

Risk Analysis in a Portuguese Archive

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Aim

It was the main purpose of this study to verify the applicability of the Cultural Property Risk Analysis Model (CPRAM) [1] to a Portuguese Archive [2]. The authors intended to compare the magnitude of specific risks estimated for the same archive collection when located in four storage rooms in two different parts of this building: an older and a recent part.

Introduction

Preventive conservation requires a comprehensive approach and a consistent evaluation of the way collections are stored, handled, exhibited and kept. It should draw together all professional areas associated with culture and patrimony. Establishing priorities and planning improvements is imperative and these can be based on risk management strategies, risk being the chance of an undesirable change occurring. Risk assessment is the evaluation of the magnitude of each and every risk affecting an entity and is crucial to the decision making process [1]. The risk analysis model is based on a systematic evaluation of the conditions and dangers posed to every collection and it allows for damage to be avoided and actions prioritized.

Methods

- CPRAM applied to 4 storage rooms: rooms A1 and A2 in the older building and B1 and B2, in the new building (Table 1).
- Magnitude of risk (MR) was estimated by $MR = FS \times LV \times P \times E$ (FS = Fraction Susceptible; P = Probability; LV = Loss in Value; E = Extent); FS was always considered equal to 1.
- The study focused on eight agents of deterioration: Physical forces, Fire, Water, Theft/Vandalism, Light/Radiation, Pests, Relative Humidity (RH) and Temperature (T).
- Insects were monitored using Agrisense® sticky traps and visual inspection.

Seismic susceptibility and cabinets characteristics were considered for the “Physical Forces” agent

Illumination was assessed in five different places in each room (Elsac 764 Environmental Monitor)

T and RH were measured continuously during four consecutive weeks (Elsac 764 Environmental Monitor)

Presence of fire extinguishers, sprinklers and fire-resistant doors was determinant for the assessment risk associated with “Fire”

Features	Room A1	Room A2	Room B1	Room B2
Building	Old	Old	New	New
Level in the building	Ground floor	Ground floor	Ground floor	Ground floor
Type of storage	Shelves (open, not floor-fixed)	Open shelves (non floor-fixed and floor-fixed)	Open shelves (non floor-fixed and floor-fixed) and cabinets (closed, fixed shelves)	Shelves (open, non floor-fixed) and cabinets (closed, non floor-fixed)
Presence of windows	2	1	0	0
Illumination	Fluorescent/solar	Fluorescent	Fluorescent	Fluorescent
HVAC system	no	no	yes	yes
Manual fire extinguishers inside room	CO ₂	CO ₂	Water	no
Sprinklers	no	no	no	no
Fire detection systems ^a	no	no	no	no
Fire doors ^b	no	yes	yes	yes
Value	Similar	Similar	Similar	Similar
Staff procedures	Similar	Similar	Similar	Similar
Cleaning procedures	Similar	Similar	Similar	Similar
Readers procedures	Similar	Similar	Similar	Similar

Table 1 – Features considered in the four selected rooms

Results

Some of the results obtained are highlighted in figures 1 and 2:

