

3rd International Conference on Innovation in Art Research and Technology – INART 2018

Parma, Italy



<http://www.inart2018.unipr.it/>

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WELCOME REMARKS

The 3rd International Conference on Innovation in Art Research and Technology takes place in Parma, on March 26-29, 2018.

The Conference scope is to create a bridge of communication between interdisciplinary units in the field of archaeometry. It took several years for the scientific and art historical knowledge to be brought together and establish a new era on approaching preservation of cultural heritage. Nowadays, the contribution of natural sciences to characterize and document artistic materials is well known. Generally, these applied sciences, especially physics and chemistry, contribute to a deeper understanding of cultural heritage artefacts and shed light on different aspects related to the origin of the work of art or its chronology.

The topics to be addressed within the conference sessions are (amongst others):

New technological developments

In vitro experimental set-ups and degradation mechanisms

In situ experiments and mobile instrumentation

The need on non-invasive and non-destructive analysis

Imaging techniques

Environmental issues on the preservation of art and archaeological objects

Special Focus on Contemporary Art

Danilo Bersani

Chair, Local Organizing Committee INART 2018

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PROGRAM AT A GLANCE

Monday 26		Tuesday 27		Wednesday 28		Thursday 29	
		9.00	Invited Talk 3: L. Burgio	9.00	Scientific Session 7 Contemporary art	9.00	Scientific Session 8 Museums and databases
9.30	Autorities Speech	9.40	Scientific Session 4 Non -invasive				
10	Invited Talk 1: M. J. Mosquera						
10.40	Scient. Session 1 Pigments	10.40					
11.00	<i>Coffee Break</i>	11.00	<i>Coffee Break</i>	11.00	<i>Bus to CSAC</i>	11.00	<i>Coffee Break</i>
11.30	Scientific Session 1 Pigments	11.30	Scientific Session 4 Non-invasive	11.30	<i>CSAC visit</i>	11.30	Scientific Session 9 Textile and paper
13.10	<i>Lunch</i>	13.10	<i>Lunch</i>	12.50	<i>Lunch</i>	13.10	Conclusions
14.30	Invited Talk 2: F. Fernandez	14.30	Scientific Session 5 Imaging	14.30	<i>Social Excursion: Torrechiara Castle + Ariola</i>	13.30	End
15.10	Scientific Session 2 Inorganic						
16.30	<i>Coffee Break</i>					15.50	<i>Coffee Break</i>
17.00	Scientific Session 3 Dating	16.20	Scientific Session 6 Middle and Far East				
17.40	End	17.40	Poster Session				
				18.30	<i>Come back</i>		
19.00	<i>Welcome Cocktail</i>	18.40	End				
				20.00	<i>Social Dinner</i>		

comparative analysis with the gathered reference data. The developed spectral database based on the fully documented copal resin samples originated from the collection of the Polish Academy of Sciences Museum of the Earth in Warsaw.



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ABSTRACT O.5.2

X-RAY IMAGING FOR CONTEMPORARY ART: "PAOLO E FRANCESCA" BY G. PREVIATI (FERRARA, 1909)

[Impallaria A.](#)^[1], [Gollini G.](#)^[2], [Tisato F.](#)^[1], [Petrucci F.](#)^[1], [Evangelisti F.](#)^[3], [Squerzanti S.](#)^[3]

Keywords: Radiography, Contemporary Art, scanner, X-rays, image processing

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X-ray radiography provides information about the conservation state, the artistic technique and the presence of pentimenti or paintings underlying the visible one [1]. In recent times, the introduction of organic pigments and artistic materials with low Z elements has limited the use of radiography: the

possibility to see something related to the pictorial layer is lower, due to the less radiopacity of the materials employed [2].

However, in some cases, X-ray radiography can be helpful also for modern and contemporary art, not only for restoration purposes. It's the case of "Paolo e Francesca", depicted in 1909 by Gaetano Previati, the most important Italian divisionist artist. The canvas of big dimensions (2.60 x 2.30 m²) represents the two protagonists embraced in the whirl of the hell, described by Dante in the Canto V of the Divine Comedy. The request for the whole radiography has come for restoration purposes, in order to prepare the work of art for the exhibition in Ferrara in March 2018 [3].

