación para el desarrollo de la metodología para la futura restauración. La realización de registros gráficos y fotográficos es esencial para el complemento de los estudios.
An approach to the study of gold leaf from a Baroque altarpiece

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Introduction

The Igreja de Jesus (Church of Jesus), located in the former Convent of Jesus belonging to the feminine branch of the Dominican Order, is one of the oldest convents in Aveiro (Portugal), dating back to the second half of the 15th century. In 1461 Pope Pio II granted a papal bull that authorized the establishment of the order. The work began in 1462 in the presence of King D. Afonso V [MADAHIL, 1939]. The Kings’ daughter, Princess Joana, joined the convent in 1472, living a life of holiness that lead to her beatification in 1693. The convent was then definitively associated to the life of this holy Princess. The building experienced numerous works of expansion, improvement and artistic enrichment between the 16th and 18th centuries. In the 19th century liberal ideas prevailed, leading to end of religious orders. Although by 1834 all male religious orders were extinct, the female orders were allowed to remain until the death of the last nun. Thus, religious life at the Convent of Jesus persisted until 1874. In 1911 the Aveiro Museum was installed in the Convent.

The Church of Jesus is one of the most magnificent examples of the Baroque period, reflecting the rising production of altarpieces in Portugal and the increase in use of gold leaf in church decoration (Figure 1). This demonstration of wealth resulted from the abundance of gold arriving from Brazil, particularly after the discovery of the mines in Minas Gerais in the 17th century [GUERRA et al, 1998]. Despite the abundant influx of gold, references to the origin of the gold used in the altarpieces in contracts and other documents, is practically non-existent. This fact makes the relationship between the gilders and the gold-beaters very important since it can provide some information regarding the circulation and acquisition of gold. The study of contracts from the Baroque period reflects the importance of the gold suppliers, whose reputation depended on the quality of the gold and the way that it was beaten, which was strictly regulated according to the master gilder specifications [FERREIRA-ALVES, 1989]. These regulations ensured that the gold could be supplied by the patron or by the gold-beaters with guarantee of good quality [FERREIRA-ALVES, 1989]. The quality of the gold was between 20 and 24 carats, and was sold in 1000 units – 10 books each one with 100 leafs [FERREIRA-ALVES, 1989; MARTÍNEZ, 1997]. Currently, in order to study the gold used in Portuguese Baroque altarpieces an investigatory project is being carried out, focusing not only in the typology of the gold used but also on the archival study of existing contracts and treatises.
The studied altarpiece is located in the main chapel of the Convent Church. The church is decorated completely in gilded wood – carved and gilded in different periods during the 17th and 18th centuries – combined with ceramic tiles (azulejos), sculptures and paintings. António Gomes and José Correia were selected in 1725 as master craftsmen to carve the interior of the main chapel [BRANDÃO, 1985; FERREIRA-ALVES, 1993]; due to continuing construction in the church, such as placing of windows, the complete carving was only finished in May of 1728. The gilding was applied in the following year by the master gilders Manuel da Silva and António José Correia [BRANDÃO, 1986; FERREIRA-ALVES, 1993].

Methodology

The samples were selected from discrete but representative areas such as the back of the columns or the steps of the throne. The cross-section and the surface of the samples were analysed by optical microscopy (OM) using reflected and polarised light and by field emission scanning electron microscopy with energy dispersive X-ray spectroscopy (FESEM-EDS). Samples were mounted and observed using established guidelines for the analysis of material derived from easel painting and polychrome sculpture [Khandekar, 2003]. A Zeiss Stemi 2000-C OM with external artificial light system Zeiss KL 1500 LCD, image acquisition with digital camera AxioCam MRcS and an Axio Vs 40 V4.4 Carl Zeiss Vision GmbH acquisition and treatment software were used. The FESEM-EDS analyses were performed in a SU-70 UHR Schottky FESEM of Hitachi with a Quantax 400 EDS system of Bruker AXS (XFlash Silicon Drift Detector). It was applied a 15kV acceleration voltage and a current intensity of 32 µA. Elemental analysis was taken from an area of 300x400 µm² selected regarding its homogeneity and lack of voids, with spectrum acquisition times of minimum 60 s. The semi-quantitative results were based on a peak-to-background ZAF evaluation method (P/B-ZAF), being ZAF a matrix correction, mainly based on analytical expressions for atomic number (Z) dependent X-ray yield, self-absorption (A) and secondary fluorescence enhancement (F), provided by the Esprit software. The samples were coated with carbon.

Results and discussion

The OM and the FESEM-EDS techniques provide an accurate analysis of both physical and chemical aspects of the gold, allowing the determination of a traditional gilding technique. The different layers are clearly identifiable: ground layer, bole (red colour) and gold [MARTINEZ, 1997; SERCK-DEWAIDE et al., 2004]; however it is not possible to determine how many applications of ground and bole layers were made (Figure 2). The analysis of the ground layer through EDS revealed the presence of sulphur and calcium. Aluminium and silicon were determined as components of the bole layer; thus, a clay rich in aluminium-silicates and iron.

Figure 2. Cross-section image by optical microscopy (OM). (40x)

Figure 3. SEM image (a) and EDS mapping of the surface – Au (b); Ag (c); Cu (d); Al (e) and Si (f). (8000x)

<table>
<thead>
<tr>
<th>Elements</th>
<th>Au</th>
<th>Ag</th>
<th>Cu</th>
<th>Carat</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>90.5</td>
<td>4.61</td>
<td>4.89</td>
<td>21.72</td>
</tr>
</tbody>
</table>

Table 1. Concentration in relative percentage of the alloy composition and gold carat.

The elemental study of the gold leaf through EDS allowed the identification of the major elements in the gold alloy – gold, silver and copper (Figure 3) – and the presence of a very pure gold with 21.72 carats (the results were normalized to 100%) (Table 1). The analysis of minor elements in the gold leaf composition such as palladium, platinum, tellurium, tin, antimony or zinc raises several doubts. This uncertainty is due to the interpretation of the characteristics peaks of these elements because of the X-ray line overlap, for example between platinum and gold, and tellurium and calcium. Also the semi-quantification of these minor elements is influenced by the detection limit of EDS, that is restricted by factors like the bremsstrahlung background (which is always present), the matrix self,
etc. Some expected elements such as ruthenium, rhodium, chromium or lead were not identified, probably because the concentration of these elements was below the detection limit [BIDARRA et al, 2009]. The determination of minor elements, and the concentration of these, provides important information regarding the provenance of the gold. Some elements such as platinum and palladium are characteristics of South American gold ores coming from Colombia, Brazil and Peru (although Peruvian gold has lower levels of these); other Latin American gold ores show traces of palladium, tin and antimony; while gold from India, after the 16th century, has distinctive traces of tellurides [GUERRA & CALLIGARO, 2004].

Conclusions
The determination of major elements in the gold leaf through FESEM-EDS identified the presence of gold, silver and copper; thus the gold leaf consists of a threelfold alloy. It was also possible to detect the presence of aluminium and silicon in the bole, and sulphur and calcium in the ground layer. Since the analysis failed conclusively to detect minor elements, such has platinum, palladium, tin, antimony and tellurium; other proceedings are now in order, such as inductively coupled plasma mass spectrometry (ICP-MS) and the use of synchrotron radiation (SR). The identification of these elements will provide important information regarding not only provenance, but will also aid in establishing distinct fingerprints between the gold used in the different altarpieces.

This study is part of a larger project that aims to study the compositional characterisation of the gold leaf, the typification of its aging and to establish provenance, thus allowing a better approach to the conservation and restoration of these coatings.

Acknowledgements

Bibliography


CRÓNICA da Fundação do Mosteiro de Jesus de Aveiro, e Memorial da Infanta Santa Joana Filha Del Rei Dom Afonso V, (16th century codex), Aveiro, 1939 (Leitura, revisão e prefácio de António Gomes da Rocha Madahil), p.28.


