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**THE RESEARCH PROJECT:
“MATERIALS AND PAINTING
TECHNIQUES OF PAINTERS
FROM THE NORTH OF
PORTUGAL”**

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ABSTRACT

In the context of the postgraduate studies in painting conservation at the Escola de Artes – Universidade Católica Portuguesa (School of Arts, Catholic University of Portugal), it was possible to develop a specific research project through CITAR – Centro de Investigação em Ciência e Tecnologia das Artes (Research Centre for Science and Technology in Art) within the scope of the National Strategic Reference Framework (NSRF), through the North Portugal Regional Operational Programme, Priority Area III: Environmental and Territorial Enhancement and Improvement (Cultural Heritage). Entitled “Materials and techniques of painters from the north of Portugal”, the project started in February 2009, will last two years, and has two major aims: the first is focused on the investigation of the materials and techniques used by selected painters from the north of Portugal; the second is related to the dissemination of results within an academic context and the general public. The ongoing research includes 14 researchers and the collaboration of many public and private institutions.

RÉSUMÉ

Dans le contexte des études graduées en conservation des peintures à la School of Arts, Catholic University of Portugal, un projet de recherche spécifique a été développé au sein du Research Centre for Science and Technology in Art (CITAR), conformément au Cadre de référence stratégique national (CRSN), par le biais du programme opérationnel pour la Région nord du Portugal, zone d'intervention prioritaire III : valorisation et amélioration de l'environnement et du territoire (patrimoine culturel). Intitulé « Matériaux et techniques des peintres du nord du Portugal », le projet

INTRODUCTION

Little is known about the materials and techniques used in Portuguese paintings and their associated conservation. There are few studies about the specific characteristics of individual artists and the evolution of painting over time. “The materials and techniques of painters from the north of Portugal” project aims to begin a systematic study of a representative selection of artists and paintings.

With the creation of Masters and PhD degrees in painting conservation at the School of Arts at the Catholic University of Portugal in 2006, an increasing number of Portuguese painters and national works of art have been the subject of research.

In line with this trend, a large research project was initiated in the aim of studying artworks and providing the possibility for scientific examination. In the spring of 2008, an official application was made by the research group “Study, Conservation and Management of Cultural Heritage” through the Research Center for Science and Technology in Art (CITAR) for European funding within the National Strategic Reference Framework (NSRF) and the North Portugal Regional Operational Programme, Priority Area III: Environmental and Territorial Enhancement and Improvement (Cultural Heritage).

The research project involves the study of paintings from the 16th century until today. The selection includes known artists such as Francisco Correia, Glama Ströberlle, Francisco José de Resende, Marques de Oliveira, Aurélia de Sousa, Abel Salazar, Gerardo Burmester and Albuquerque Mendes and other painters whose works are of special importance in the north of Portugal, such as Grão Vasco, Pedro Alexandrino, Júlio Pomar and Pedro Cabrita Reis. Emblematic works of art by unknown masters, such as the *Triptych of Pentecostes* at the church of San Pedro de Miragaia, or particular types of works widespread in northern Portugal, such as the rolled paintings on Baroque altarpieces or the painted *caixotão* ceilings, are also included.

As the paintings being studied in the project are located in museums, churches, municipal institutions and private collections, it was hoped to involve different institutions in the project. One of the objectives was to disseminate information between the various entities and the general

a démarré en février 2009 et durera deux ans, avec deux objectifs principaux : le premier porte sur l'étude des matériaux et des techniques employés par plusieurs peintres du nord du Portugal ; le second concerne la diffusion des résultats dans un contexte académique et auprès du grand public. Les recherches en cours mobilisent 14 chercheurs, en collaboration avec de nombreuses institutions publiques et privées.

