

# TECHNOLOGY LINKS PAST AND FUTURE

By Giorgio Di Marzo

*"**Cultural heritage** is the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations."*

I would like to start off from this definition of cultural heritage by Wikipedia which, for the few that may not know, is the free encyclopaedia on the web, hence a way of preserving culture through technology.

And the connection between cultural heritage and technology was the topic of a two-day seminar on 1<sup>st</sup> and 2<sup>nd</sup> October 2008, organised in Oxford by the Italian Embassy in London and by the Italian Studies at Oxford in collaboration with the History of Art Department of the University of Oxford and the Oxford e-Research Centre, by the title "Technologies for Cultural Heritage: Leonardo and Beyond", introduced by Prof. Roberto Amendolia, scientific attaché of the Italian Embassy in London, and Prof. Martin McLaughlin, Fiat-Serena Professor of Italian Studies, with the keynote speech by Prof. Martin Kemp, Professor in the History of Art at Oxford University and one of the greatest expert on Leonardo.

Three main points were discussed: the technologies involved, the public engagement, the education. As to the technologies, it is important to highlight that this field is definitely work-in-progress for one reason: technology always evolves. But there is also another reason, which undermines all the efforts: funds always shrinks. It seems to be a law of physics, or maybe one of Murphy's laws, especially because a country like Italy should invest in its past as it represents its future. Instead, as everybody knows, investing in research, art and history is considered by politicians, not just in Italy, as a low priority policy. Luckily something happens, even without a strong helping hand from the governments, and nowadays we can see how different institutions in different countries collaborate in

order to develop and apply different research areas and technologies to common problems like the protection of the cultural heritage. Chemistry, physics, computer sciences, Earth sciences, biology and their associated technologies have become crucially important to study and preserve cultural heritage. In particular, the main role of physics is diagnostic, as it is non-invasive or micro-invasive. This involves all the latest cutting-edge technologies such as the laser cleaning of surfaces; thermoluminescence, optical stimulated luminescence and radio carbon dating; authenticity test; ion beam analysis. It is to note that Italy and the UK have been at the forefront of the development of these techniques for cultural heritage which allow the researchers, for example, "to see" the different layers of a painting to tell not just its authenticity and dating but as well any changes, like in the Madonna dei Fusi by Leonardo da Vinci through the infrareds, or, as another example related to parchments, "to read" the Dead Sea Scrolls without opening them through the X-ray tomography.

The second topic related the public engagement. It is important to keep in mind how the research in the field of cultural heritage has to be related to the way the public, the museum goers, experience exhibitions and museums. Through the use of technology, such as in the exhibition at the Victoria & Albert Museum "Leonardo da Vinci: Experience, Experiment, Design", some works by Leonardo were brought to life by the team led by Prof. Kemp thanks to animations for a more involving experience for the public. For an example of the animation [click here](#).

Prof. Martin Kemp was involved, too, in the making of the CD "Leonardo da Vinci", commissioned by Bill Gates after he bought the Codex Leicester (for \$30.8 million). One of the most fascinating aspects of the CD-ROM is the creation of the Codescope<sup>[tm]</sup>, a unique viewing and translation tool designed by Corbis whereby users are able to translate the Codex Leicester into Italian or English, and allowing the reversal of the trademark da Vinci mirror writing associated with Leonardo's sketchbooks.

The importance of improving and extending the public's experience is well understood in Italy, too, in fact Dr. Antonella Guidazzoli from CINECA introduced the Interactive Virtual Environments, a complex

simulation which involves the building of a virtual digital scenario, the validation and certification for the related information, the design of an interactive interface.

Prof. Bruno Ricco' of the Universita' di Bologna has instead pointed out the importance of the services required by the public, for which Italy has a negative record compared to other countries. His idea is to use the mobile phones as the only device to get information both outside – for example how to get to the museum and an overview of what to see – and inside a museum. The technology is there, but not the system yet.

The seminar ended with a close-up on the educational system in Italy related to the cultural heritage, and the call for a new, interdisciplinary approach to the topic.

Personally I do think that researchers and scholars, especially when they exchange information, can do more to art and culture than politics, hence any seminar like this has to be encouraged as it is an example that science and art, scholars and general public, can get along and have the same aim.

The seminar has been patronised by the Italian Opificio delle Pietre Dure and sponsored by Microsoft Research.

*For further information:*

*Italian Studies at Oxford:* [www.italianstudies.ox.ac.uk](http://www.italianstudies.ox.ac.uk)

*Opificio delle Pietre Dure:* [www.opificiodellepietredure.it](http://www.opificiodellepietredure.it)