João de Ruão sculptures – characterisation through pigment analysis

Isabel Matias, Eduardo Oliveira, Nuno Gonçalves, N. Mendes, Ramos Silva, Matos Beja and Francisco Gil*

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In the present study, pigment analysis was carried out on samples removed from two polychrome altarpieces carved in stone (Figure 1, Christ appearing to the Virgin [CAV] and Figure 2, Christ appearing to Mary Magdalene [CAMM], both with dimensions 100 x 100 x 20 cm) and one polychrome stone sculpture (Figure 3, The Virgin Mary with Jesus [TVMWJ] about 100 cm high). This group of three artworks originally belonged to the Celas Convent in Coimbra and now form part of the reserve collection of the National Museum of Machado de Castro in Coimbra. Made around 1530, they can be stylistically attributed to João de Ruão, one
of the most important sixteenth century sculptors in Portugal, or his workshop. The importance of his oeuvre, in the context of Portuguese sixteenth century art history, urges a thorough study and characterisation of the pigments used by the artist. Parallel to this investigation, a further eight wooden panels (measuring 129 x 92 cm), executed collaboratively around 1533/34 by contemporary sixteenth century artists Cristóvão de Figueiredo, Gregório Lopes and Garcia Fernandes, were studied (Figure 4) [BENQUERENÇA, 2009]. These panels belong to the Ferreirim monastery church of Saint Antony in the Northern region of Portugal.

Minute cross-section samples, measuring less than 1mm in dimension, were removed from the three artworks attributed to João de Ruão. Samples removed from the artworks were analysed using micro-analytical techniques, namely optical microscopy, micro-Raman Spectroscopy (Raman) and X-ray diffraction (XRD) [1]. The samples collected from the artwork were initially studied with an optical microscope. The individual layers were separated and prepared for XRD powder analysis. While samples removed from the stone altarpieces showed, in cross-section, a build-up of two layers (an example sample is shown in Figure 4a), those removed from the stone sculpture revealed three layers (an example sample is shown in Figure 4b). The preparation application is similar for both the stone altarpieces and the polychrome stone sculpture. This consists of a single white layer in all cases containing lead white.

The comparison between these samples tentatively suggests that the polychrome layers present on the altarpieces are not original. The lowest paint layer found on the sculpture corresponds to the original paint application. This contains gold leaf in the draperies border and in the hair of both the Virgin Mary and Jesus (layer A1 in Figure 4a), lazurite (the blue mineral of lapis-lazuli, or natural ultramarine) mixed with lead carbonate hydrate (mineral compound of lead white) in the blue areas and cinnabar (vermilion mineral compound) in the red areas. The layer immediately overlying (layer B2 in Fig. 5a) contains similar pigments in the blue and red areas, but showed also the presence of chalcopyrite (the mineral copper iron sulphide, CuFeS₂, or copper pyrite, which looks like and is easily confused with pyrite, FeS₂). Chalcopyrite is one of the minerals referred to as "Fool's Gold" because of its bright golden color and is commonly found in copper and iron Portuguese mines) and here is used instead of gold in the golden-yellow paint passages. In the uppermost layer, neither chalcopyrite nor gold were found; instead crocoite (the mineral compound of chrome yellow, a nineteenth century pigment) was used in the yellowish areas [again indicating a non-original layer]. It shows the presence of cinnabar (mineral compound of vermilion) as the used red pigment and lazurite as the blue pigment mixed with lead white.

The layer build-up, present on the two stone altarpieces, differs from that found on the sculpture described above. Here there are only two layers present: the lowest layer (layer B1, Figure 4b, found only in few areas, namely in the border of Mary's headdress seen in Figure 1) contains chalcopyrite, lazurite and cinnabar. This layer is damaged and the stone support below has degraded, becoming powdery. The analysis of the stone support was conclusive, and confirmed its calcite nature. Lazurite was also widely used as a pigment in the two altarpieces uppermost paint layers. It is present in all the blue motifs: in the draperies, the columns and ceiling of the buildings, and was used to depict the sky. It is also clearly present mixed with chrome yellow pigment in the green motifs, such as the trees. Among the detected red pigments, the occurrence of vermilion (cinnabar) was noted, sometimes mixed with lead red. The results obtained from gray and pink areas of the incarnation suggest the use of a mixture of vermilion and lead white. Dark
overpaint layers were found in the brownish passages in the foliage. These overpaints contained crocoite.

Figure 3: The Virgin Mary with Jesus

It was evident from these results that the two existent paint layers of the stone altarpieces are similar to the intermediate and uppermost layers of the stone statue. The uppermost layer of all the artworks must be a nineteenth century re-painting. A question arises: cheap nineteenth century pigments as chrome yellow (crocoite) were found in this outer layer mixed lazurite, the mineral compound of a very expensive pigment – how can the presence of the latter pigment be explained? As the only difference between the natural and the artificial blue ultramarine is the calcium content [OSTICIOLI, 2009] and the XRD analysis does not distinguish one from the other, it is believed that the outer paint layer contains the artificial version and the inner paint layer the natural more expensive one. The microscopic observation of these two blue layers showed a much thinner powder in the outer layer and considerable bigger crystals in the inner layer, confirming this conclusion.

Figure 4: (a) Sample from CAV showing two paint layers; (b) Sample from TVMWJ showing three paint layers.

It is believed that the artist originally used very bright and rich colors and later, probably because of stylistic or economic reasons, the artworks were re-painted by other people. The damage to the original layer on the altarpieces was so extensive that this layer had disappeared completely. The identification of the upper layers as non-original is supported by the presence of nineteenth century pigments.

Parallel to this research work, eight wooden panels from contemporary sixteenth century artists (Cristóvão de Figueiredo, Gregório Lopes and Garcia Fernandes) working collaboratively were studied (Figure 5). This research established the use of a much more traditional palette and painting technique. The images are painted on wood panel in oil over a traditional gypsum [glue] ground. Tiny samples were collected from the panels and analyzed by micro-Raman spectroscopy, focusing the laser beam on the observed crystals. The optical microscopy analysis of the eight Ferreirim Masters’ panels revealed only one pigmented layer. In this layer the following pigments were found from the micro-Raman analyses: lead white was found mainly as a whitening agent of other pigments. Red ochre was used in red brownish areas, while lead red was used in dark red areas or, in one case, under a thin yellow layer composed by lead tin yellow type I to simulate a metallic golden detail (see golden cross in panel H of Figure 5). Vermilion was used on bright red areas, in the flesh tones and in a mixture with other pigments. The only blue pigment detected on these paintings was azurite. The most significant yellow pigment found in the studied samples was lead tin yellow type I. The black pigment found in the studied samples was lamp black.

Figure 5: Ferreirim panels: (a) Annunciation; (b) Nativity; (c) the Death of the Virgin; (d) the Coronation of the Virgin; (e) Christ walking to Calvary; (f) Calvary; (g) Christ Deposed from the Cross; (h) Christ’s Resurrection.

In conclusion, unlike the Ferreirim Masters, who used common pigments and traditional practices in their artworks, João de Ruão and his workshop used rich materials such as natural ultramarine, vermilion and gold, and later interventions were made using the unusual mineral chalcopyrite as a substitute for gold. The inclusion of these pigments in his palette cannot be justified purely by financial reasons. The traditional ground layers and use of other pigments standard to the sixteenth century painting practice suggest that João de Ruão and his workshop consciously choose to include these rare minerals and expensive materials. Additionally, the identification of these components in
samples removed from the two stone altarpieces and the sculpture supports the stylistic attribution to the same artist or workshop.

Notes

[1] A Renishaw RM2000 instrument operating with a diode laser, with excitation wavelength at 785.2 nm and a resolution of about 2 cm$^{-1}$ was used to perform micro-Raman spectra and the identification of the compound was made by comparison with known data basis. Powder-XRD was performed using an Enraf-Nonius system with a FR 590 3 kV generator (I=45 A, V=45 kV), Cu-Kα radiation, a bent quartz crystal monochromator and a curved position sensitive detector INEL CPS120 with rotating capillary in transmission set-up. Compounds identification was made by comparison with an XRD data basis with the rigorous criterion of perfect match between the obtained diffractograms and those from the data basis.

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Study of the coatings and finishing touches on the Colégio de Jesus in Coimbra

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Introduction

The present case study focusing on the “Colégio de Jesus” (Jesus College), also known as “Colégio das Onze Mil Virgens” (College of the Eleven Thousand Virgins), is part of an ongoing study by the Historical Centre of Coimbra aiming to characterise the “epidermis”, namely, the colours, the textures, the coatings and architectonic surfaces, which gives the old city of Coimbra its unique identity.

Figure 1: Coimbra University Square. “Paço das Escolas” Architectonic style (middle 16th century) contrasts with “Faculdade de Letras” (middle 20th century, “Estado Novo”)

Research plan and results

The aim of the project was to produce a working basis to support the implementation of a colour plan, and inform the maintenance and restoration of other historical centres. The project investigates the hypothesis, set forward by one of the authors [Aguiar, 2008], that the coatings applied to the historical buildings in the middle of the 20th century aimed to imitate earlier coatings applied to stone.