RESUMEN

En el contexto de los estudios de postgrado en conservación de pinturas de la Escuela de Arte, Universidad Católica Portuguesa, fue posible desarrollar un proyecto de investigación específico a través del CITAR (siglas en portugués del Centro de Investigación de Ciencias y Tecnología de las Artes) dentro de la esfera del Marco Estratégico Nacional de Referencia (QREN, en sus siglas en portugués), a través del Programa Operativo Regional del Norte de Portugal, Área Prioritaria III: Valorización y Mejora Ambiental y Territorial (Patrimonio Cultural). El proyecto, que se inició en febrero de 2009 con el título "Materiales y técnicas de pintores del norte de Portugal" y tendrá una duración de dos años, consta de dos objetivos principales: el primero está enfocado en la investigación de los materiales y técnicas empleados por pintores seleccionados del norte de Portugal; el segundo está relacionado con la difusión de los resultados dentro de un contexto académico y entre el público general. Este proyecto continuo de investigación incluye a 14 investigadores y cuenta con colaboraciones de numerosas instituciones públicas y privadas.

public. Exhibitions, videos, workshops and seminars are therefore being developed for that purpose.

STAGES OF THE PROJECT

The project is divided into seven stages, some occurring in parallel, and others sequentially. The first is the identification of materials used by artists and the characterization of the techniques employed; the second part of the project consists in documenting the state of conservation of the objects. The following five stages support the dissemination of the results. The results will be presented in different formats in accordance with their target audience. Information will be shared in the form of presentations at national and international congresses, written articles for specialized reviews and the publication of a book. A website is planned as well as a DVD. Four thematic exhibitions and a large overall exhibition will present a summary of the findings. The workshops will allow for reconstructions to be made of two types of painting techniques studied. Finally, the results of the project will be shared with the cultural institutions of the region.

SCIENTIFIC METHODS AND TECHNIQUES AVAILABLE

Technical documentation has been made using normal light, ultraviolet and infrared radiation (photography and reflectography) and X-radiography. Analytical methods including optical microscopy, micro-chemical testing, energy dispersive X-ray fluorescence (EDXRF), scanning electron microscopy with an electron dispersion X-ray (SEM-EDX) and chromatographic techniques have been used.

A support team consisting of a chemist, photographer and radiologist has been put together to help the researchers who are working in conjunction with conservation specialists, chemists and art historians.¹

Due to the portability of the equipment being used, the majority of the artworks can be examined in situ. In some cases, however, they have been documented and studied at our facilities at the School of Arts in Oporto.

TECHNICAL ASPECTS OF THE PAINTINGS STUDIED

Portuguese paintings have their own stylistic aspects. Stylistic and material influences from the great international artistic centres are identifiable and include the influence of Flemish art from the Middle Ages, Italian Renaissance art and 19th-century French painting. One of the aspects investigated in the 16th-century works of art studied was how the presence of paintings and artists from other countries might influence the way the Portuguese painters worked.

There are Flemish paintings in the north of Portugal, imported during a period of intense maritime trade with Flanders, such as the *Triptych of Pentecost* in the church of San Pedro de Miragaia, in Oporto, an anonymous work which has been studied.

Its wooden support has been identified as Baltic oak and dendrochronology reveals that it might have been painted between 1512 and 1517. It has a ground of animal glue and calcium carbonate and an underdrawing. Slight stylistic and technical differences are noticeable among some of the painted areas, such as grisailles on a red background on the closed doors representing the Annunciation, and the figure of the donor on the central panel.

Some panel paintings by Vasco Fernandes, one of the most famous Portuguese painters of that time, also known as "Grão Vasco" have been studied. Research has focused on the wooden supports of some of the preserved panels that belonged to the major altarpiece in Lamego Cathedral and are now located in the museum of the same village. The participation of woodworkers and carvers from Flanders is known through documentation. However, some of the contract requirements were not carried out, as Baltic oak was replaced by the local chestnut wood, commonly found in Portuguese panel paintings. Through radiographic study, previously unknown aspects of the work have been discovered, including the probable original dimensions, assembly systems and some major substantial changes in the pictorial compositions (Salgueiro 2010a and 2010b).

In northern Portugal in the 16th century, a number of artists worked in association with important local workshops. Among these painters is Francisco Correia, who painted the altarpiece in the chapel of Alfaiates (Oporto) (Figure 1), the altarpiece of the main church in Azurara and the panel paintings of São Estevão (Valença do Minho). Through technical and material studies, progress is being made in characterizing the work of this artist and his workshop (Martins and Carballo 2010).

