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EU-ARTECH: Access Research and Technology for the Conservation of the European Cultural Heritage

Science is important in the conservation of paintings, sculptures and other works of art. Sophisticated instruments allow conservators and restorers to identify the materials and methods used by the original artist, while modern materials and test methods ensure that work done today respects the principles of durability and compatibility. The EU-ARTECH project has brought together 12 of Europe's leading art conservation bodies. The project has provided transnational access to relevant fixed and mobile laboratories in France and Italy, and developed standardised and innovative techniques for analysis and conservation.

● CONSERVATION AND RESTORATION

Historical artefacts and works of art deteriorate over time because of exchange of energy and matter interactions with the surrounding environment. These processes are complex from a chemical-physical point of view and can lead to changes in the original appearance of an object, as well as to weakened structures, corrosions and other alterations that - without any conservation to stop or slow down the degradation - could lead to it being lost completely.

Carrying out conservation and restoration first of all involves recognising a work of art as a physical object possessing both aesthetic and historical value. This is followed by work (such as cleaning, consolidation and protection) that is based on full respect for the original work of art in its historical context, on the principle of the reversibility of any intervention, and on the stability and safety of the materials used.

Scientific research makes a significant contribution to the conservation of our heritage. Several methods are used to explore the bulk, microscopic and surface properties of artefacts, including both traditional and advanced analytical techniques. The works studied include paintings, sculptures, metal works, ceramics, manuscripts, printed books and archaeological items.

Before a piece is restored, conservators use scientific investigations to learn about the materials and techniques used

to create it. This allows them to make sure that they use materials that are compatible with the originals and that the intervention is effective and durable. Other investigations include the study of alterations and their origin, the identification of previous restorations, and assignment of provenance or dating. Science is also used to develop and test new conservation methods and to create innovative diagnostic tools. All these studies are by their nature multidisciplinary, bringing together specialists from the arts and the sciences to exchange ideas and develop creative and sustainable solutions.

To promote the application of best practices in the conservation of Europe's cultural heritage and to develop new methods, the EU-ARTECH project has brought together 12 prominent European institutions in a programme that covers networking, transnational access and joint research.

Networking activities have been developed to achieve a permanent interoperability among the European institutions of the EU-ARTECH consortium and those external to it. This has facilitated discussions among scientists on the use of analytical resources and on conservation methods, leading to proposals for protocols on material studies with a view to meaningful comparisons of results and promoting the adoption of common strategies.

● ANALYSIS AND RESEARCH

Transnational access has been offered to European researchers to fixed (AGLAE) and mobile (MOLAB) facilities. The service has allowed users to carry out their work in the best possible conditions, either in the laboratory or in situ (i.e. at the site where the work of art is located or exhibited), taking innovative and multi-technique measurements.

Through the AGLAE facility (Accelérateur Grand Louvre d'Analyse Elementaire) in the Palais du Louvre, users have been able to carry out non-destructive investigations of precious objects such as necklaces and earrings belonging to Egyptian mummies, mosaic tiles from S.Marco in Venezia, Limoges enamels, Byzantine coins, filigrane glass, ancient ceramics and many others. More than 50 projects have been carried out and in all cases relevant results were obtained concerning execution techniques, provenance of materials and authentication.

Through MOLAB, users have had access to a unique set of mobile equipment, which has made it possible to carry out on-site multi-technique measurements with no sampling of and no contact with the artwork. Studies have been carried out on ancient and modern paintings such as those by da Vinci at the National Gallery in London and the Hermitage Museum in St Petersburg, by Caravaggio at the Gemäldegalerie in Berlin, by Memling at the Royal Museum in Antwerp, by Cézanne and

Renoir at the Courtauld Institute of Art in London, by Rothko at the Tate Modern also in London, and many others. There have also been studies of precious ancient manuscripts such as the Book of Kells at Trinity College Dublin and the Gospel Books at the Putna Museum in Romania, and even of precious historical objects such as ceramics at the V&A Museum in London and Stradivarius and Guarneri violins in Paris. Some 26 interventions have been carried out and information relevant for the study and conservation of the artworks has been obtained.

In all cases, through AGLAE and MOLAB facilities, studies otherwise impossible for the users have been performed. Users have had a diverse profile including scientists, conservators, art historians and archaeologists, drawn from many different countries.

EU-ARTECH's joint research activities have been focused on defining the advantages and the limitations of organic and inorganic treatments for the protection of outdoor stone and bronze monuments and on setting up new instruments and methodologies for innovative in-situ non-invasive measurements. The results obtained to date are clearly encouraging the use of new methodologies in conservation, and point to exciting prospects in future for new applications of imaging and spectroscopy techniques.

● ACCESS RESEARCH AND TECHNOLOGY FOR THE CONSERVATION OF THE EUROPEAN CULTURAL HERITAGE IN SUMMARY

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