Figure 2: “Sé Nova” and “Colégio de Jesus”, in Coimbra

In the middle of the 20th century the urban heritage of Coimbra was largely destroyed due to the extensive construction of new public buildings. The epoch of
Salazar’s regime known as “Estado Novo” (Figure 1) saw the demolition of a significant part of the medieval city centre [Rosmaninho, 2006]. Traditional methods of construction were replaced by industrial methods; consequently, historical techniques gradually were forgotten. City centres, such as that of Coimbra, have quickly lost their historical character. Nevertheless, Coimbra still possesses a remarkable heritage which needs to be preserved [Providência, 2009].

The effect of the new building policies undertaken during the regime of “Estado Novo” has in itself become part of the history of the city centre. The new buildings were decorated with finishing layers simulating historical coating techniques, such as mortars imitating traditional stone colour, in order to create a homogeneous aesthetic [Aguiar, 2008]. The current project aimed to compare the traditional coatings with those applied during the “Estado Novo” campaign. Samples were removed from still existing historical buildings, such as the “Colégio de Jesus”, for technical and scientific analysis for comparison. This was the first college building in the University complex of Coimbra, founded by the Jesuits (Figure 2) in 1547. [Lobo, 1999]

Studying the “epidermis” of a historic building involves a colour study and a physical, chemical and mineralogical identification of historic coatings and finishes. The technical studies used macroscopic and microscopic analytical techniques, including optical microscopy (OM), micro-Raman spectroscopy, powder X-ray diffraction (XRD) and colorimetric identification. All layers from the building fabric to the finishing coatings were analysed within this project [Santos Júlio et al, 2006]. Most previous studies have focused on render mortars, especially on identifying the components of traditional mortars to find compatible materials in conservation and renovation work [Veiga, 2006]. The texture conferred by each of the renders and/or finishing render components (aggregate, binder and pigment) is particularly important; variations in these materials can introduce subtle modifications in the final appearance of the colour. Therefore, components of the render and the thin finishing coat must be individually identified. It is also important to establish the lithic (stone) materials used for the building fabric.

Figure 3: “Colégio de Jesus”. Identification of coatings from different epochs on the front façade of the west vertical projection.

The first phase of the project was to assess the “Colégio de Jesus” as a whole, which allowed identification of several past interventions. In a second phase, the zones where the old finishing touches and coatings had seemingly been preserved were selected for sampling. These zones included the front of the façade and the decorative elements (for example, the frieze, the trimmings and the eaves), areas that were expected to provide the maximum information relative to the different architectonic elements.

Figure 4: “Colégio de Jesus”. Samples from the front façade (Figure 3) in which several layers of coatings and finishing touches may be identified.

The texture conferred by each of the renders and/or finishing render components (aggregate, binder and pigment) is particularly important; variations in these materials can introduce subtle modifications in the final appearance of the colour. Therefore, components of the render and the thin finishing coat must be individually identified. It is also important to establish the lithic (stone) materials used for the building fabric.

Figure 5: “Colégio de Jesus”. Analysis with a binocular microscope of the sample (Figure 4), showing different types of particles, namely quartz, biotite and other rock fragments.

Samples of the mortar collected from the front façade, close to the eaves, exhibited a number of layers relating to different plasters and mortar. These corresponded to different time periods, probably from the “Marquês de Pombal” period (18th century) and the “Estado Novo” (mid 20th century) (Figure 3). Further samples were removed to validate the laboratory
results. Samples of the mortars (Figure 4) showed that both the thinner lower layer and the thicker upper layer effervesce and completely dissolve in hydrochloric acid revealing that they both contain calcium carbonate (lime). Further micro-chemical tests carried out using a binocular microscope proved that the lower layer is almost entirely made up of lime, while the upper layer contains additional aggregates of a variety of minerals, namely quartz, (white, hyaline, yellow, with orange shades), biotite and other rock fragments (Figure 5).

**Figure 6:** “Colégio de Jesus”. Analysis with a binocular microscope of the sample (Figure 4) simulating a stone coating.

A study of the surface showed that it had been smoothed: its even, compressed and slightly vitrified, appearance suggests that it had been polished, resulting in a texture, colour and brightness similar to the surface of limestone. This implies that the final finishing coat of the mortar was applied with a stonemason’s spatula or polisher (Figure 6).

**Conclusion**

The samples collected in this project from the “Colégio de Jesus” characterize the historical coatings and finishing layers applied to the building dating to its foundation by the Jesuits and the subsequent remodelling by the Marques de Pombal. Plasters composed of lime and sand from the region were identified. Final layers were applied with a smooth finish in a white plaster of about 1mm in thickness. These samples were compared to those removed from buildings from the “Estado Novo” period of rebuilding. The latter shows the presence of a new covering 2 to 3 mm thick, made of lime paste, stone powder and sand. This outer coating, which replaced the white plaster finish, was intended to simulate the appearance and the colour of the local stone used in the historical buildings.

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Two monumental polychromed clay sculptures of Alcobaça

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**Introduction**

This article is based on the content of the Master degree thesis in Conservation (post-Bologna) by the author, from the New University of Lisbon, about two almost unknown monumental polychromed clay sculptures of Alcobaça. The supervisors of this project are João Pedro Veiga and Carlos Moura. Some information was gathered during the treatment of some of these sculptures carried out by the author.

**Historical Background**

The monumental polychromed clay sculptures of the 17th century found in the Cistercian monastery of Saint Mary of Alcobaça constitutes one of the most original Baroque chapters in Portugal (Figure 1). The production began probably with the sculpture of Our
Lady of the Rosary and continued with the Sanctuary (c. 1670); the altarpiece of the main-chapel (1676-1678); the altarpiece of the Transit of Saint Bernard of Clairvaux (c. 1675-1678); the Royal Gallery (c. 1675-1678); the altarpiece of Saint Peter (c. 1675-1678?); the Nativity scene (c. 1684-1690); the second phase of the altarpiece of the Transit of Saint Bernard of Clairvaux (c. 1687-1690); the King D. Afonso I (?); the altarpiece of Our Lady the Cloister (c. 1702); the second phase of the Royal Gallery (before 1716); the altarpiece of Saint Bernard of Clairvaux and the poor; the third phase of the Royal Gallery (c. 1762-1765); and lastly the altarpiece of the Calvary.

According to a macroscopic analysis, we have classified the sculptures into two groups, corresponding to two different workshops, but working contemporarily. The artists were probably Cistercian converts, who also worked for other monasteries, Cistercian or not, where we have found similar sculptures.

In the 19th century, some of these monasteries were attacked and occupied by the people. Some altarpieces were dismantled (c. 1930), in accordance with the Conservation Philosophy of Violet le Duc (1814-1879). In our research, we found photographs of some of these lost sculptures.

The two sculptures chosen for further study are King D. Afonso I (?) (Figure 2) and Saint Mary Magdalene (Figure 3) belonging to the Convent of Saint Mary Magdalene in Alcobaca. Both sculptures were probably made by the same workshop. King D. Afonso I (?) was donated to the Museu Arqueológico do Carmo, Lisbon, in 1885 by the Alcobaca City Hall. We believe that this sculpture represents D. Afonso I, the first Portuguese king and the founder of the monastery of Alcobaca, and not D. Afonso IV, D. Afonso V or D. João IV, as it was previously classified. Saint Mary Magdalene was sold to a collector (c.1960) and was recently donated to the Museu Nacional de Arte Antiga, Lisbon, by his heirs.

**Execution techniques**

All the sculptures of Alcobaça were constructed hollow and the largest were sectioned, already modelled, transversally in blocks. These operations were intended to facilitate transport and to promote the drying and firing processes. As the sculpture of D. Afonso I is not large (107cm x 61cm x 35cm), this was executed in one piece. However, the sculpture of Saint Mary Magdalene (54cm x 144,5cm x 44cm) was constructed in four vertical tacelos. One section, corresponding to a part of the rock, is missing. The blocks were placed in their correct positions in the chapels and the sculptures were polycromed in-situ, hiding the divisions between the blocks.

**Sampling**

Very small samples of materials were taken so not to visibly damage the objects. Samples were removed using a scalpel. Two samples of the clay support and fourteen samples of the polychromy were taken from D. Afonso I, while three samples of the clay support, one
from each block, and eight samples of the polychromy were taken from the *Saint Mary Magdalene* sculpture.

**Methods of Study**

Semi-quantitative chemical composition of the clay body was estimated through X-ray fluorescence analysis with a wavelength dispersive system using a Panalytical XRF-WDS 4 kW AXIOS sequential spectrometer (equipped with a Rh X-ray tube) under He flow. Standardless semi-quantitative analysis was performed using the SuperQ IQ+ software package.

