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a cura di Guido Biscontin e Guido Driussi

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Così, la città dei vivi e la città dei morti, sinora affiancate, vengono qui concepite come sovrapposte e interrelate. T'era Park tenta, dunque, di iscriversi nel processo della storia nel quale evolve il significato e il significante di un luogo, registra le modificazioni sociali, culturali, tecniche ed economiche e tenta di metterle in forma con rispetto verso il passato ma guardando al futuro attraverso un progetto di riciclo.

Gli elaborati grafici della ricerca e del progetto sono pubblicati nel profilo instagram " t_erapark ". Accedi con il QRcode a destra.

Bibliography

1. Ricci M., *Nuovi paradigmi*, List, Trento, 2012, p.18.
2. Agostino da Ippona, *Confessioni* XI, (20,26).
3. Cfr. Ciorra P., Marini S., *Re-cycle. Strategie per l'architettura, la città, il pianeta*, Mondadori Electa, Milano, 2011.
4. Calvino I., *Gli dei della città*, in Una pietra sopra, Mondadori, Milano, 2002.
5. Cfr. Milizia F., *Principj di architettura civile*, Finale 1781.
6. Cfr. Foucault M., *Spazi altri*. in S. Vaccaro (a cura di), Spazi altri. I luoghi delle eterotopie. Mimesis Edizioni, Udine, 2001.
7. Cfr. Foucault M., Le eterotopie. in A. Moscati (a cura di), Utopie Eterotopie, Cronopio, Napoli, 2018.
8. Cfr. Antoniadis S., Stendardo L., *"The power of the wreck"*, in Detritus, volume 8, 2018.
9. Cfr. Cherchi P. F., *Typological shift. Adaptive reuse of abandoned historic hospitals in Europe. Riuso degli ospedali storici abbandonati in Europa*, LetteraVentidue Edizioni, Siracusa, 2016.
10. Masullo A., *L'eloquente artificio della memoria e la silenziosa emozione dei ricordi*, in Mangone F. (a cura di), *Cimiteri Napoletani. Storia, arte e cultura*, Massa Editore, Napoli, 2004, p. 19.
11. Bialestowski A., *"Lieux funéraires. L'espace du deuil se dématérialise"*, in *Le moniteur architecture*, 215, maggio 2012
12. De Leo E., *Paesaggi cimiteriali europei. Lastscape realtà e tendenze*, Mancosu editore, Roma, 2006.
13. D'Agostino A., *In-between spaces. The former psychiatric hospitals, new urban glue*, in A.A.V.V. *In between scales*, "Ion Mincu" Publishing House, Bucharest, 2016.

PROPOSAL OF AN EXPERIMENTAL APPROACH FOR FIRE SAFETY COMPLIANCE IN PALAZZO VECCHIO

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Abstract.

This contribution is a part of a wider research project dealing with the problem of complex activities management in "Palazzo Vecchio" in Florence. The goal of the research is to create a sartorial shell of building intervention and management strategies to reach both safety and comfort for occupants, together with building conservation and safeguard. The goal of this contribution is to describe the research framework and to give some remarkable results with respect to the complex approach to the whole Building. Palazzo Vecchio is the town hall of Firenze and it is an ancient building, since its origins built to be the representative location of the political power of the town. Palazzo Vecchio hosts a lot of very important activities for the city and the goal of the public administration is to assure health and safety both to the workers and to the public visiting the building. Moreover, public administration has the duty to conserve building and contents, both from fire risk and from the heavy building interventions usually required to reach safety regulation compliance. Fire Safety requirements can be managed in such a complex framework only making use of innovative approaches able to harmonize traditional fire safety design together with Fire Safety Engineering methods. As a first step, a wide specific database was created by performing a detailed data collection both about activities and about building's characteristics. As second step, the public administration's stakeholders were involved since the beginning, suggesting them the best management strategies to reduce risk from the top. Then, analysing the whole building with the proposed approach, were suggested management strategies and construction interventions on the building useful to reach most of the safety objectives taking the maximum advantage from building's architectonical features. The first tangible results obtained since now are related to the whole approach to the building and to the first FSE results. Future developments are related with the definition of complete fire safety masterplan of the building.

Keywords: *fire prevention, historical heritage building, FSE.*

1. Intro

This contribution intend to explain the more recent development of the research project dealing with management of complex activities in Palazzo Vecchio. The research project puts together Dipartimento di Ingegneria Civile e Ambientale of the Università degli Studi di Firenze and Comune di Firenze, in order to reduce health and safety risks in historical heritage buildings, with the specific interest in fire risk management.

