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ASSESSMENT METHODS FOR COLLECTIONS: COMPARATIVE AND TEST STUDY TOWARD THEIR APPLICATION TO EXHIBITED COLLECTIONS OF HISTORICAL HOUSES AND CASTLE-MUSEUMS EPICO Research Program

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SUMMARY

The first phase of the EPICO program, closed in 2015, provides an update on the different methods available to carry out an assessment of the state and the conditions of the preservation of the collections. Two approaches are most commonly used in European and international heritage institutions: assessment based on the condition report of the collections, a method taught to the students of the Paris 1 master since its inception, and risks assessment, particularly developed by the ICC - Canadian Conservation Institute and circulated through ICCROM since 2005.

Is the condition report of the collections an adequate basis to establish a preventive conservation plan? Does risks assessment reflect the real condition of the collections? Which of these two methods makes it possible to have a global and exhaustive view of a house without carrying out a complete and therefore time-consuming census of all the objects and decorations? The two approaches are valid, a cross-fertilisation between the two seems finally possible and tests in this direction have already been made.

The purpose of our research is to answer these questions, Trying to find the method best adapted to the specificities of the collections of historical houses that are open to the public.

KEYWORDS

Historical houses; preventive conservation; condition report of the collections; assessment of preservation conditions; causal relationship; conservation of cultural heritage.

INTRODUCTION

The interiors of historical houses and their collections of furniture, artworks, paintings, sculptures and textiles are subject to specific conservation conditions. These conditions are linked to the particularity of the presentation of the artworks and of the building that shelters them. Actually, the cultural heritage of these historical houses escapes any thematic order because they are exhibited according to the use for which they were conceived, part of an indissociable ensemble between collections and decors. A thematic order would allow the realisation of museography equipment designed for the preventive conservation of the collections.

How can we effectively evaluate the needs in terms of preventive conservation of collections in such a specific context as that of the historic house or the royal residence? It was in the context of such reflections that the Château de Versailles and its Research Center decided to devote a research program dedicated to this specific issue.

The EPICO¹ research program - European Protocol in Preventive Conservation - inaugurated in December 2014, led by the Château de Versailles, directed by the Institution's scientific and cultural program and part of the research approach of the Château de Versailles research centre for the next three years. Our team, constituted of three people in Versailles, can count on the help from two partners that are very involved in preventive conservation of historical houses, the La Venaria Reale Centre for Conservation and Restoration Foundation (Turin, Italy) and the King Jan III Palace Museum in Wilanów (Warsaw, Poland). The ARRE, the Association of Royal European Residences, which is also a partner of the project, broadcasts the program's results to other residencies.

Our research arises from the analysis of the absence of a real assessment methodology of the collection's state and conservation conditions applied to cultural heritage exhibited in historical houses and castle/museums, which is able to satisfy a systemic approach, that is reproducible and transferable to other houses, whatever their size. The research aims to supply a work tool to the teams in charge of preventive conservation, in order to easily extract the priorities and the actions to be led so as to eliminate the active deterioration causes and prevent the risks linked to the exhibition in the rooms and to different types of activities present today in the historical houses. The first research phase (2015) focused on the different assessment methods of the existent collections (Forleo et al 2017). The second phase (2016) was devoted to testing the methods that were taken on, following the objectives of the EPICO, whose first results are presented here.

COLLECTIONS ASSESSMENT: TEACHINGS, PRINCIPLES, AND APPLICATIONS

The assessment of the collections, their state and their conservation conditions, are placed at the heart of the teachings of the Paris 1 Panthéon-Sorbonne University's Preventive Conservation Master. It is focused on learning to look, not just at the individual object, but at the entire collection, taking a step back so as to get an overview of the state of the artworks, the exploitation conditions and the flaws that could have caused or are likely to cause damages or losses.

Our research arises from the field, the collection registration department represents a privileged point of view to observe and to try to resolve preservation problems. In a huge institution, a question remains: where must we direct our first look ?

The statistical method proves to be necessary when there are too many objects making an item to item census approach very difficult. Nevertheless, if this method adapts perfectly to a storage

assessment, where the items are, in theory, assembled by homogeneous categories, this approach has proved to be more difficult to apply to the rooms of a house: the diversity of the collections, the presence of the decorations, themselves a collection, would entail a very close sampling, the price of the representativity of the statistical profile would be too costly in terms of time.