For crystalline phase identification of the ceramic body and polychromy samples, Raman microscopy was carried out using a Labram 300 Jobin Yvon spectrometer, equipped with a He-Ne laser of 17mW operating at 632.8 nm and also a solid state external laser of 50 mW operating at 532 nm. Spectra were recorded as extended scans. The laser beam was focused either with a 50× or a 100× Olympus objective lens. The laser power at the surface of the samples was varied with the aid of a set of neutral density filters (optical densities 0.3, 0.6, 1 and 2).

![Figure 4: Pb red pigment of D. Afonso I helmet plume.](image)

**Experimental Results**

Results obtained so far by X-ray fluorescence spectrometry of the clay support of *D. Afonso I* permitted a comparison with results (obtained by other authors) from different sculptures executed by the same workshop, and provides a similar conclusion. Quartz and calcite were identified in the ceramic body but it is still necessary to ascertain the presence of other clay minerals.

Starting from the support, the stratigraphy consists of several layers: a white preparation of gypsum and the colour layers. Raman microscopy results indicate malachite and azurite for the green and blue pigments respectively, however further analysis is still ongoing to determine the other pigments found.

The pigments used on *D. Afonso I* were identified as being lead white, chalk, yellow ochre, vermilion, red ochre, azurite, malachite, charcoal, Carbon black and vermilion (Figure 4). According to the literature, these pigments are very similar to the pigments used in other sculptures of the monastery of Alcobaça. The pigments used on *Saint Mary Magdalene* are currently being identified, but we already can already observe a complex stratigraphy with multiple layers.

**Conclusion**

With the preliminary study of all the monumental polychromed clay sculptures of Alcobaça, we were able to determine the dates and the attributions of some altarpieces and monumental polychromed clay sculptures. The study incorporated some previously unknown altarpieces and we discovered different stages of execution for some other altarpieces. We have shown that the sculptures were not executed by one workshop, but by two workshops working contemporarily. Monks were not employed in these workshops, on the contrary work was carried out by converts, who presumably also worked elsewhere in the country, as similar sculptures have been identified in this study. The material study of the sculptures of *Saint Mary Magdalene* and of the *King D. Afonso I (?)* of Portugal showed similar results to results obtained in other previously studied pieces, executed by the same workshop, although further analysis is continuing.

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**Introduction**

Le thème que nous sommes en train de présenter est une synthèse de l’analyse des matériaux et des techniques de construction du brancard de procession, appartenant au groupe sculpté et polychrome de la Dormito Mariae du “Real Mosteiro das Chagas” de Vila Viçosa, au Portugal. Ce texte fait partie d’une étude scientifique approfondie dans le domaine de la conservation et de la restauration, qui vise la connaissance de tels objets composites au Portugal.

Daté du XVII / XVIIIème siècle, cet objet de dévotion rare et insolite a la double forme d’un bateau et d’une voiture. Sa morphologie lui donne un fort impact visuel. Il a été conçu pour transporter une sculpture grandeur nature, couchée, lors de la procession de “Nossa Senhora da Boa Morte”, qui fait partie de la liturgie résurrectionnelle célébrée par l’Église catholique romaine.
Contexte historique:
Suivant l’exemple de la tradition théâtrale médiévale, cet objet allie la figuration sculpturale et picturale de caractère allégorique et iconographique, suggérant la représentation des différents titres de louange à Marie, selon l’inspiration des “Litanies de Lorette.”

Figure 1. Groupe sculpté et polychrome de la Dormitio Mariae.

Le nom Dormitio Mariae, liturgiquement adopté jusqu’au milieu du XVIème siècle, a été progressivement remplacé par celui de l’Assomption de la Vierge, ce qui augmente l’aspect eschatologique d’une fête qui porte en elle une promesse de rédemption universelle. Les célébrations commençaient à huis clos dans la communauté religieuse et culminaient le second jour par une apparition publique. La Vierge couchée dans le brancard de procession était l’élément central d’un rituel visant l’expansion de l’espace sacré vers la communauté et le public, pour stimuler la foi et encourager la dévotion. Symbole de manifestation d’une puissance religieuse, qui lie deux fêtes Mariales (La Dormition et l’Assomption de la Vierge), le groupe sculpté dont fait partie le brancard de procession de l’étude apporte une forte signification symbolique et esthétique, marquée par le style baroque.

Techniques de construction et examens de laboratoire:
Ce brancard de procession, conçu en bois polychrome, présente une typologie hybride. Il ressemble aux vraies barcaes portugaises de la même époque, et sa structure présente des similitudes avec les techniques de construction navale. Bien que ne respectant pas les principes fondamentaux qui permettraient son immersion dans l’eau, cette pièce montre une préoccupation dans le choix des matériaux. Les essences de bois notamment, ont été sélectionnées pour leur faible poids et densité en vue de la mise en œuvre de la structure et pour l’épaisseur réduite des planches du doublage.

Pour cette conclusion, les radiographies et l’observation de la construction visible ont été fondamentales. Les différents types de bois ont été identifiés par observation d’échantillons en coupe transversale. Cela nous a permis de constater qu’ils ont été choisis dans le but de réduire au minimum le poids total de la pièce, chose très importante, car ce lit était porté sur les épaules de six hommes, pendant les processions.

De grandes dimensions et poids, cet objet est composé d’une structure interne de planches en bois renforcées par des traverses qui se terminent en pointe sur la proue et coupées en travers sur la poupe.

À coque arrondie et poupe surélevée (semblables aux caravelles), l’embarcation dispose d’un embout formé de deux pièces jointes qui renforcent la proue. Deux
paires de roues, assemblées par des lattes qui sont supportées par des cales en bois, sont les seuls points de contact avec le sol. Lors de la procession, quatre barreaux de bois rentraient dans la quille, dans des ouvertures circulaires pratiquées dans les cales des roues.

À l’eau. Les effets finaux visibles sont l’or bruni et l’or mat (dans les fonds), parfois délimités par une fine gravure.

À travers des techniques polychromes diverses, ou l’or est allié à de l’argent, on peut aussi observer le fond or avec une couche de peinture sur laquelle est gravé le dessin d’un grand soleil et l’inscription: “Ave Maria cheia de graça sem pecado original”. Au centre de cette composition, on observe une un travail en creux réalisé par poinçonnage où l’effet de petits clous arrondis et rectangulaires est visible.

Enfin, nous soulignons l’importance de la contribution des examens et des analyses de laboratoire (Étude stratigraphique, Fluorescence de rayons X (XRF), Diffraction de Rayons X (DRX), etc.) pour la caractérisation de tous ces éléments et de ces techniques, en soulignant dans ce contexte, la découverte d’une pièce de monnaie portugaise “V reis” en cuivre, datée de 1848, trouvée à l’intérieur de la barcae (figure 4.), et qui pourrait correspondre à une intention de dater une intervention de restauration.

**Conclusion:**

L’analyse des techniques de construction de ce groupe sculpté contribueront à la compréhension d’autres groupes sculptés ayant le même thème iconographique et ouvriront les portes à la connaissance d’aspects techniques intéressants. Ce travail n’a pas été possible que grâce à la collaboration d’un large éventail de partenaires qui ont permis la multidisciplinarité de l’approche scientifique.

**Conservation of a wooden sculpture with a rare Baroque high relief brocade decoration**

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**Introduction**

A wooden polychrome sculpture, produced during the Baroque época, was studied in its entirety using an inter-disciplinary approach. This gave insight into the historical and technological background of the complex sculpture ensemble. Furthermore, information regarding the condition of the sculpture’s wooden support came to light. This article will discuss the insect infestation sustained by the wooden elements and the anoxic treatments implemented to disinfect the sculpture. In addition, treatments carried out to preserve the three-dimensional Baroque decoration.
and the restoration of the wooden support will be considered.

**Historical and Technological Background**

The subject of this study is a wooden sculpture ensemble originating from Portugal, created by an unknown sculptor, which can be dated to the early Portuguese Baroque époque. The object belongs to a private chapel in Ponte de Lima northern Portugal. It measures 87.5 cm x 67 cm x 30 cm (height x width x depth) and represents the Pietà. The Virgin Mary is shown sitting on a rock, mourning the loss of her son with painted tear drops falling down her cheeks. The dead body of Christ is draped over her knees. The sculpture represents a very moving and dramatic image, full of Baroque pathos (Figure 1).

