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CREATIVE RESTORATION METHODOLOGY ON PAVEMENTS OF HISTORICAL OBJECTIVES: CASE STUDY – THE ARAD FRANCISCAN MONASTERY

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Abstract

Pavement can be generically defined as the hard layered structure, forming a path, a track, a road or a paved pedestrian area. Usually associated with outdoor spaces (pedestrian paths, squares, inner courtyards, sidewalks, etc.) it may also include indoor spaces, namely the floors. Representing a symbolic, determining factor in the overall aesthetics of the space, pavement was mainly overlooked by the academic media, in terms of an individual, well-defined architectural element, with own aesthetics and structural characteristics; consequently, its presence and evaluation was generally performed as integrated part of a whole, specified space or context. The current study offers a more detailed and targeted attention to pavement as distinct and essential part of a built space, with well-established ties to the general context, but also requiring a well-deserved close-up for detailed, particular evaluation and development of optimum preservation strategies, in accordance to its specific compositional and aesthetical directions. The Carlo Scarpa model of creative restoration model is theoretically applied to a historical monument located Arad (western part of Romania), namely the Franciscan Monastery, specifically to the floor of the edifice, as part of a major restoration challenge promoted by the local authorities with support of academic media: architects, engineers, designers, students, etc. Two distinct scenarios are proposed, considering the actual state of the monument, in order to develop a personalized, optimum and modern preservation approach of the pavement, as individual structural element, but also an integrated component of the whole Franciscan Monastery.

Keywords*: Pavement; Historical heritage; Conservation; Carlo Scarpa, Creative restoration; Arad Franciscan Monastery*

Introduction

Pavement, from civil engineering perspective, can be defined as the hard layered structure, which forms a path, a track, a road or a paved pedestrian area. The origin of the word comes from the Latin ¨PAVIMENTUM¨, in translation ¨hard floor¨ [1]. Generally, the term is associated with outdoor spaces (pedestrian paths, squares, inner courtyards, access roads in the vicinity of routes for mechanized vehicles, etc.) [2], but it may also include indoor spaces,

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generally known as *floors*, i.e., the horizontal interior surface of spaces, used as a walking and resting element, with a consistent decorative role in addition to its obvious functionality. From the architectural point of view, the floor is a fundamental bi-valent element, structural and aesthetic as well, a synergetic binder for the rest of components, the promoter of the space built in its entirety, three-dimensional functionality, ensuring the passage from one space to another, with functional connotations but doubled by aesthetic and symbiotic attributes, necessary in a harmonized environmental framework. Slightly exposed to academic interest from the pure perspective of an intrinsic structural-architectural element, considering individualized evaluations performed from a complex perspective (from aesthetic, historical, stylistic and structural evolution point of view, in accordance with the associated technical and technological development, etc.), the pavement was mainly treated contextual, as an integral part of a particular architectural concept. This current study proposes a change of perspective, with focus on the restorative and conservation analysis associated with the floor, as an individualized structural and architectural element, extracted from the general context and customized in terms of its structural and aesthetic defining components, considering its essential contribution to the visual, aesthetic and even emotional component of the built space, of which it belongs.

The current research has as central objective the pavement of the Church of the Franciscan Monastery from Arad, respectively the identification of the optimal methods of its restoration, in the context of the complex process of integral restoration considered for the mentioned historical monument. Thus, the Creative Restoration, a modern method of restoring the historical heritage, is considered pertinent and adequate to be currently applied in the proposed case study, namely the Church of the Franciscan Monastery in Arad, respectively its floor. Creative restoration has as founding principles the objectivity, the recognition of the uniqueness of the historical monument, the need for ethics in the field of heritage, the importance and primordiality of conservation, the need to understand the role of *memory* as a link between past and present, and they prevail in the restoration process approach. This study identifies the basic principles of the proposed method, at the theoretical level and further on, their effective application within the proposed objective, considering the particularities and individual challenges of the factual situation at the time of conducting the case analysis.