The compatibility between building and activities requirements is a complex problem, both in terms of occupant comfort and in terms of compliant to regulations. National construction regulations often consider peculiar exceptions in the case of historical buildings application, compensating expected building performance with management procedures, in order to obtain an equivalent level of compliant. The manager of historical buildings inside which today activities are performed, has to guarantee safety and comfort of occupants, together with the preservation of the building and artistic contents (Giusti, 2014). A simple application of existing regulations cannot be adopted because of a lacking harmonization among them (Nassi e Marsella, 2008 e 2010); the only way is to create a sartorial shell of regulations and demonstrate that, both safety and comfort goals are reached, combining respectful interventions on building with activity management strategies.

Such an approach has been used to manage Fire Prevention together with Health and Safety in the Florentine building "Palazzo Vecchio"; the research produced a working workflow (Giusti, Getuli, Capone, 2018), shortly summarised in the follow. The application of such methodological approach leaded to some important results about fire safety masterplan of the building and FSE outcome are reported. These results are described in this paper.

2. Palazzo Vecchio

Palazzo Vecchio is the town hall of Firenze and it is an ancient building, since its origins built to be the representative location of the political power of the town. In Palazzo Vecchio three different blocks can be identified, corresponding to the historical extensions of the building. The original nucleus is the medieval one, characterised by the tall tower facing "Piazza della Signoria"; the second block is the renaissance extension that comprehends the "Salone dei Cinquecento", the main hall of the palace; the latest part is the one rises around the third courtyard.

The building has one underground level, four levels out of ground and two mezzanine floors; the architectonical layout of rooms and stairs is quite complex because of the historical development of the palace. Almost all the rooms in use today were created in the past with different purposes with respect to the today use; only the two main halls (Salone dei Cinquecento and Salone dei Duecento) were originally create to host public assemblies and this is the today destination of use. The medieval and the renaissance parts are open to the public since they are a museum; the most recent part contains offices of the local administration.

As said, Palazzo Vecchio hosts a lot of very important activities for the city and one of the main goal of the public administration is to assure health and safety both to the workers and to the public visiting the building.

3. Research background

In this paragraph the methodological working flow produced by the research is summarised - an extended description can be found in (Giusti, Getuli, Capone, 2018). It is believed that the proposed methodological approach is able to represent a general technical reference for the organic integration between the prescriptive approach and the performance approach in fire prevention in historic buildings.

Workflow consists of 8 steps and follows a logical process that involves the use of cyclical analysis in two distinct moments for the in-depth analysis necessary to resolve the identified critical issues (Fig. 1).

1. Data collection
2. Fire risk assessment[1]
3. Macro critical issues[2]
4. Strategical mitigation actions[3]
5. Regulatory compliance[4]
6. Micro critical issues[5]
7. Prescriptive design[6]
8. Performance design[7]

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[1] Areas at risk were identified in relation to the typical categories of fire prevention, with particular attention to deposits and archives.

[2] The critical issues at scale of the building complex are identified.

[3] It represents the first key step with which a reduction of the fire risk at the base is made, going to make those strategic choices that influence the future scenario of project intervention. After taking the mitigation actions, it is necessary to map the risks again (the passage is iteratively repeated).

[4] Detailed analysis of all the points of non-compliance with the prescribed technical rules for each activity.

[5] For each of the categories of non-conformities identified in the previous step the possible solutions are identified.

[6] We find the interventions concretely feasible and compatible with the building. This is an overall mapping of all the areas made eligible by prescription and the areas that must be evaluated with a performance approach.

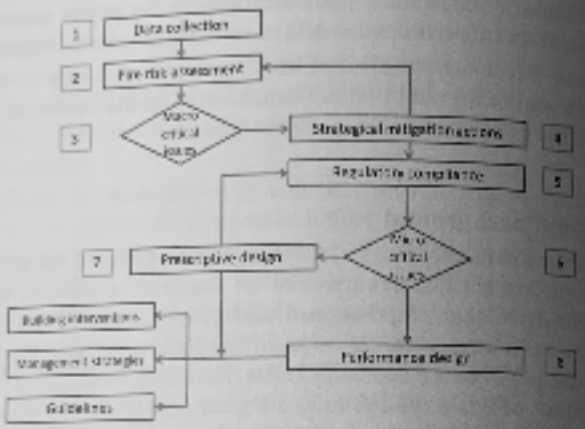

Fig. 1. methodological workflow for fire prevention in historical buildings.