One large block of walnut wood, *Juglans regia* L., was used for the main segment of the sculpture, while the lateral sections are carved from smaller pieces of sweet chestnut, *Castanea sativa* Mill. Both wood types were commonly used in Portugal in this time period. The polychrome layers are colourful, denoting a variety of richly decorated materials. The delicate decorative brocade of the Virgin Mary’s outer garments is achieved using wax applied in geometric high relief, subsequently oil gilded. Imitation precious stones are dispersed throughout the brocade to highlight the costly effect [LE GAC, 2002]. Adhesion between the polychrome layers and the support is lacking in many places, resulting in loss. This situation is obviously ongoing, as much of the original polychrome layers have been overpainted. Further loss has occurred to the decorative brocade described above resulting in missing sections in the wax relief decoration and some of the imitation gemstones. The wooden support is in a fragile condition and shows evidence of past insect infestations and bio-deterioration. This has caused the wood to split and shows that the sculpture has been kept in inadequate environmental conditions (Figure 2).

Two types of insect damage have been identified through a study of their characteristic damage patterns. Both wood beetles (Coleoptera, Anobiidae) and termites (Isoptera, Rhinotermitidae) have attacked the wooden sculpture. A large number of flight holes have been made by the Coleoptera species, *Oligomerus ptilinoides* (Wollaston, 1854). The Isoptera specie, *Reticulitermes grassei* (Clément, 1978) is a subterranean termite that forms characteristic tubular galleries often filled with particles of sand, earth, wood and faeces, cemented together with a glue-like secretion. These galleries are evident on the base of the sculpture (Figure 3).

Besides these insects, evidence of Lepidoptera Tineidae larvae (moth) with their silk cases was found, in addition to some spider webs and cocoons. It is
unlikely that these arthropods have damaged the sculpture, however they have found an ideal microenvironment for shelter.

Disinfestation: the anoxic method
Anoxic treatment involves placing the object within an enclosed environment in which the air inside is replaced by nitrogen. As oxygen levels decrease the spiracles (external respiratory openings) of the insect begin to close, and when an anoxic environment is achieved the insects become desiccated. The Pietà sculpture was placed within a plastic bubble in which anoxic conditions (0.0% oxygen) were maintained for one month (Figure 4). Further treatment is unnecessary as desiccation causes death, thus chemical or temperature induced treatments which could further damage the fragile state of the sculpture were avoided [SELWITZ and MAEKAWA, 1998].

Conservation treatment
Firstly, all remaining insects and pupae casings were removed. The weakened fragile wooden support was consolidated by repeated injections of an acrylic resin, Paraloid B72®. A 10% solution of the resin was used in a mixture of diacetone alcohol and ethanol (30:70 v/v). This solvent mixture was chosen, as it would be least damaging to the wax based high relief decorations. The open galleries were further reinforced by applying a structural filler (Figure 5). The filler consisted of cellulose powder mixed with diluted poly-vinyl acetate (PVA) emulsion. Agepon (a surfactant) was added to increase wetting power. The cellulose filler is light weight when dried and is compatible with the original wooden support. The original structure was partly reconstructed where additional stabilization was necessary. Lastly, losses to the polychrome layers were filled with a common kaolin and animal glue mixture (Figure 6). These fills were textured and retouched to complete the aesthetical reintegration.

Conclusion
An investigation of the constituent materials used to construct the sculpture group aided in the decision making process for treatment and thus the effective conservation of the object. A detailed and systematic study of the wax brocade motifs, recording measurements and construction techniques, took into account solvent choice, allowing aromatic solvents to be excluded due to the susceptibility of wax to these solvents. The anoxic treatment of the object avoided further damage by biological infestation. Consolidating and filling the remaining fragile structure reinforced the wooden support without increasing the weight of the sculpture. The reintegration methodology permitted superficial lacunae to merge with the original surface diminishing their visual dominance.

The original materials of the Pietà are susceptible to deterioration from light, fluctuations and extremes of humidity and temperature, insects, fire, dust, salt and vibration as well as mechanical damages (dents, knocks, and chips) that come from contact with human beings. Thus, ensuring that the correct storage conditions and a good preventive conservation plan are essential for the ongoing preservation of this very delicate sculpture [CARVALHO and ALMEIDA, 2007].

References
CARVALHO, G., Almeida A. 2007. Vade-mécum Preservação do Património histórico e artístico das
Introduction

Since archaeological objects tend to have been restored throughout their history, the treatment of such objects involves not only assessing the 'original state' but also the relevance of keeping these previous restorations. The inner coffin of the Egyptian priest Nehemsimontou, kept at the Castle-Museum of Boulogne-sur-Mer (Figure 1) [1], has been remodelled several times during its history; and thus is an excellent example of this problem. This object has recently been investigated and treated at the C2RMF. The project involved a close study of the object in conjunction with an assessment of previously applied restoration treatments, their potential subsequent removal and the treatment of the coffin. This required the combination of various competencies, as well as a close collaboration with the scientific laboratory in order to guide treatment options based on the results of research and analysis.

Object history

Dating from the end of the Third Intermediate Period (25th Dynasty), the Nehemsimontou coffin is an important piece within the museum collection and was purchased by the municipality, thanks to public donations, from a Parisian collector in 1837. This wooden anthropoid coffin is painted and gilded with inlaid eyes. It measures 211 cm in length and 55 cm in width. It was studied by the young Auguste Mariette [2], and played an important role in inspiring his interest in Egyptology. Mariette was the first to describe the object and to decipher its hieroglyphic inscriptions. The Nehemsimontou coffin discussed in this paper refers to the inner coffin, which has been separated from its accompanying funerary equipment. The mummy has since been proven not to be that of Nehemsimontou [3] but rather that of an unknown. The outer coffin has been lost, perhaps during World War I, and the cartonnage that enveloped the mummy is now kept in the museum of Grenoble.

Research carried out as part of a Master Thesis Diploma at the Ecole du Louvre [THOMAS, 2006-2007] has enriched our knowledge and understanding of the object and its material history. Five separate restoration campaigns were identified. The first, conducted before the sale by the Parisian collector, must have been carried out to increase its market value. At that time, the feet were repainted, the face gilded and the beard painted in black. The box was also repainted in several places. Later restorations were made during the inter-war period (1920-1940) treating damages the object had sustained, especially to the lower section of the lid. Three further campaigns were conducted: in 1948 (including: fumigation for pest control, cleaning the inside of the box, application of fillings, and structural consolidation); in 1980 (including: applications of filling and retouchings); and most recently, in 2004 (including: cleaning, minimal consolidation of the paint layer and partial removal of modern joints). Except for the most recent campaign, these interventions are poorly or not documented at all.

Diagnosis and treatment

A preliminary study using a wide range of examination techniques (UV, IR and x-rays) (Figures 2 and 3) and analysis (polychromy and wood identifications) has highlighted the technical components of the coffin and its material composition.

Support

The box and the lid are made from wood, *ficus sycomorus*, and consist of planks connected with tenon joints, maintained to mortise joints by *ziziphus spina Christi* wood pegs [ASENSI-AMOROS, 2006 & 2008]. The foot panel of the box, made of one full piece of wood, is attached to the coffin on the sides by a system of pegged dovetails.
The object has, in the past, suffered damage from xylophageous insects, which has weakened the wooden support. These damages have been partially covered by repaintings. The assembly joints are open and desiccation cracks run through some parts of the surface. The cracks, resulting from the movements of the wood, have also damaged the polychrome layers, especially along the joints. Several fills and structural interventions have been identified on the lid and the box. X-radiographs revealed that gesso fills have been reinforced with nails and metal elements (e.g. a threaded rod in the bottom of the lid).

Polychrome Layers

The analysis has helped our understanding of the stratigraphy of the polychromy, and has enabled the identification of materials used. Around twenty microsamples were taken to characterize the original polychromy and the history of the coffin’s restorations. The following techniques were used: Optical Microscopy (OM), Scanning Electron Microscopy (SEM), Fourier Transfer Infrared (FTIR), Gas Chromatography-Mass Spectroscopy (GC-MS), microchemical tests [PAGÈS-CAMAGNA, 2007].

Overall, the surface of the coffin was very irregular. The wooden support and decorative layers showed deterioration in some areas. Past treatments were inconsistent, although in some cases more appropriate than in others. Several past interventions were visible and various different painting techniques used to apply prior retouches or overpaints could be easily distinguished. A previous cleaning campaign had removed entire pictorial scenes from the interior of the box and some of the blue hieroglyphs applied on the white background of the lid. Furthermore, some pigments have been partially erased, leaving some marks and indications of this past cleaning campaign, resulting in illegible areas in which the pattern or image is no longer clear.