Evolution of the pavement as critical architectural element

The pavement is a determining factor in defining the architectural environment, mainly urban, over time. The materials used as a finishing layer for the construction of the pavement and floors are chosen according to the functionality and the destination of the space where they will be installed. Thus, the used finishing material can be cold finishing, like cladding with different types of gritstone and hard stones, cement-based composites, concrete, stamped concrete and prefabricated, ceramic and concrete paving blocks etc.), or warm, finishing, consisting in materials such as wood and its derivatives, linoleum, synthetic resins and polymers, polyvinyl chloride, etc. Both, the pavement (considered mostly as exterior walking surface) and the floors (considered for interiors) have evolved closely related to the material used as support and finishing layer, and also to the technological development throughout history.

A brief view on the history of the pavements, with respect to the materials from which they were made and also to the used techniques, would provide a necessary perspective on current and future practices, regarding both, the new structures and also in the area of conservation the existing ones, in accordance with agreed practices, principles and with respect to the in-force legislation. [3, 4].

At the beginning of their evolution, the pavement, both the interior and the possessed a strictly practical and functional purpose, representing mainly *rammed earth* intended for walking and stationary purpose or transit from point A to point B, with the development of

civilization, the concept also evolved, gaining diversity, aesthetics and complexity. The first attempts to improve the functional aspect and also the aesthetics of the floors included covering the initial, compacted the soil layer with sand, herbs and even sunflower seeds which, by walking pressure, generated an oil that impregnated the surface and thus, increased its impermeability, limiting excess dust, and simultaneously gaining a sanitizing role [5]. In India it was practiced painting the clay floors with rice powder, as primary techniques to improve the aesthetics of this architectural surface [5]. *The wood* became further used for floor making. Wooden flooring is also known in Romania; thus, as a result of archeological excavations located in Hârșova Tell, a wooden a floor was unveiled (Fig. 1), dated around the period of the *Gumelnița Culture*, the 5th -1st millennium BC, according to the specific identification research [6].

Fig. 1. Wooden floor of Tell Hâșova (Romania), dated from the period of the Gumelnița Culture, 5th - 1st millennium BC [6]

Stone as a building material started also to be used as a pavement finishing layer, offering outstanding strength and durability characteristics. Thus, the Great Pyramid of Giza (Fig. 2) is a classical but one of the most eloquent examples of stone efficiency as building material, for interior and exterior surfaces, both vertical and horizontal, associated with ceilings and floors as well.

In ancient times, the floors were mainly made of wood, stone and mosaic. The mosaic technique, developed during this period, is one of the most resilient types of decorative flooring, used both indoors and outdoors [8, 9]. Original from Greece and dating from the second half of the 5th century BC, the mosaic pavement technique experienced a remarkable development from initial pebbles mosaic to a consolidated technique with supporting layers and decorative ones, as well (Fig. 3). The regular "tesserae" (almost regular, but still imperfect shapes of cubic materials, such as stone, terracotta or glass, etc.) were set into the embedding mortar, producing a pictorial effect. The mosaic technique spread in Italy and further on in all Roman empire, evolving from a luxury form of art, destined exclusively to the wealthy class, to a more accessible product, for the rest of the ancient society, which could afford, use and enjoy it.

The mosaic floor technique was also used in Romania. A solid proof relies in the Roman Tomis Mosaic Pavement, discovered in the ancient fortress Tomis, today Constanța (Fig. 4). Its initial surface was estimated at 2000sqm, but after archeological excavations extra 800sqm were recovered; it is realized by two techniques: *opus tesselatum* (Fig. 3, right) and *opus vermiculatum*. The mosaic technique includes lithic material containing naturally colored rock segments, except marble. These ¨tesserae¨, at the time of the archeological unveiling of the

Tomis mosaic in Constanța, were in seven colors and the associated shades, predominant being white, black, red, green-blue and yellow-beige [11, 12].

