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PREVENTIVE CONSERVATION

Preservation of mixed-media objects: An online decision-support tool

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The Mechelen City Museum in Belgium preserves seven medieval Enclosed Gardens. They are wooden retable cabinets with virtually countless little elements composed of a multitude of materials in complex configurations: brass and silk flowers, glass and brass berries, polychrome wooden statuettes, paper banderoles, etc. These extraordinary Belgian heritage artifacts were the starting point for the network project ArtGarden (Art Technical Research and Preservation of Historical Mixed-Media Ensembles: "Enclosed Gardens"). The ArtGarden team comprises art historians, conservators, and conservation scientists who delve into the multifaceted process of safeguarding and enabling the sustainable use of each Enclosed Garden. One part of the project focuses on the conservation treatment, supported by advanced imaging techniques, laboratory analyses, and art historical research (see the article by Watteeuw et al., Textiles WG, in this publication). Another part tackles preventive conservation issues. For complex objects like these, the choice of preventive conservation measures is not straightforward. Therefore, the project partners have developed an online decision-support tool to help heritage caretakers make more knowledgeable decisions. This tool aims at wider applicability to cover historical mixed-media objects in general. Content, language, illustrations, and interface design have been conceived to be user-friendly and match the target audience of heritage caretakers. The tool guides the user through the three main elements: (1) user input, (2) knowledge base, and (3) output. User input consists of identifying the materials present in the object and their ranking according to relative occurrence or significance. Subsequently, the user specifies how the different materials co-occur in the object, as some of them can physically or chemically interact and cause damage. The user then scores the condition of the materials individually and in their existing pairwise combinations using a verbal scale (good, fair, poor). Finally, the user identifies potentially dangerous factors in the immediate environment of the object by filling in a simple questionnaire with Yes/No questions covering all ten agents of deterioration. This input is used to search the tool's knowledge base for relevant information on material–environment and material–material interactions that might damage the object. The knowledge base consists of information from three main sources: field research (systematic documentation of mixed-media objects), technical and scientific literature, and laboratory experiments performed during the project. The output consists of a series of standardized warnings with illustrated examples, references, and recommendations for risk reduction. To assist the user in prioritizing their actions towards the most problematic agent and/or material (combination), an internal algorithm ranks the agents of deterioration and the materials present from highest to lowest risk based on the relative vulnerability of every material to each of the agents of deterioration to which it is currently exposed. This approach is based on comprehensive risk analysis principles applied to individual objects.