It is from these observations that Bianca Fossà, a conservator from the ISCR – Istituto Superiore Centrale del Restauro – in Rome and teacher in the Paris 1 master, produced her method of « pilot inspection » preliminary to the actual assessment, which is necessary to understand how to approach in a statistical way a very heterogeneous collection. Cluster sampling (Giommi 2009), a technique that stems from the field of demographic studies, is used to identify sample objects, which are representative of their location in the assessed spaces.

Other methods have also been tested, like the zoning method devised by the ICCROM (Centre international d'études pour la conservation et la restauration des biens culturels) as part of climate management training in museums (De Guichen et al 1997). In this case, a calculation system that assesses the influence of the exterior climate on the collections environment according to the characteristics of the architectural sheath, identifies the rooms that are the more at risk. The inspection method applied to the Château de Chantilly by Agnoko-Michelle Gunn as part of her dissertation for her master in preventive conservation uses this kind of zoning as a starting point (Gunn 2001).

The different inspection approaches, that determine on which items or rooms we must perform our assessment, echo the different approaches and operational modes that define the way of collecting data during the successive stages of the assessment.

THE COLLECTIONS CONDITION REPORT AND RISKS ASSESSMENT: PAST, PRESENT AND FUTURE IN THE ASSESSMENT OF COLLECTIONS

The approach based on the observation of the collections that is being taught to our students in the Paris 1 master considers the condition report an indispensable tool, be it in a systematic way or on a statistical basis, be it detailed or synthetic. All the students have done the exercise of creating their own condition report form according to the objectives of the assessment. The sanitary check is the pivot on which the collection's assessment rests and bases its recommendations. It is by observing the collections that we can understand the active degradations, the problems derived from an inadequate exploitation or from a non-optimal management. The recommendations can only be based on this pivot that is the audit.

At the beginning of the nineties, Robert Waller upset this perspective, opening up a new perspective on preventive conservation (Waller 1994). The condition report, by its nature, is limited to the observation of what happened, so when it happens it is « too late ». The method proposed by R. Waller, the CPRAM - the Cultural Property Risk Analysis Model - is based, as its name suggests, on risks analysis (Waller 2003): the ten risk factors already identified mostly by Stefan Michalski² are analysed depending on the institution context and developed according to the potential effects they may have on collections (catastrophic, severe or cumulative). They are calculated according to the probability or frequency of the number of impacted objects, and in particular, the value loss associated with each risk. The calculation result for each risk gives a figure, called the « magnitude », the « magnitude », which shows how much, on a time scale of about a hundred years, the collection will lose value (in historical, aesthetic, financial terms) if the risk is not addressed (Waller et al 2005)³.

The highly complex Waller model was then taken up and simplified by Stefan Michalski at the Canadian Conservation Institute (CCI), after having evolved, it is now known as the ABC scale method (Michalski et al 2016, Karsten et al 2010). The magnitude principle remains the same, but the analysis is facilitated by the construction of risk scenarios, of summaries that help the assessor « dissect » the risk and quantify its effects on the collections. This is done by answering three questions, A, B and C, thanks to a notation system that gives the magnitude score intuitively. The assessment of the collections' values, which is sometimes difficult to put into practice outside the Anglo-Saxon world, is now becoming more and more important. It is now at the root of risks assessment, determining action priorities. Thanks to the collaboration between the CCI, ICCROM and the Dutch Conservation Institute (ICI), this method has since 2005 been the subject of numerous training courses for heritage professionals.

So risk, by its potential nature, is used to anticipate the degradation, in a « predictive » approach, which aims not to wait for the damage to be detected, but to act beforehand. Despite the numerous published articles and manuals, the many field tests⁴ (Broekhof 2005), the method based on risks analysis remains a tool mastered by a limited number of professionals because the uncertainties linked to the putative nature of the risk prove to be difficult to circumvent.