Many northern churches that combine tile decorations on the walls with large wooden ceilings with coffered panel paintings are dated to the 17th century. One of the most interesting examples is the ceiling decoration in the church of Salvador (Braga). In this case, the paintings depict biblical scenes. They are large compositions, executed to be seen from a distance. The wooden supports, consisting of multiple panels, are framed to hold them together. The whole set presents a strong wooden structure into which the paintings fit. These structures were more or less separated from the roof, leaving ventilation chambers and access to the back, thus facilitating cleaning and maintenance. The ground layers on the panels are thin and the paint layer is composed of inexpensive pigments and applied simply (Figure 2). The fact that the paintings were to be observed at a great distance influenced the working method (Rodrigues 2010).

In the late 17th century, there was a great change in Christian liturgy resulting in the construction of innovative altarpieces that reached their maximum expression in the 18th century. Carpentry workshops were very important in the region, so most of the existing altars were replaced or renewed by these new Baroque structures (Ferreira-Alves 2001). The altarpieces are made with a large central niche containing a stepped podium called a *trono* for the placement and exposure of the holy host at certain



Figure 1

General view of the altarpiece in the chapel of Alfaiates, Oporto

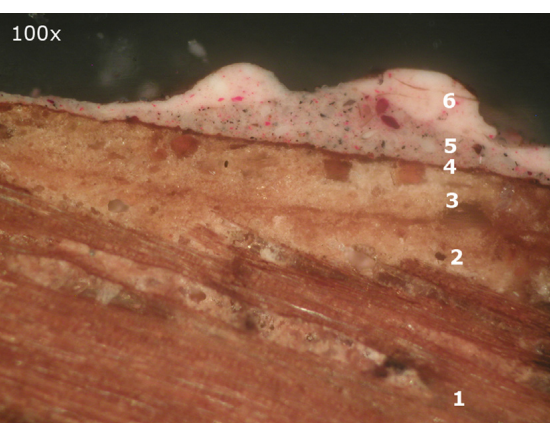


Figure 2

Cross-section of the flesh area in S. João Baptista. Panel ceiling decoration in the church of Salvador, Braga

times during the liturgical year. However, the rest of the time, this niche was covered by a painting. These are often large canvases that are rolled up at the top using a pulley system. Important artists, including João Glama Ströberlle and Pedro Alexandrino, painted these large works, which are under study to try and determine if the techniques the artists employed differ from those they used on traditional easel paintings (Figure 3). Special attention is being paid to the conservation issues manifested by these types of paintings (Pamplona and Veiga 2009).



Figure 3

Analysis by EDXRF of the rolled canvas *Visão de Santo Agostinho*, João Glama Ströberlle

Figure 4

Detail of the eyes with the paint layer split from the tin support. *Busto de António Soller*, Francisco José Resende

Figure 5

Radiography of *Tarde no campo*, Aurélia de Sousa

The 19th century is characterized by the introduction of new materials in the fine arts in Portugal (Santos 2009). The artists being studied from this period include Francisco José Resende, João Marques de Oliveira, Aurélia de Souza and Abel Salazar. In the case of José Resende, special attention was paid to his paintings on metal, specifically tin, because some examples presented serious conservation problems (Veiga 2010) (Figure 4). The works of Marques de Oliveira under investigation have been painted on cardboard and paper (Lopes 2010). Aurélia de Souza (Aguiar 2010) and Abel Salazar (Brito 2010) are being studied more extensively by examining works from different periods in their careers (Figures 5, 6 and 7).

Twentieth-century artists studied include Júlio Pomar (Cudell et al. 2010a), Albuquerque Mendes (Figure 8), Pedro Cabrita Reis (Cudell et al. 2010b) and Susana Bravo.

OUTCOME OF THE PROJECT

As the project has progressed, research has been presented at conferences and symposia, through oral presentations and posters, as well as in articles in technical journals. The *VII Jornadas de Arte and Ciência* presented partial results of the study at the School of Arts in June 2010.

