COHERENT METROLOGY IN IMPACT ASSESSMENT OF MOVABLE ARTWORK: THE MULTIENCODE PROJECT

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1. Abstract

Europe's works of art are the lifeblood of Europe's cultural heritage. Museums put them on display and, increasingly, loan them out to other institutions. However, repeated handling, the need for conservation treatments, and exposure to sudden environmental and climatic changes can all take their toll on old or delicate objects. Art in transit is also under threat from mishandling and fraud. Conservators need to monitor the condition of artwork in a way that responds to these issues. The MultiEncode project creates this new approach to monitoring the condition of artwork. It introduces an innovative method and tool which allows conservators to assess the conservation state of an object and the need for any treatment; illustrate new damage; monitor the impact of transport; and confirm a piece's authenticity. Distinct features of an artwork are encoded with undisclosed information that will be used to assess the impact of handling, treatment, and authentication of an object in the future.

2. Introduction

Ever since the invention of lasers and optical coherent techniques as non-perturbing tools, they have maintained a competitive profile towards modern applications in art conservation1-6. A thorough presentation of these techniques is not among the priorities and the context of this paper, however, a short description of the advantages offered include the non-contact nature of the laser source used to produce the signal of interest, a non-destructive approach in procedures including an examination process free of sampling or artwork preparation and the use of non-deleterious procedures throughout the examination of the artwork in terms of intensity and power of the pump and probe beams6. Therefore, ethical parameters essential for safe art handling during examination are satisfied with optical coherent inspection, and this inspection is independent of the exact geometry setup7. A recent demand that has emerged from the increased interest and transport of cultural objects forces the conservation community to seek special methods, strategies, and eventually instruments capable of performing repeated assessments of handling, transportation, climate, and restoration effects. This demand is the reason why the MultiEncode project was formed—to introduce a new overall approach towards information retrieval and archiving the assessment of an artwork throughout its entire life to safeguard it for future generations. The key word is inspection; the encoding of distinct features invisible to the human eye and to analytical tools but visible to specialized laser interference techniques. A specially-developed procedure of repeated inspection over time has been developed as has software to handle the data and process the information in a portable, user-friendly, system. The results have successfully proven this instrumental approach and it has been named as an Impact Assessment Procedure. The field of applications is broad and may expand to routine monitoring of indoor and outdoor cultural treasures as well as to periodic assessment of collection maintenance, loan constraints and in planning environmental storage, display, or shipping strategies.

3. References

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