From 2005 to 2010, it is a group of English conservators - from the English Heritage, led by Amber Xavier-Rowe and Claire Fry, that implemented an assessment method that is a cross evaluated link between risk assessment and condition evaluation in order to carry out a complete census of the sites managed by the English Heritage on a vast territory (Xavier-Rowe, Fry 2007 et 2011). Based on an interesting article by Joel Taylor published in 2005 (Taylor 2005), A. Xavier-Rowe's team created a system with eight deterioration factors that are analysed as active causes in the context of the condition report and as potential risks in the context of risks assessment (Fig. 1).

The two scores associated with each deterioration factor — the Damage Score and the Risk Score - are then weighted and converge into a single index, the Weighted Score, which should fill the uncertainties associated with the condition report, while also considering the risks that are impossible to view on objects when doing the report (for example, immediate and catastrophic risks). A ranking of the most important deteriorations/risks has made possible to draw each site's priorities for action, but also between several sites thanks to the *Priority Score*.

Although the English Heritage's eight factors reflect S. Michalski's ten risk factors, they are grouped according to a different logic: to each factor corresponds systematically a feasible solution within the English Heritage's activities, so as to immediately mark next to each cause the solution that needs to be implemented to solve the problem⁵.

In the course of our research, our attention has therefore focused on two types of assessment methodologies: the methods whose starting point is the observation of the collections, their state and conservation conditions, and the risks assessment methods, where the collection's condition report constitutes a limited part of the assessment approach.

TESTING THE DIFFERENT EVALUATION METHODS ON THE SAME SITE (PHASE 2 OF THE EPICO PROGRAM)

Tested methods

Three methods, according to the objectives of the EPICO research program, have particularly held our attention:

1. A pilot inspection method designed by Agnoko-Michelle Gunn;
 2. An ABCD risk assessment methodology, developed by the Canadian Conservation Institute in collaboration with ICCROM and ICN;
 3. A condition report and risks assessment cross method developed by the English Heritage.
- Although it is not a true evaluation method, but rather a condition report tool that supposes a method, the CAT software – Condition Assessment Tool (Murray et al 2002) — has also been tested in the context of our research, to verify its effectiveness in relation to our objectives.

All the methods cited require a more or less a thorough observation of the collections and, in particular for the ABCD method, the objects' conservation context. The CAT tool and the English Heritage method require making a report, on each object (CAT) or on a statistical basis (EH) in order to identify the action priorities in terms of preventive conservation that are to be programmed. A. M. Gunn's pilot inspection also requires a condition report of the items on a statistical basis, all typologies combined, but concentrates on the prioritisation calculation of the degradation causes.

In order to compare the results of the different methods (some using statistical calculation systems), it was decided to carry out a comprehensive sanitary check of the rooms, subject to the test, by carrying out a condition report of all the items. Using Excel® sheets as support for data collection, we also provided possible causes, corresponding to each deterioration observed on each material constituting the items (see image, input table example *Fig. 2*). The decoration of each room (wood paneling, ceilings, paneling, wall hangings) has also been included in our sanitary check.

Test preparations

The preparation of a reference glossary of degradation indicators requires a considerable effort to establish comparable reports: all the objects from the assessed rooms using the methods, were analysed based on sixteen indicators we developed in order to measure the observed degradations. The aim here was to provide a reference image, as objective as possible, of the collections condition report of the assessed room, in order to measure and compare the results of the tested methods.

Scope

For the choice of the scope of the test, several criteria were taken into account, for the sake of comparability, between the different sites:

- History of the locations, typology, the number of objects and presence of the decorations in the same room;
- Conservation condition of the objects (it was necessary to avoid collections recently restored);
- Type of attendance (free or guided tour, number of visitors, opening hours);
- Accessibility for the condition report (maximum observation height: 180 cm): the condition report had to be able to be done correctly without moving or manipulating the object;
- Surface and orientation of the rooms;
- Availability of climatic parameter recordings: in order to make assumptions about the causes of degradation and the risks related to the climate of the rooms (this criterion did not discriminate because the recordings were not always available).

Results

We present here an overview of the results of the tests carried out on the collections of a historical house⁶ within the framework of the EPICO program. The results are presented in the form of graphs from the calculations carried out applying each method to the three selected rooms. Doing a comparison is complex; the methods tested follow different approaches since they measure with different parameters, the active or past causes and the potential causes. While recognising this difference, we believe it is essential for our objectives to look at these results using a single lens,

in order to understand the relevance of the methods and their effectiveness in identifying solutions that arise from the assessment in the specific case of the collections of a historical house.