A website was created to disseminate the goals and results of the project.² In the same context, a final DVD is being produced to disseminate the results obtained through a selection of particular works, illustrating the pertinence of study in the area of conservation. An explanatory discussion on the scope and utility of specific methods of examination and analysis is also presented. This film is now in its final phase, with the introduction of contemporary music corresponding to each period studied. Thirty-three thousand copies of the DVD will be distributed free of charge with a national newspaper in the north of Portugal, the targeted area.

In the final phase, several thematic exhibitions will be held at several of the museums and institutions that have collaborated in the project, as well as a large final exhibition summarizing all the subjects of research at the Catholic University of Oporto, scheduled for the first months of 2011.

At the same time, there will be two workshops on the reconstruction of particular painting techniques based on the data collected. A book summarizing the results of the project is being prepared in parallel with the exhibitions. Finally, it is envisaged that all participants and partners

will continue to discuss ways in which cultural and tourist organizations in the region can use the material obtained via this project.

CONCLUSION

The scope of each area of research will differ according to the academic degree to which it is related. The outcomes of this research project will constitute an important contribution to the knowledge and preservation of Portuguese heritage. The conclusion of this project is set for the beginning of 2011, but there is interest in continuing the research and the collaboration between the scientific community and museums or other institutions.

This project allows us to gain a deeper knowledge about paintings from the 16th to the 21st centuries, which includes material and technical studies in relation to conservation issues.

A major effort has been made to share the results of the various research projects with specialists and the general public.

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NOTES

¹ The general coordinators of the project are: Ana Calvo and Maria Aguiar. The scientific coordinators are: Jorgelina Carballo (methods of examination and analysis), Gonçalo de Vasconcelos e Sousa (history of art) and Luís Teixeira (digital arts). Liaison between the digital arts team and researchers is handled by Carolina Barata. The conservation researchers are Ana Brito, Ana Cudell, Ana Rita Rodrigues, António Pamplona, Carla Ferreira, Carla Tavares, Joana Salgueiro, Jorgelina Carballo, Maria Aguiar, Nicole Marques, Sofia Martins and Sónia Santos. They are supported by Sandra Saraiva (chemist), Luís Ribeiro (photographer), Vítor Teixeira, José Ferrão Afonso and Laura Castro (art historians), and Arlindo Silva (painter).

² <http://citar.artes.ucp.pt/mtpnp>.

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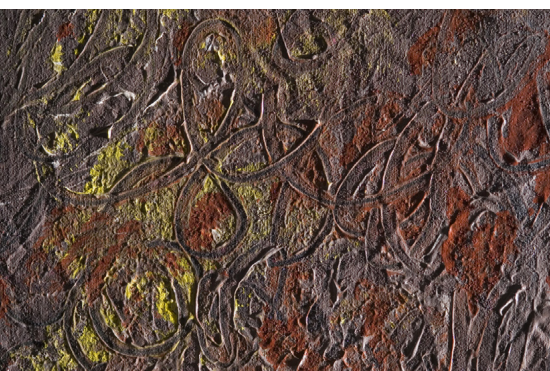
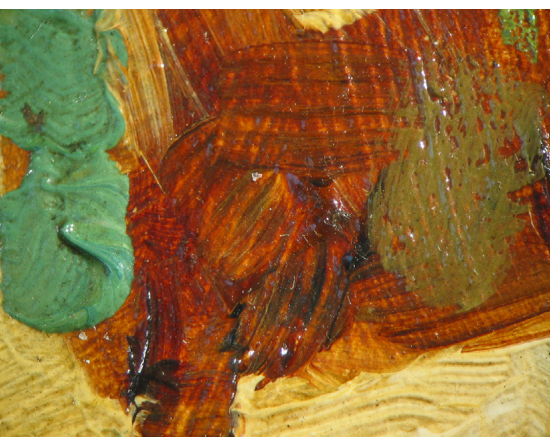


Figure 6

Photomicrograph of the paint layer.
Balaustrada na Quinta da China, Aurélia de Sousa

Figure 7

Digital IR photography. *Mercado da Ribeira*, Abel Salazar

Figure 8

Detail in raking light. *Hollywood*, Alburquerque Mendes

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