4. Significant fire prevention outcomes

The main outcomes of the approach described in the previous paragraph are related to:

1. Strategical mitigation actions;
2. Fire prevention masterplan definition;
3. FSE simulations.

Strategical mitigation actions

As a result of the identification of the main fire risk factors on a building scale, strategic decisions have been implemented to mitigate the factors that can deeply influence the whole project. Moreover, at this stage, the reiteration of the mapping-analysis-mitigation actions of the risk factors at scale of the building body, aside to optimizing those that are the interventions aimed at eliminating the maximum possible number of macroscopic criticalities, reducing and optimizing the intervention efforts that would be needed to achieve the same results.
Mangers of the Comune di Firenze transformed the suggestion coming from the research into directives that directly influenced the following issues:

[1] Analyses of the performance type are made only in those parts of the building which in any way cannot be adjusted due to building and/or artistic constraints. For each covered area of the building Fire Safety Engineering simulations are carried out.

- *optimisation of use of the deposits and archives*. The dangerous distribution of combustible material near potential sources of ignition, positioned in places that create large risk factors for people or artistic assets, has been forbidden. This led to the elaboration of a plan to optimize the spaces used for archives and deposits. All deposits have been transferred to either the basement floors or elsewhere. This lead to the implementation of intensive archives on underground levels.
- *re-opening of existing vertical connections*. Reopening of stairwells, currently destined for other uses, to reconstitute alternative escape routes, destined for workers and employees of the areas destined for offices (therefore with good knowledge of the environments) was permitted.
- *re-opening of the horizontal connections*. Reopening of rooms and corridors currently used for warehouses or technical rooms was stated.
- *rationalization of use destinations*. Changes to the destinations of some rooms were decided. Such a choice in order to homogenize some areas of the building to the same function and thus rationalize the use of spaces.

Fire prevention masterplan definition

Once defined the strategical mitigation actions, was possible to outline the fire prevention masterplan of the whole building that is based upon the following items:

- Division of the areas to the museum destination from those to the offices. Such division was done through the use of the architectural features of the building and subdivision interventions, in order to completely divide the areas to different destination and users with different levels of knowledge of the building.
- Creation of fire prevention filter in the middle of the building, corresponding with the main hall Salone dei Cinquecento.
- Creation of a "circulation" of the escape routes, in order to guarantee more exit routes in case of fire. The creation of alternative escape routes was only possible in consequence of the strategical mitigation action definition (circular routes were mainly planned on the second and third floors of the nineteenth-century area used as offices) – Fig.2.
- Definition of a new emergency plan for the whole building evacuation.

Masterplan definition is one of the most remarkable result of the latest part of the research. Building's needs of conservation were safeguarded exploiting the hidden potential of the palace. It was possible to create an effective network of paths and compartments just giving back dignity to some of the building's rooms today reviled.

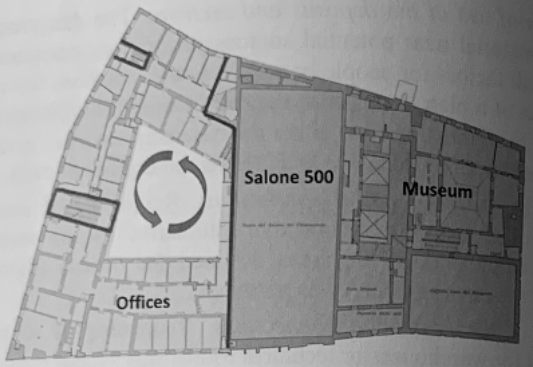

Fig. 2: example of the fire prevention masterplan at the third floor of the building.

Fire Safety Engineering simulations

Fire Safety engineering simulations were undertaken to resolve the critical issues that cannot be tackled with prescriptive interventions. This is because the particular artistic-architectural constraints have limited, under various aspects, the respect of the current regulations. The performance approach has been configured as the only one able to find an effective solution to the problems encountered and, at the same time, to be non-invasive while respecting the context in which it is inserted.

For each area of the building affected by an analysis with a performance approach, in-depth analyses are carried out relating to:

- identification of the safeguard objectives we want to demonstrate to achieve (safeguarding human life, protection of the works or of the building);
- identification of fire scenarios and computational modelling of fire spread (smoke, pollutants, etc ...), also in order to monitor the presence of pollutants compatible or not with decorated surfaces and works of art;
- determination of the reference parameters for safeguarding life (and works, if required by the specific context);
- analytical determination and by means of computational modelling of exodus times from the areas identified.

Specifically, studies and performance modelling were carried out regarding the spread of the fire, and therefore of temperatures, fumes and pollutants, on:

- main staircases (Vasariano staircase, Stairway between the Elements Quarter and the Salone dei Cinquecento) - Fig.3
- Arnolfo tower;
- Salone dei Cinquecento (Fig.4).

