



The HERACLES approach for setting the guidelines for predictive and cost-effective monitoring of Cultural Heritage built monuments

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The interaction between monuments and their surrounding environment significantly affects their preservation state. For Cultural Heritage (CH) monuments, the risk analysis investigates how a factor (environmental, socio-economical, etc.) can cause alteration to the value and integrity of the CH asset, manifested in different forms especially in Climate Change crisis events. The understanding and monitoring of the surroundings of a monument in terms of significance, climate and environment, with the aim to clearly identify the origin of any alteration before applying any treatment, is becoming the current concept for the protection and safeguarding of CH.

This work identifies a methodological approach and the related guidelines for predictive and cost-effective monitoring of the alterations observed on a CH monument in correlations to its surroundings. Systematic monitoring protocols and conservation-restoration actions for CH are initially discussed in their general context and in accordance with the international as well as national, legislation. Subsequently the specific needs for conservation-restoration (C-R) actions are set. As case study areas, the HERACLES test-beds, namely the Town Walls and Consoli Palace in Gubbio and the Palace of Knossos and the Venetian Sea fortress of Koules in Heraklion, are been discussed.

The objective was to design a general methodology that can be part of the regular monitoring for the condition/preservation state of built CH. It can lead in the classification of damage or decay and therefore help in prioritizing the need for C-R actions. In particular, protocols are defined in the form of checklists, with the aim to estimate and classify the evidenced damage and decay, in correlation with the factors of alteration. The aim is to be incorporated in the HERACLES platform, which will enable the production of reports according to the needs and specificity of each monument/ structure/ material, supporting the total management cycle, ranging from the initial evaluation of the condition of the monument to the specific maintenance and preservation actions. The proposed methodology can be used as a tool for: a) collecting information about a monument and its surrounding environment through an organized and systematic methodology for monitoring its condition, b) correlate the alteration factors to observed alteration and estimate, or even predict, future damage or decay and therefore help in prioritizing intervention for the maintenance and preservation of the CH monument, and c) help in suggesting preventing actions, directed to the monuments surroundings, in order to prevent or mitigate future damage or decay.