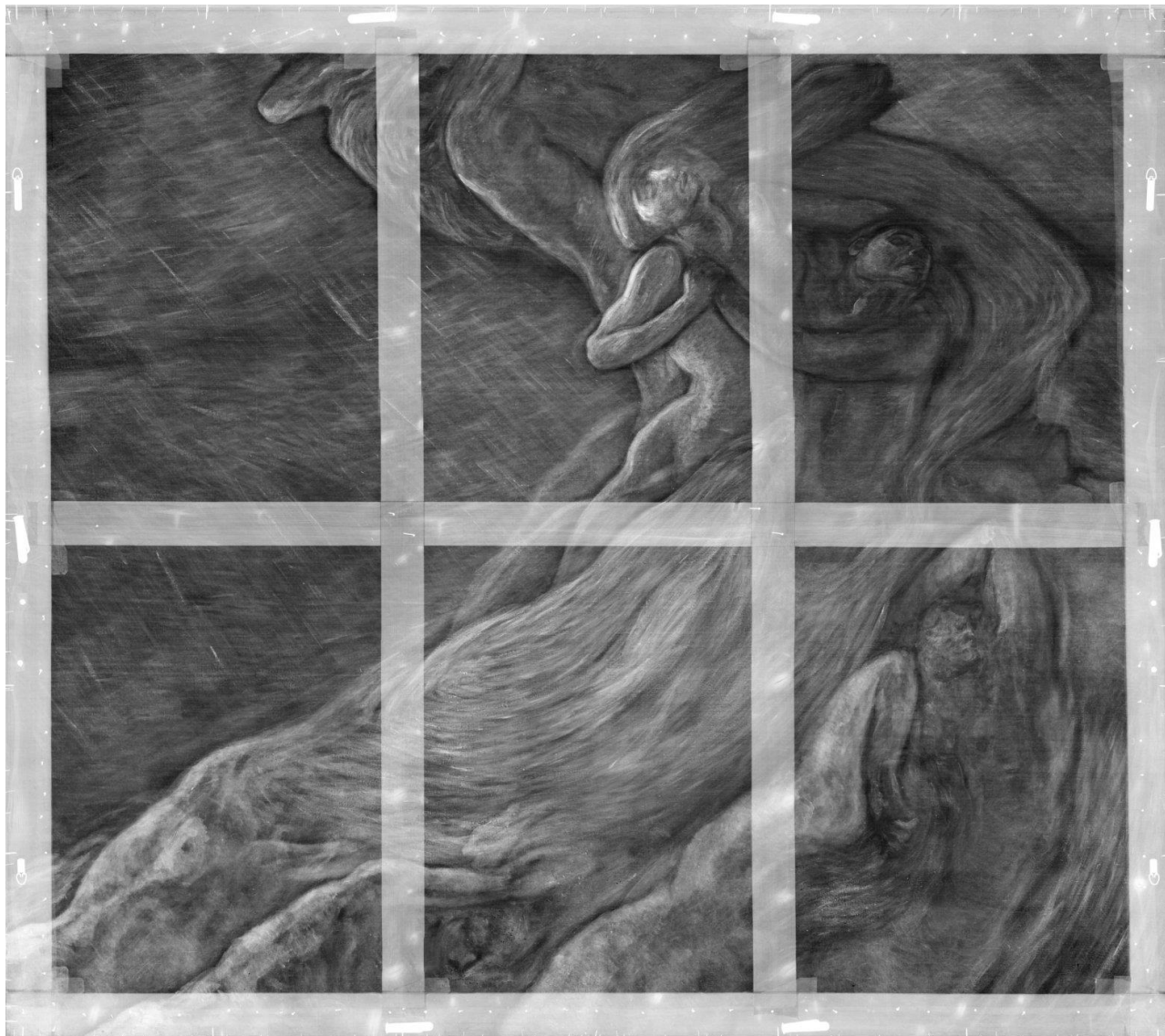
The digital radiography of the painting has been performed directly in situ, by means of the portable radiographic scanner developed at the University of Ferrara [4]. The scanner is composed of two units, one dedicated to the digital detector and one to the X-ray source. It is easy transportable, thanks to its dimensions (1.40 x 1.53 x 0.74 m) and weight (55 kg each unit), and scans an area of 1 m². However, it is possible to get the whole size radiography of paintings of any dimension, because there are no mechanical bound between the two units. Furthermore, the radiographic scanner is very adaptable: for "Paolo e Francesca" only the detector stage has been used, placing it in front of a new X-ray tube not yet included in the other stage. The detector moved in order to scan an area (74 x 94 cm² or 74 x 63 cm²) of the canvas, while the X-ray tube was stationary, illuminating the same area.

To collect all the radiographic images needed to reconstruct the whole painting (1137), the acquisition has been divided in 12 squares (108 or 72 images per square): 3 rows and 4 columns. For the acquisition of the images of the central row, the detector unit and the X-ray tube have been lifted.

The digital detector (a CMOS matrix of photodiodes coupled with a scintillator screen, 1024 x 1000 pixel, 96 µm side) allows the immediate control of the images setting the best parameters of exposure. Then, the depth of digitization at 12 bit/pixel involves a huge range of grey levels, which means more information achieved than films or fluorescent screens. Finally, the digital correction of images gives more uniformity in the final radiographic images, eliminating the contribution of the uneven irradiation in different areas of the paintings. Furthermore, no segmentation is visible thanks to the digital stitching between the images.

But the biggest advantage of the digital images is that they can be processed in order to eliminate the contributions of stretchers on canvas paintings, which can make the radiography not easy to read [2] [5]. Having digital images with such a huge range of grey levels allows to choose the best contrast for the wooden areas, similar to the canvas ones, with no loss of information and with no counterfeit. The whole radiography of the Previati's painting has been corrected in this way and the read ability of the radiographic pictorial layer is improved.

The final radiography of "Paolo e Francesca" revealed a lot of pentimenti, through all the scene. Looking at the radiography, it's possible to see the former edition depicted by Previati of "Paolo e Francesca", so reconstructing the evolution of the artist's creativity.



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