Fire simulations are performed using FDS software, having output related to temperature, visibility and pollutant; from the models of staircases and tower we demonstrated that the building is not able to guarantee a sufficient time for building's occupant exodus; the only way to mitigate fire risk in those spaces is to apply procedures that are able to avoid the fire starting.

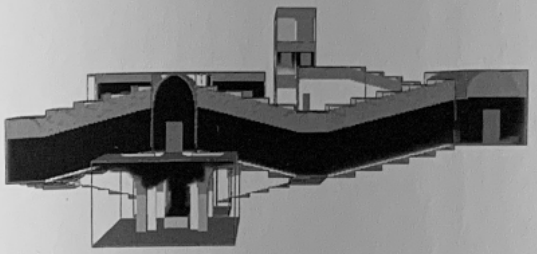

Fig. 3: fire production in Vasariano staircase (t=900s). The result in not compatible with occupants evacuation.

From the model of Salone dei Cinquecento, we demonstrated how is possible to make the hall working as a "fire filter" for the whole building, just by means of the installation of automatic opening mechanism on the windows.

From the fire spread simulations we determined the Available Safe Escape Time (ASET=800s).

Furthermore, performance modelling was carried out regarding the determination of the exodus times on:

- Museum of Palazzo Vecchio, with all the connected environments and Salone dei Cinquecento (Fig. 4);
- Nineteenth-century portion used as offices.

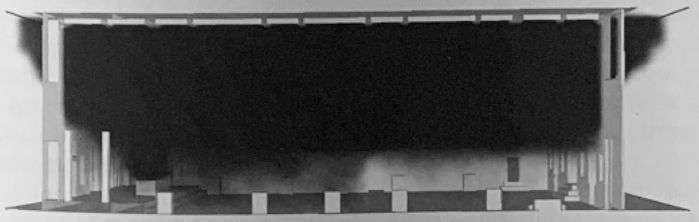

Fig. 3: smoke production in Salone dei Cinquecento (t=800s). This scenario is compatible with occupants evacuation.

To determine the Required Safe Escape Time (RSET) we referred to the ISO/TR 16738. Escape time is given by the sum of the following components: detection time, alarm time, pre-travel activity time, travel time - calculated using a exodus modelling software (simulation was performed using Pathfinder software in SFPE mode).

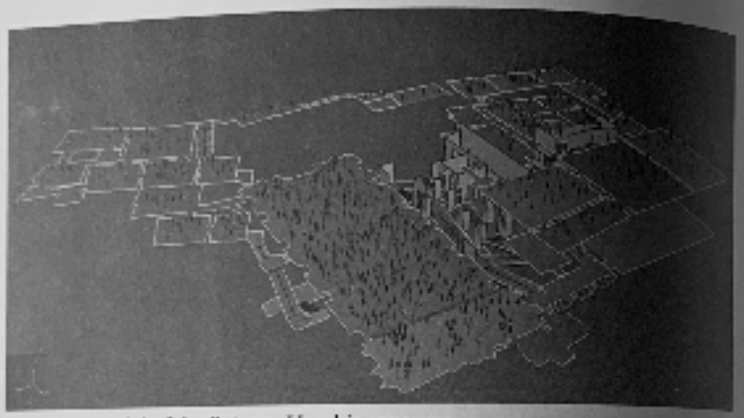

Fig. 4: exodus model of the Palazzo Vecchio museum.

Two main models were done, one for the whole museum part and another for the offices part. From each model we found the total escape time RSET.

In the following table, results in terms of ASET and RSET are resumed for the considered main scenarios, together with some notes useful to explain important practical relapses involving building and management.

CFD fire spread models	ASET	Exodus model	RSET	Description
Main staircase (scalone Vasariano)	240 s	Main staircase	930 s	Not acceptable scenario. Scenario that has to be avoid acting with management strategies. No motor vehicle can be stationed near the base of the staircase, each vehicle must be accompanied by personnel trained in fire-fighting and equipped with fire extinguisher.
Arnolfo tower	300 s		654 s	Not acceptable scenario. Scenario that has to be avoid moving combustible materials from the offices at the base of the tower.
Salone dei Cinquecento	800 s		600 s	Acceptable scenario, with installing automatic opening mechanism on the windows and new fire prevention masterplan execution
-	-	Offices staircase	540 s	Acceptable scenario with respect to fire fighters intervention time. In favour of safety, this scenario neglects the presence of the internal stairs that have been re-opened.