Several areas of modern overpaints had been applied to fill cracks and locally retouch the polychromy, especially where the original decoration has been lost or was very damaged (Figure 4). This can be seen in the white, brown and burgundy-red layers and in the red details like those applied to the edges of the box and to some hieroglyphs that have been repainted in their entirety. Some of the previous restorations from the nineteenth century not only re-emphasised the original design but also reinterpreted areas of partial loss. These restorations were of sufficient high quality to fool the young Mariette, who described them without realizing they were overpaints.

The exterior of the coffin has received a layer of varnish (exhibiting a yellow fluorescence under UV light) at a later date than conception. This is clearly visible extending over the repaints. The original varnish has been applied very locally to the exterior of the lid. It does not have the same composition as the later applied coating.

This study has provided further insight into the history of the object and the extent of previous interventions, and has fostered a better understanding of the object by explaining the observed alterations: cracks, flaking polychromy, condition of the restored joints, lacunae and modern overpaints [BEDOS I BALSACH et al, 2008 & 2009].
Treatment
A team of five freelance conservators (Isabel Bedos i Balsach, Anne Courcelle, Geneviève Delalande, Daniel Ilbled and Amélie Méthivier) worked on the coffin from February 2008 to June 2009. They benefited from a committee composed of scientific experts and Egyptologists from the Louvre, the College de France, and the C2RMF. Indeed, the development of conservation protocol raised various questions. Debate dealt with cleaning issues and whether previous restorations should be removed or accepted in order to recover the original polychromy partially hidden by overpaints. These questions required collective and collaborative decisions.

This conservation treatment aimed to remove the modern interventions, such as fills and overpaints, and to restore the nineteenth century condition of the object due to the irreversible alterations that had occurred previously to the original [4]. The stratigraphic study allowed the team to determine the nature and conservation status of the different coloured layers of the original polychromy. Knowledge of the layer buildup aided the assessment during the removal of non-original materials, which proved to be technically challenging. Mechanical and chemical tests were conducted to establish the best way to remove the fills and overpaints. Each area of the coffin presented different issues from the point of view of conservation and treatment, so different products had to be used. Most treatments undertaken were chemical. Moreover, the conservation treatment involved stabilizing the support, consolidating polychromy, cleaning the surface, filling lacunae and open assembly joints and retouching areas of loss, for example in the face depicted on the lid. The fills were applied lower than the original surface so that lacunae remained evident but that the visual continuity of the decorative elements was returned, ensuring unity to the coffin without masking the current restorations and traces of time (Figures 5 and 6).

The oldest repaints, again masked by some subsequent interventions, revealed surprising patterns such as a horse’s head facing a “horse-snake” figure on the right hand side of the broad collar. These elements were retained, although not part of the original decoration, due to their quality and importance from the standpoint of the history of restoration and that of Egyptology. Although they are the results of the interpretation of the nineteenth century artists, they give an indication of what remained of the original decoration [BEDOS I BALSACH et al, 2009].

Conclusion
Past and successive interventions gave a confused and inconsistent appearance to the coffin before the current treatment. A strict return to the original appearance was technically and ethically impossible. The treatment options, cleaning, filling and retouching levels have been carried out to give a homogeneous and consistent aspect to the box and lid, while respecting its authenticity and the unique evidence it conveys.

Notes
[2] François Auguste Ferdinand Mariette (1821-1881) was a French Egyptologist who became famous for his discoveries in Saqqara. He set up the Egyptian Service of Antiquities and became its first director in 1858. He also established the Cairo Museum in 1861. During his life in Egypt, he excavated at many Egyptian monuments. His work was significant in opening the field of Egyptology.
[3] Nehemsimontou was an Egyptian priest of the 25th dynasty who belonged to the clergy of the Temple of Karnak, dedicated to the worship of the Theban god Amun. He was “captain” of the sacred boat of Amun, the god of Thebes”.
[4] The nineteenth century appearance of the object has historical significance. Furthermore, the object was
A short presentation of imitation gold leather wallpaper from the Balin manufacturing firm: results of technical and physico-chemical examinations

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Introduction

The focus of this paper lies on a corpus of embossed wallpapers housed within the collection of the Royal Museums of Art and History of Belgium (MRAH/KMKG, Brussels) and more precisely on wallpapers made by the French manufacturing firm of Paul Balin (Paris, 1863-1898) (Figure 1).

The aim of the study is to get a better insight into the production process of the gold embossed leather paper imitations made by the Balin factory by both technical examination and physico-chemical analyses. A comparison with other contemporary leather imitations, European as well as non-European (in particular the Japanese leather papers aka \textit{kinkarakawakami}), allowed us to obtain a more precise understanding of the variations in the contemporaneous production of this type of wall decoration.
Musée du Papier peint (Rixheim), can be dated exactly. Both collections named contain some identical models [JACQUÉ, 1991, p. 107] to our corpus.

Figure 2: Sample page from the catalogue Balin: some available colour schemes of pattern 4975 with their code and (hand-notated) prices.

**Methodology and sampling**

After a visual examination of the substrate and surface layers with the aid of a stereo-microscope, further observations of small sample cross-sections were made using optical microscopy - both white reflected light and ultraviolet (UV) illumination. This allowed a study of the multiple layers composing the wallpaper, the subsequent stratigraphy, physical aspects and type of application. The identification of the inorganic and organic materials [1] in each layer was done using complementary physico-chemical techniques such as Scanning Electron Microscopy-Energy Dispersive X-ray (SEM-EDX) spectroscopy, micro-Raman spectroscopy and High Pressure Liquid Chromatography (HPLC). The composition of the paper was analysed with microscopic techniques. Special attention was given to metallic finishing layers by semi-quantitative analyses of the copper/zinc alloys (Figure 3).

**Results and discussion:**

The substrate consists of a rather heavy and strong white paper. A Herzberg staining test implemented on one sample allowed the identification of the pulp as a mixture of long liberian fibres, most probably flax fibres (*Linum usitatissimum* L.), that is to say a high quality linen rag pulp.

Stratigraphic examinations revealed complex multi-layer structures on all samples studied (Figure 4). The presence or absence of the following layers was noted: ground layer; coloured intermediate layer (or not); varnish (or not); different coloured and/or metallic (gilding or silvering) finishing layers according to the motif; coloured or golden highlights. A large variety of metallic finishings were found. Their characteristics were recorded: differences in the application method of the metal (leaf, flakes or powder); differences in the nature of the metal (tin, brass); different shades (golden, copper and green bronze) of brass leaf or powder according to the copper/zinc ratio; possible mixtures of different metal flakes with pigments.

Figure 3: Detail of 4975E: fine golden stripes highlight the embossed copper red motif on a varnished ochre ground layer. This sample costs 49 francs the roll.

The most sumptuous and expensive wallpapers show a subtle interplay of materials and colours, created mainly by varying the metallic finishings, such as the common combination of dull surfaces (covered with metal flakes) and brilliant highlights (metal leaf in fine stripes) to enhance the relief effect. Remarkable special effects of reflection were obtained by printing with a white - possibly metallic - powder on some edges of the gilt embossed motifs. These rather illusionistic and hence imperceptible highlights are only detectable as ‘material’ by very careful examination in good lighting conditions.

Further gold imitation, leather wallpapers of a possibly Belgian unidentified factory from the second half of the 19th century (also kept in MRAH/KMKG, Brussels) were examined and analyzed for comparison with the Balin corpus: in these papers, the gilding systematically consisted of a white tin leaf coated with a yellow varnish, to give it a golden glint, as a first layer applied to the whole length of the paper substrate. On top of this, finishing layers heighten the embossed motifs and/or the background. The same techniques, metal leaf and stratigraphy, were found in the *kinkarakawakami* of the Meiji era (1868-1912) [WAILLIEZ, 2007a, p. 174-175; WAILLIEZ, 2007b]. This type of gilding can be considered as an adaptation...
of the “auripetrum” technique, described in numerous mediaeval recipes, and also applied on gilt leathers from the Renaissance and the Baroque period, where mainly a silver leaf was used, lacquered yellow to imitate gold.

Figure 4: Cross-section of a complete stratigraphic sample from 4975E: the highlights consist in a yellow brass leaf (6) on a white mordant layer (5); the copper red motif is printed with brass flakes (4) on a white underlayer (3); an organic layer (2) coats the ochre ground layer (1) applied to the paper substrate (0).

Pigments used in the coloured layers were rather common to that period: calcium carbonate, white lead, carbon black, Prussian blue, artificial ultramarine, iron oxide red, red lead, chrome orange and yellow, massicot, yellow ochre... Fortunately, the identification by HPLC of lacquer pigments based on synthetic dyes provided a *terminus post quem* and an approximate date for the catalogue. Artificial alizarine, introduced after 1868, and especially Orange II (acid orange 7, CI 15510), discovered in 1876, were found.

