Preventive conservation research: a scan of all risks for the casket, the QuiskScan© to prevent future loss of value

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The casket for the crown reliquary of Holy Thorns was transferred to KIK-IRPA to establish its condition and preform an in-depth preliminary investigation, in the light of a conservation treatment. The object, composed of different materials, showed degradation due to the different responses of these materials to atmospheric fluctuations (of relative humidity and temperature).

On this occasion, the casket, as a remarkable historical multi-material artefact, came to the attention of the ArtGarden - researchers. The ArtGarden project focusses indeed on preventive conservation of historical mixed-media objects and expressed the wish to integrate this fascinating object as a case-study.

Parallel to the trajectory of the research and conservation of the casket by the multidisciplinary team of KIK-IRPA and fellow conservators, the ArtGarden project extended the research to the analysis of the conservation environment of the casket and the possible consequences for interactions of the different materials within the object.

Within the same ArtGarden, the online tool AGATO is developed to assist the decision-making for preventive conservation of historical composite artefacts. This instrument is to provide an automated risk assessment based on both information on object and its environment. To put this tool to the test and refine its functionality, it was decided to carry out a risk analysis in situ, in the Musée Diocésain de Namur.

The QuiskScan method[1], generally used to get a better overview and understanding of the risks to which an entire collection is exposed, was chosen and exceptionally applied to one object only, in this case, the casket. Its results indicate which risks merit attention and may help to prioritize mitigation actions to take.

In close collaboration with the museum, the different steps of the QuiskScan were executed to map the exhibition environment of the object. To obtain a complete overview of the situation, all of the 10 agents of deterioration are taken into account: physical forces, incorrect temperature, incorrect relative humidity, fire, water, biological agents, light (and UV and IR radiation), theft and vandalism, dissociation and pollution.

During a QuiskScan, the characterization of the collection is the core of the overall process. It involves the division of the collection into subcollections by different types of museum objects based on the different materials and their specific vulnerability. In the next step, their relative value is defined in relation to the other subcollections. Then, all risks are analyzed for each subcollection. In order to do this, the vulnerability of each subcollection for any of the 10 agents of deterioration is evaluated and the exposure of the subcollection to any of the 10 agents of deterioration is determined. Together, these two parameters contribute to formulate the risk level. Ultimately, they are combined with all assembled data to understand where the risk of loss of value is the biggest in the collection and how much of the collection would be lost in that case.

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[1] Brokerhof, A. W. and A. E. Bülow, The QuiskScan - a Quick Risk Scan to Identify Value and Hazards in a Collection, in Journal of the Institute of Conservation, 2016, 39 (1), 18–28.