5. Conclusions

The proposed methodological approach, applied to Palazzo Vecchio, brought a series of remarkable results for the improvement of the safety conditions of the occupants and of the goods, with reference to fire risk. First of all, it was possible to set up a program of interventions aimed at the progressive elimination of the main critical issues. Subsequently, thanks to the virtuous mechanism of comparison with the municipal administration, it was possible to guide the building manager towards the adoption of those strategic measures indispensable to a reduction of the risk upstream. Then, all the concretely feasible adaptation interventions were agreed and agreed with the technical offices of the Municipality, mapping the areas of intervention with a prescriptive approach and determining the areas and peculiarities to be investigated with an engineering approach.

The methodological approach leaded to define the Fire prevention masterplan, totally respectful of the building's architecture. Most significant results of the last part of the research al linked to the exodus time estimation and fire spread simulation. The application of FSE is, this way, linked to the determination of the fire-fighting strategies to compensate the risk of safeguarding occupants life. The fire spreading and exodus scenarios of the project were investigated; the exodus of

the occupants was analysed through the two main vertical connecting ways of the building. Exodus times, determined both analytically and by computational way, were then compared with the development times of the fires mentioned above, ascertaining the compatibility between them.
In any case, all the numerical data and the hypotheses on the basis of this study have to be matched with the reference performance requirements of the Fire Fighters.

Bibliography.

1. Capone, P., Ciatti, M. (2017), Restaurare in sicurezza, Edifir, Firenze
2. Giusti, T., (2014), Fire Risk Management for Valuable Contents in Historical Buildings - A Fire Risk Management Procedure for Valuable Contents in Historical Heritage Buildings, OmniScriptum GmbH & Co. KG
3. Nassi, L., Marsella, S. (2008), Sicurezza antincendio per i beni culturali, Utet Giuridica
4. Nassi, L., Marsella, S. (2010), L'ingegneria della sicurezza antincendio, EPC libri
5. DM 569 del 20/05/1992,"Norme di sicurezza antincendio per gli edifici storici e artistici destinati a musei, gallerie, esposizioni e mostre"
6. Giusti, T., Capone, P., Getuli, V. (2017), Management of complex activities in historical heritage buildings: a digitized environment for H&S and fire safety in Palazzo Vecchio, in Re-shaping the construction industry, Atti del convegno ISTEA 2017 – Maggioli, Firenze
7. Giusti, T., Capone, P., Getuli, V. (2018), Gestione di attività complesse negli edifici storico-monumentali: un approccio sperimentale per la prevenzione incendi in Palazzo Vecchio, in Edilizia circolare, costruire nel terzo millennio - Atti del convegno Ar.Tec 2018 – Edicom edizioni
8. SFPE Handbook of Fire Protection Engineering (2002)
9. SFPE Engineering Guide: Human Behavior in Fire (SFPE, 2003)

ECONOMIA CREATIVA PER IL RIUSO E LA VALORIZZAZIONE DEL PATRIMONIO CULTURALE IN MUTAMENTO. 10 LABORATORI APERTI PER 10 CITTÀ STORICHE DELL'EMILIA-ROMAGNA.

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Abstract
In the last few years, Cultural Heritage has gradually moved from being an inactive and onerous inheritance to a driving force for new regenerative processes capable of catalysing sustainable development in the historic city, supported by an economy focused on culture and creativity. This is the perspective of the EU-funded project implemented by the Emilia-Romagna Region under the POR-FESR 2014-2020 Programme. To enhance the cultural attractions of urban identity while increasing the inclusiveness and participation, this programme faces the challenge of the use of heritage. The idea is to set up 10 living labs, located inside 10 historic buildings, abandoned or underused, by transforming them into creative and cultural hubs, which not only put the building back into use but innervate their activity inside the historic city. The 10 buildings are set in the consolidated fabric of as many cities in the region: revived, the goods are transformed first into architectural restoration sites then into sites of ideas to rethink the urban space with the support of ICT and the collaboration of citizens, local stakeholders, universities and public administration. In relation to the context outlined, the paper aims to read the phenomenon of reuse linked to the living labs under the lens of restoration at different scales – from the identification of artefacts to technical solutions adopted for functional recovery, from the choice of tools of technological innovation to the first experiments of unconventional use. The objective is to verify the role of the creative economy in the processes of change of the architectural and urban structure and estimate the actual contribution to the construction of an identity of the dynamic city, still rooted in the memory of places.

Keywords: *Cultural Heritage, Creative Cultural Industry, Living Labs, Emilia-Romagna, Enhancement, Historic city.*

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