**Conclusion**

Despite the fact that Paul Balin was clearly inspired by real wall hanging models within a very broad time period - from the Middle Ages, through the Renaissance, the Classical as well as the Baroque period – and not only from either French but also foreign origins, the results of the study show that his manufacturing process is not based on techniques of earlier gilt leathers but rather mimics the decorative effect by using illusionist techniques. If the composition can be seen as rather common, the elaborate stratigraphy is quite unusual in comparison to traditional wallpaper productions. With this in mind, the coloured (printed) underlayers are remarkable and evoke the gilding techniques.

So far, very promising and interesting results were obtained which clearly reveal the complexity of the composition of Balin imitation leather wallpapers. However, it would be of great interest to extend the research to the organic layers (varnishes, glazes, coatings) and binding media (mediums and adhesives) to get an insight into all aspects of the manufacturing process. This will be done using the Imaging FTIR spectroscopy that enables direct analysis on the cross-sections.

An extensive report will be published in the near future.

**Notes**

[1] Metals, mineral pigments and extenders, organic pigments and lakes have been analysed; so far binding mediums and coatings have not been analysed.

**Acknowledgements**

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**Bibliography:**


**Doing, Knowing, Informing. Heritage conservation practice and traditional crafts: an educational programme for children**

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**Introduction**

This work-in-progress project aims to spread knowledge of the traditional artistic crafts, with special reference to the conservation practice. Planned on the basis of similar projects, it is intended for the Primary School pupils from 6 to 10 years old. The project stems from the didactic and professional experience of the author, who operates with a holistic view and a multidisciplinary approach to conservation, and the various stakeholders involved in the maintenance of cultural heritage. The unique context of a heritage interior of an historic building, containing multiple artefacts inherently different in technique and/or material (easel paintings, wallpaper, carved furniture, china, polychrome sculpture, wood or mosaic floors), can benefit either from the work and findings of conservators or from traditional craftsmen skills. If the
training and education of the Conservator is defined worldwide by the ICOM-CC Copenhagen Document of 1984, what position does the craftsman specialised in antique or traditional works have?

Since ancient times craftsmen have been considered as demijures, incorporating the double idea of “public” (demios, i.e. belonging to the people) and “production” (ergon, i.e. work) (Figure 1). Technical capabilities were transmitted from one generation to the following one, by the master who instructed the young apprentices entering his bottega / atelier (i.e. the [work]shop). At the end of the learning process, established by strict guild or corporation rules, the apprentice's work was assessed. He had to show and finish a complete work in order that he could open his own shop, otherwise he continued to work as a labourer or journeyman. Over the last few decades the precious heritage of crafts, the pride of the western world since the Middle Ages, is well on its way to being scattered. The so-called professional schools are no longer able to attain the level of good practice previously required by the apprenticeship. Modern society rejects manual skills as devaluated practice, and thus many bottegas close definitely, while others are in peril. Consequently, this situation assists the incipient loss of cultural identity.

My first didactic experience was in a classroom of 8 year old pupils demonstrating the fresco-painting technique and punching cartoons. In this environment, I realized the enthusiastic approach of children to practical experiences, concrete knowledge, manual labour, personal projecting and completion of a finished hand-made object. So, why not approach this leaning experience from a different perspective, perhaps looking beyond often insurmountable entrance requirements to the field, trusting in a small seed sown in a fresh and fertile soil in favour of a new frame of mind, open to the beauty of tradition, to the passion for an ever-new activity, to the pride for a unique and special product? The answer could be to reproduce the traditional relationship between master and apprentice inside the Primary School educational programme.

The educational project

The goal of this project was to restore the synergy between the head and the hand, and between the desire and the reason, both typical attributes of craftsmen, as well as to recover an ideal educational path in general. We must place more trust in imagination, creativity and emotion, characteristics that children are more likely to express with sensitivity. In the Middle Ages an apprentice's education was defined by rules and regulations laid down by the craftsmen guilds; today the Confartigianato Udine (Note 1), a modern guild, oversees the new apprentices with the so-called “Master of Crafts” project [1] (Figure 2).

During the 2009-2010 school year more than 500 pupils from the Udine province were involved in the project. Proposals were established for various crafts, and arrangements were made with the teachers for a mutual harmonious integration within the official educational program and a synergy with the local culture. Each venture consisted of a theoretical introduction and a practical application of the craft proposed. The theoretical introduction provides the necessary concepts to set a historical (both synchronically and diachronically), geographical and cultural groundwork. A sort of “net” strategy is set: amusing pictures, bizarre stories, gripping free dramatisations, manipulation of objects and materials. In such a way, knowledge improves and is accumulated in a funny, gentle and light atmosphere.

In the fresco-painting project, children draw with charcoal, grind minerals to obtain coloured pigments and add binding medium to the powder to form a paste to use with fur pelts or hands – techniques used by prehistoric man. Inspiration for stained glass comes from music and lights projected on the walls or from looking inside a kaleidoscope. Metal works applied with copper foils are made with almost the same techniques as the original Longobard gold jewels and iron weapons found in the local museums. Weaving and tailoring derive inspiration from the tale of Bombyx (Bombyx mori, the silkworm) and its breeding and feeding on mulberry leaves [2]. The theoretical classes are complemented with some guided tours: to small...
country churches containing fresco-paintings (Figure 3) and stained glass, to bottegas making copper, iron or precious metals artefacts, to joiners and carvers’ workshops. At this point that the project comes into its essence: the master of crafts demonstrates how to make an object to the young apprentices, who repeatedly practice techniques in order to gain skill and produce their own artefact. It is amazing how those small hands, at first clumsy with the rough materials, become so skillful at the completion of the task. Each creation has always a link to the region and its cultural heritage. Generally the use of discarded materials (wood, cloth, yarn, plastic, metal) as well as naturally occurring ones (coloured earths, stones, leaves) is favoured to breed the rising consciousness for eco-sustainability and the creativity of recycling [3].

It is calculated that 10,000 hours are required to train a master carpenter [Sennet, 2008]. The “Master of Crafts” certificate is definitely not intended as a substitute the hopeful reinstatement of the apprenticeship system or other educational programs, nor is it intended to entail such a laborious path. However it is supported by some worldwide, recognised didactical suggestions by anthropologists and pedagogues. For example: developing technical skills does not depend on inspiration, illumination or natural talent (i.e. genius) but on repeated exercises. Iteration does not dampen the mind - a well-calculated number of repetitions that do not overwhelm the attention span is favourable to a qualitative jump and an expansion of skills. The hand is the window of the mind. It is a very specialised tool: its movements, pressure capability and sense of touch are a function of brainwork (Figure 4). Homo faber in fact evolved when a man could grasp something firmly with his hands. Consequently, man began to think about that object and to become “creative”.

The project “Sounds of Woods”, involving a familiarisation with wood, can be seen as a model. This well-known versatile material is the raw matter for many trades associated with restoration: carving, inlaying, carpentry. The theoretical introduction is devoted to the knowledge of living wood, from seeds to trees. Pictures and information collected in a powerpoint presentation are accompanied by a direct familiarity with the material, analyzing scientific, technical and artistic aspects, including the examination of stratigraphic sections, direct knowledge of plants and different saps/resins, visits to bottegas of ship builders, framers, cabinetmakers, musical and scientific instrument makers, sculptors and toy makers, and by a visit to an arboretum or to a wood with foresters. Then, in cooperation with a musician, the pupils pass return to the bottegas to listen to and internalise sounds that a piece of wood make from sawing to planning, and so on. Children will now be able to choose the proper instruments to reproduce “the voice of wood”: musical instruments from local or foreign traditions, or new-made wooden instruments created to produce a new sound. The final session, in which all participants play together on a stage, ends the project. The 'music' made is recorded on CD-ROM and performed in the participating schools. There will be also a multilingual terminology publication on wood providing a cultural exchange between participants of different backgrounds and countries. “Sounds of woods” translates play and music into a simple but universal language which children are without doubt the best users.

Suggestions to improve the project are compiled through a feedback questionnaire on completion of each experience by teachers. With the support of knowledge, capability and above all passion, conservation and crafts could find a mutual advantage. We proved that this message can be easily achieved by educating the younger generation, in favour of identity preservation, cultural heritage maintenance and
beauty of “knowing how to do”. This is because children are the real beauty of the world (Figure 5).

Figure 5: Young craftsmen are studying sundials: mechanisms and decorations.