We have presented in a table the risks magnitudes in descending order, while the report from the CAT software, the Weighted Score and the index of the importance of the causes are presented graphically. For the sake of consistency, the two indices are presented with the same scale, but in our comparison, it is rather the importance of each factor/aggressor compared to the others and the final ranking that interests us (*Fig. 3 and 4*).

Accidents and in general the risks associated with handling and construction work are perceived as major risks. Inadequate or repeated maintenance is one of the major causes of degradation.

The climate was, on the contrary, synonymous of both ill-adapted temperature (T°) and relative humidity (RH) in the condition form, whereas for ABCD the two factors are distinct and in the English Heritage method only HR is taken into account. Fluctuations are among the most common causes for CAT, while very high HR values are not of concern. Light, a risk factor or a very important cause for the English Heritage method, has a smaller magnitude compared to other factors in ABCD: it is, therefore, more important as an active cause than as a risk. In the form, if the degradation in the gray rectangle is excluded, light is the third factor of degradation. This observation, on the other hand, is incoherent with the ratio derived from CAT, where light is of less importance.

The same observations can be made for the results of the Gunn method where, on the other hand, the most important cause is intrinsic deterioration or the object's own instability (partially coherent with CAT).

However, the risks associated with fire, theft, vandalism and vibrations are highlighted in ABCD, but less in the EH score and the condition form. The infestations and the documentation show fairly comparable results, although the risks associated with documentation are more significant with ABCD.

AN ASSESSMENT OF THE ASSESSMENT METHODS?

In conclusion of this study on the different assessment methods and their application, when following the comparison of the results, we can conclude with an assessment attempt of the effectiveness of these methods in relation to the objectives set at the beginning of our research (*Fig. 5*). The application time and the human resources that have to be deployed are also fundamental elements in the assessment of each method (*Fig. 6*).

CONCLUSIONS

After a year and a half of research to identify the most relevant methods, the testing sessions have made it possible to verify on the field the adaptability and the effectiveness of the methods chosen according to the objectives of the EPICO program.

The elements that result from this research are decisive for the rest of the program:

- The assessment method, namely the way of collecting and processing data is a crucial element for achieving reliable results. The comparison of the graphs of the tested methods clearly shows that the relevance of the results of the assessments is related more to the data processing system than to the level of expertise of the examiners (for the tests it was the same team composed of conservators, an art historian, a registrar, a physicist and preventive conservation specialists).

Thus, it is permissible to allocate less energy to the observation of the object in its singularity, but we must not be mistaken in the data calculation system concerning the whole collection.

- The history of the location of the items is a decisive factor when taking into account the causal relationship. Even if the Gunn and the English Heritage methods evaluate the causes according to the observed degradations, the tested methods do not take this parameter into account. In a historical house, the interpretation of the degradation and its causes is facilitated by the relation that the objects maintain with the conservation conditions of the rooms for which they have been conceived or assigned. The recent history of their location (between 0 and 100 years) is more easily identifiable.

- The factors of active (cause) or potential (risk) degradation must be evaluated and interpreted as distinct but complementary elements, which publications and experiments encourage us to create a dialogue within a same method that has a systemic approach.

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¹ www.chateauversailles-recherche.fr/francais/recherche-et-formation/recherche-appliquee/conservation-preventive (consulted 12-12-2016).

² To the nine risk factor identified by Stefan Michalski (Water, Fire, incorrect T°, incorrect HR, Theft/Vandalism, Light and UV, Infestations/mold, Physical Forces, Pollutants), R. Waller adds the Dissociation risk (loss of information linked to the object, for example, loss of the inventory number).

³ For a summary of the evolution of the predictive approach see also Antomarchi et al. 2007.

⁴ In Europe, the R. Waller method and the ABC scale method have been applied to certain institutions, for example, the Dutch Conservation Institut, and especially the department in charge of the research concerning conservation directed by Agnes Brokerhof.

⁵ In the experiment of the English Heritage's team, the three factors dust, dirt, and handling are grouped because the institution has already staff training programs on these three themes.

⁶ We prefer not to mention the name of the house for confidentiality reasons.