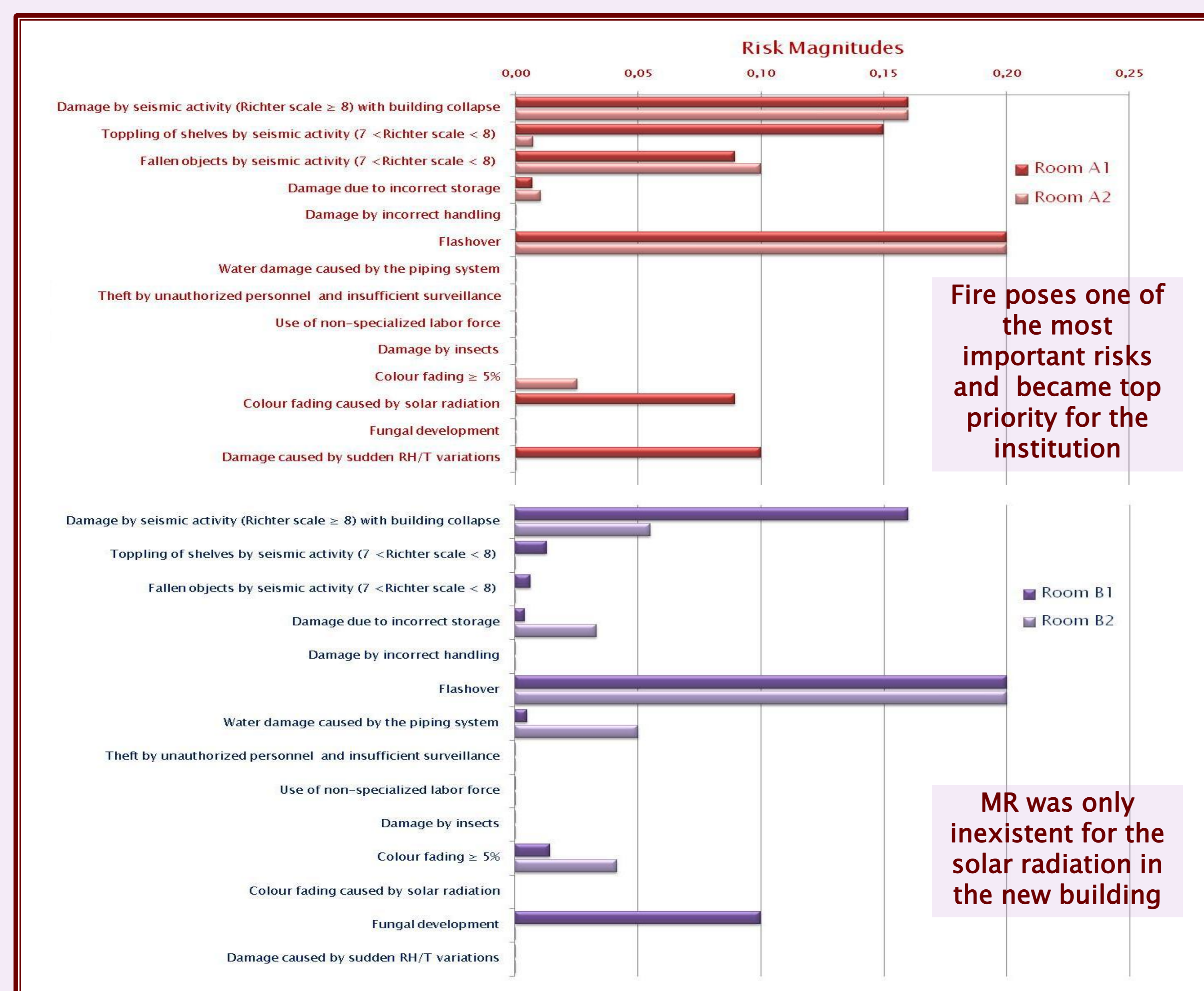


Figure 1 – Risk magnitudes estimated for the four rooms studied. Room A1 and A2 are situated in the old building and rooms B1 and B2 in the new one. Some of the risks considered are either minimal (MR=0.0001) or non-existing (MR=0).

^aFire detection systems are distributed through the entire building but not all of them are working and it is not known which are still operational; ^b Although existing, room A2 is the only one protected by a door capable of sustaining a fire for 120 minutes. The fire doors are not always closed.