The author will be very pleased to co-operate and provide further information, and to disseminate the results of this research.

Notes
[1] “Masters of Crafts” was established by Confartigianato Udine and the tradeswomen group, with the support of the Friuli Venezia Giulia Region. Confartigianato is the most important trade association in the province of Udine representing small and medium enterprises and autonomous workers.

[2] In the Friuli region of Italy, silkworm breeding spread above all in the nineteenth century, as shown today by the lines of mulberry trees found in the country.

[3] This project could be allied with the “Memorandum of Lifelong Learning” described the Commission of the European Communities (Lisbon, 20.10.2000) and hopefully practiced.

Bibliography

Links & Interesting Websites


Seventeenth-century Spanish polychrome sculpture was intended to appear as lifelike as possible. Compared to bronze or marble statues, sculpted and painted wooden figures--often with glass eyes and wigs--achieve a remarkable realistic effect. Artists specialized in particular Spanish polychromy techniques, such as estofado: painting and incising to create rich silk fabrics with raised patterns in gold and silver used for the garments, and incarnations: blending and applying of oil paint for lips, hair, and modulations of the skin.

Up Coming Events: Conferences, Symposia, Meetings ...

ICOM-CC Symposium on Polychrome Sculpture: Tool Marks and Construction Techniques

Location: Bonnefanten Museum, Maastricht, The Netherlands

Dates: 24-25 October 2010
ICOM-CC Sculpture, Polychromy, and Architectural Decoration Working Group and the Stichting Restauratie Atelier Limburg (SRAL) will host a symposium on “Polychrome Sculpture: Tool Marks and Construction Techniques”. A number of guest scholars and conservators will be invited to discuss current issues relating to the technical study of polychrome sculptures. It is hoped that the ensuing discussion among experts from various fields will lead to further attention and research in this area.

The symposium will have as a focal point the study of tool marks on sculptures relating to the construction process. Work benches were often constructed as temporary aids to help the artisan during the carving process. Traces of clamps used to hold the sculpture in position during carving are often found on both the top and bottom of wooden sculptures. Traces of these clamps and those of tools used to carve the sculpture can be often hidden by subsequent decorative layers or misinterpreted. These marks, however, can give clues to the construction process and have, in the past, lead to the identification of a workshop or even master carver himself. Focus on the identification and classification of these tool marks, through a meticulous study and documentation, may provide more insight into the carving process of sculptures leading to tentative attributions to certain studios or workshops.

Furthermore, the symposium hopes to highlight wider issues in the material-technical study of polychrome sculptures through the discussion of a number of case studies. It is hoped that this may contribute to a consensus in terminology that will cross borders between the disciplines of art history, conservation and science.
Museums in the 21st Century are at the crossroads of major transformations in the global economy and environment. They are in a position to address the urgent need for safeguarding cultural diversity and bio-diversity as the common heritage of humanity. The preferred futures across the world are for Environmental, Cultural, Economic and Social Sustainability. Museums have a role to play as mediators in these transformations in promoting social harmony.

ICOM 2010 will be a critical milestone for intercultural dialogue to promote mutual respect and intergenerational ethic emphasizing practices for the inclusion of young people in museums. There will be a range of opportunities during the General Conference to scope, debate and plan creative approaches to change and develop responsible future directions as we strive to facilitate social harmony during times of rapid change and unprecedented development.

ICOM 2010 will bring together a range of expertise from across the world to encourage new models of collaboration that provide opportunities for members to contribute to museum development addressing all forms of heritage: tangible, intangible, movable, immovable, cultural and natural. The museum will be considered as a process, as a forum and as a construct.

There will be special emphasis on appropriate capacity building for promoting cultural exchanges and future project development.

ICOM 2010 will address urgent concerns for protection and safeguarding of all forms of heritage, especially in countries and regions where heritage resources are under threat due to armed conflict, famine, climate change, illicit traffic and tensions between conservation and development.

How can we increase the quality of professional services in museums, giving priority to capacity building at all levels, especially in what relates to the basic museum functions: documentation, research, conservation, communication and education. How can we stimulate better and wider access and use of the knowledge generated by ICOM?

ICOM 2010 will provide a platform to share and critique demonstration projects by participants from culturally and linguistically diverse backgrounds. It will be a forum for developing innovative and inclusive conceptual frameworks for working across different cultures in a dynamic and changing environment. There are multiple perceptions and perspectives of what is harmony. The multiple voices of different participants will inform discussions to promote a culture of world peace. ICOM 2010 will raise the level of awareness of the importance of the purpose of museums and their role in fostering approaches and ideas to promote social harmony and inclusion.

http://icom.org/general-conference2010.html
http://www.icom-cc.org/51/news/?id=119

Painting and Polychrome Sculpture, 1100-1600: Interpretation, Material Histories and Conservation

Location: Historical Museum, University of Oslo
Frederiksgate 2, 0164 Oslo (Norway)

Dates: 26–27 November 2010

Conservation Studies at the University of Oslo will host a forum around the theme of medieval and late-medieval painting and polychrome sculpture. Speakers include conservators, conservation scientists and historians. Papers and discussion points will explore issues related to the interpretation and conservation of northern-European liturgical furniture, circa 1100 to 1600.

Background
The University of Oslo owns a rich collection of altar frontals and polychrome objects. Over the past 30 years, scholarship has focused on medieval painting techniques identified in Norwegian frontals and sculptures. A major study of 31 frontals dating from 1250 to 1350 was completed in 2006 and the mapping of materials
in surviving sculptures that date between 1100 and 1350 is in progress. These projects have been especially meaningful because those works that pre-date the 1340s are, with few exceptions, the products of Norwegian workshops.

**Platform for new research**
The paintings and sculpture in the Oslo collection that are thought to date after the first wave of Bubonic plague and through the Reformation (c. 1350–1600) are a far less homogenous group. The majority are thought to have been imported to Norway from the Low Countries and north German/Baltic regions, but these objects have been explored far less extensively than those which pre-date 1350. Therefore, many questions remain about their origins, circumstances of production and materials, as well as their current state of preservation.

This part of the collection will be the focus of a new research project based in Conservation Studies at UiO, led by Noëlle Streeton in collaboration with Kaja Kollandsrud and the Museum of Cultural History. This forum is intended to aid the development of a research platform for the long-term study of this late-medieval collection.

Registration Forms and more information can be found at [http://osloforum.wordpress.com/](http://osloforum.wordpress.com/)

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**2010 Conservation Science Annual, at the Eastern Analytical Symposium**

**Location:** Garden State Exhibit Centre, Somerset, NJ, USA

**Dates:** 15-18 November 2010

Five half-day sessions of papers, November 15-17 and a Special two-day short course, November 17-18: "PLAstics -State of the Art Techniques Important in Cleaning their Surfaces," instructed by Dr. Yvonne Shashoua and Ms. Kathrine Segel, European Economic Community conservation researchers at the National Museum of Denmark.

Advance full registration to 2010 EAS costs USD $140 before October 15, 2010, or USD $190 later. Student full registration is USD $25

Two day courses at 2010 EAS cost full registration + USD $675 before October 15, 2010, or full registration + $975 later.

More details at <www.eas.org> select "Preliminary Program," and search on "cultural heritage," and "plastics." To register in advance, select "Register Online," and for local transportation and lodging info, select "Attendee Info," an then select "Attending."

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**ICOM-CC 16th Triennial Conference**

**Location:** Lisbon, Portugal

**Dates:** 19-23 September 2011

**Theme:** Cultural Heritage/Cultural Identity – The Role of Conservation

The conference theme aims to capture the recognition by communities or nations of the importance of affirming their cultural heritage in this era of globalisation, as they evolve through contact and exchange with other cultures. Considering this trend, the conference will explore and compare different approaches regarding conservation policies and methods, as well as scientific methods for studying materials and technologies, in order to improve our understanding of the role of conservation in valuing heritage and its relationship to other areas such as sociology, economy, and politics, which are vital in ensuring the sustainability of communities.

The ICOM-CC Triennial Conference in Lisbon will be an opportunity to share methods, studies and strategies to value individual cultural identities through heritage conservation by addressing topics such as:
* The relationships between cultural heritage and cultural identity
* National and international conservation policies
* The importance of interdisciplinarity in the preservation of cultural heritage
* The development of research and education in heritage conservation
* Standards, practices, and methodologies for heritage conservation.

www.icom-cc2011.org

Membership information

ICOM Membership Application forms
The application forms to join the International Committees and Affiliated Organisations are now available on the ICOM Web Site at:
http://icom.museum/membership.html
http://www.icom.org/affiliates.html

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