The assembling of the data necessary to perform a QuiskScan calls for an important dialogue with the museum. During a first visit on site, merely 125 questions where addressed to the conservator to draw the context on possible risks linked to the daily management of the collection, the equipment of the museum and its building. This interview was accompanied by an extensive documentation campaign. The exhibition room of the casket was photographed, and its floorplan was drawn. The room, all fixtures, the exhibition furniture, the technical equipment and location of the collection and subcollection were indicated. In an additional layer, the exposition to risks linked with each agent of deterioration was mapped.
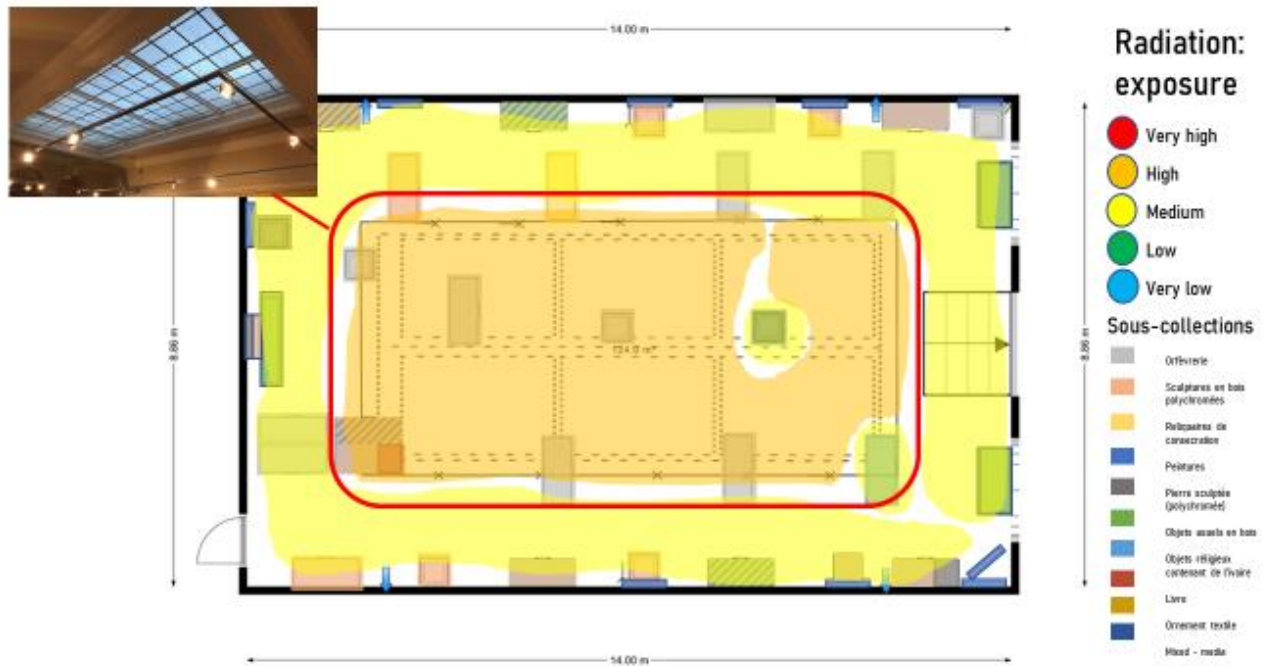
A modest measuring campaign was set up to support and complete the date gathered during the interview. A datalogger registered both temperature and relative humidity inside and outside the display case of the casket. A second datalogger was installed to measure light and UV radiation. Punctual measurements of light and UV-radiation were systematically taken on the occasion of two different visits.

Couverture en textile

The results of the QuiskScan finally allowed to put former concerns into perspective and focus attention to more pressing issues. Light intensity, for instance, didn't proof to be a major concern. Although the glass roof allows for the daylight to enter the whole room, the light- and UV-values measured, turned out lower than expected, even when measurements were taken on bright days. A closer look to the orientation of the room and the adjacent cathedral eventually learned that during most of the time, the cathedral casts its shadow over the glass roof, and sunlight does not directly reaches the exhibition room.

Mesures de la lumière et des rayons UV en vitrine

A partir du 27/01 : mesures SANS la cloche de plexiglas ;
A partir du 04/02 : AVEC la cloche de plexi ET un tissu qui couvre le dessus de la cloche ;
Vers le 10-11 /02 : neige. Couverture neigeuse sur la grande baie vitrée du toit.
A partir du 11/02 : cloche SANS tissu de couverture ;
A partir du 19/02 : cloche AVEC tissu de couverture.

Continual measurement of light- and UV-radiation permitted to better appreciate the effects of a basic mitigation action that was put in place. In an attempt to protect the casket from light induced damage, a square veil of dark cloth was put as a cover on top of the display case. The sides of the showcase remained unprotected. The data clearly showed that with the textile cover light levels were sufficiently reduced to obtain a safe environment for the casket during the period of the

measuring campaign. Surprisingly, the data allowed to see that an unexpected cover of snow on the glass roof was almost as efficient in keeping out harming light levels. Here, the analysis of light and UV-radiation was singled out, but all other risks linked to the agents of deterioration where equally considered and analyzed one by one.

The whole analysis pondering all risks against each other, provided a reliable reference to test the functionality of AGATO. The automated analysis should ultimately grant its user the same risk ranking and allow guidance when it comes to taking decisions on the preventive conservation of an historic mixed media artefact like the highly valuable casket for the crown reliquary of Holy Thorns.