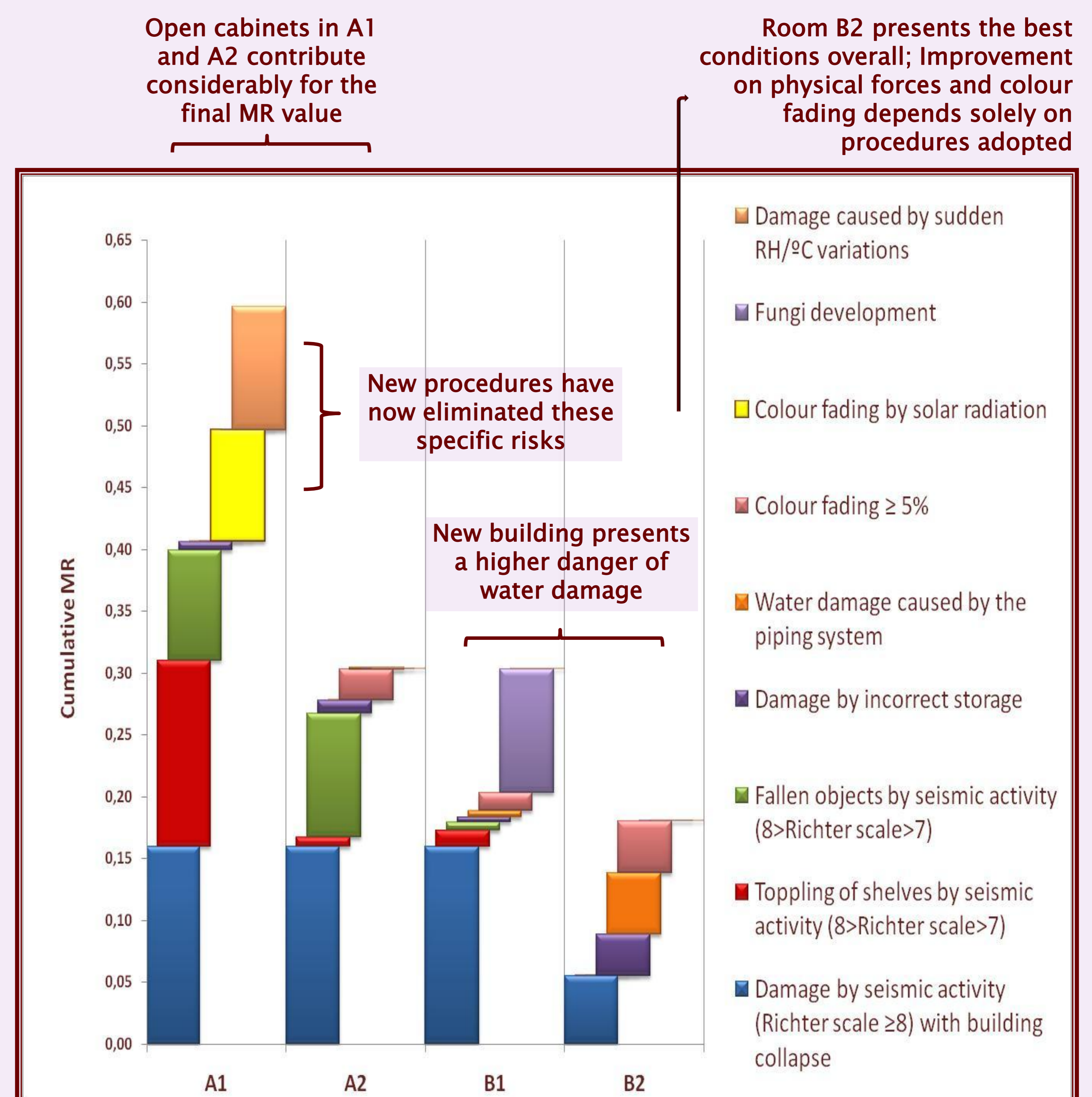


Figure 2 – Aggregate MR of the different specific risks estimated for the storage rooms (A1, A2, B1 and B2). Risk magnitudes were added for comparison purposes and are not intended to represent the total risk. Specific risks with the same MR in all four rooms are not included in this analysis.

Conclusions

- The risk assessment analysis presented in this work allowed not only the identification of the main problems that threaten this collection but also their semi-quantitative estimation and the subsequent definition of priority actions.
- Rooms located in buildings constructed 400 years apart can present similar Magnitude of Risk.
- Simple and inexpensive procedures can have a great impact on Risk Magnitude.

References

[1] R Waller, Cultural property risk analysis model: development and application to preventive conservation at the Canadian Museum of Nature, Göteborg Studies in Conservation 13 Acta Universitatis Gothoburgensis, Göteborg, 2003

[2] Pinheiro AC, Macedo MF (2009), "Risk Assessment: a comparative study of storage rooms", Journal of Cultural Heritage, Vol 10, Issue 3, pp. 428–434