Fig. 2. King's Chamber - Great Pyramid of Giza [7]

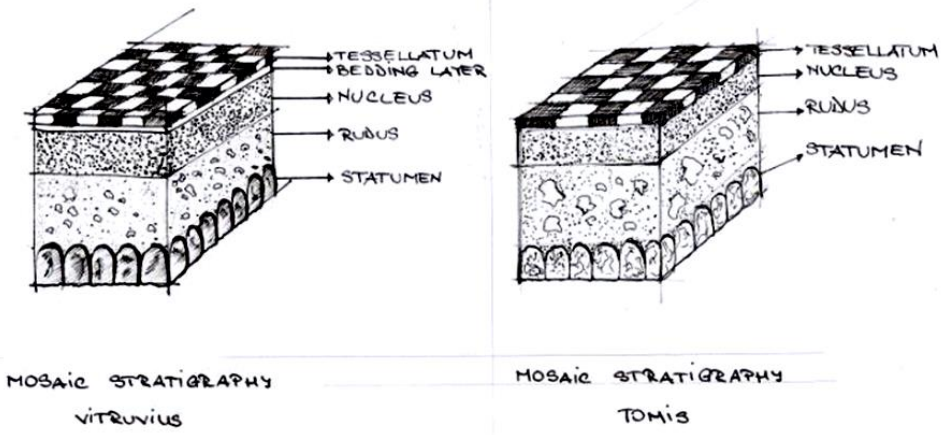


Fig. 3. The mosaic technique from Tomis fortress vs. The technique of the classical mosaic, after Vitruvius [8-10]

Floors made of natural materials such as stone, marble, travertine, basalt, etc. offer an extremely long use, due to their physical, mechanical strength and durability properties, adjacent to their versatility, respectively the possibility they provide to create different decorative elements, in accordance with the evolution of architectural styles [13] (Fig. 4b).

The accelerated urban development of the last decades has favored the vital importance considered for interventions on exterior pavements, requiring certain futures on pavement characteristics, both in terms of modern design and also related to the used material. The necessary changes, considering the requirements of the last 10 years, when pedestrian transport is encouraged detrimental to individual or even common mechanized urban travelling, determines changes in the character of certain streets and squares in city centers, in terms of car or hybrid traffic to strictly pedestrian traffic. These changes require certain characteristics of the exterior floors, such as the finishing material, in terms of strength, durability, slip resistance, wear, etc., adjacent to the aesthetic factor and economic aspect as well, when evaluating the ability of the considered solution to be successfully included in the historical and urban context of the actual location area (Fig. 5).

Fig. 4. a) Tomis Roman Mosaic pavement; b) Notre Dame de Paris Cathedral - top view of the floor [14]

Fig. 5. Lipscani Nouveau Center, Bucharest –concept of modern rehabilitation of historical heritage; Pavement (Interior and exterior spaces) as architectural integrated element in the redesigned environment – Tofan Arhitekt (dr. arh. Bogdan Tofan)

Creative restoration in the modern concept of historical heritage restoration

The restoration project can be defined as the way to find the past in the present, as it is the result of the creative interpretation of the monument.

The need to develop creative models in new, contemporary methods of restoration, transcends into the present from the past, to currently protect the values that characterized the buildings at the time of their realization: the use value, functional value, aesthetics and beauty, ideological and conceptual [15].

In the 19th century, Camillo Boito established the basic principles of restoration [16]:

- the principle of preserving the construction stages of the historical monument;
- the principle of marking the intervention (style, techniques, craft of the time),
-the principle of the exceptional character of the restoration, applicable "as a last resort" recommended being the safeguarding, maintenance, consolidation and / or repairs not exposed to sight;
-the principle of marking the intervention of the reconstituted elements by using the written / existing in situ historical document;
- the principle of authenticity, by adopting elements or materials contemporary to the object to be restored to the new components.

The philosophy of preserving the historical heritage includes different approaches, related to the juxtaposition of two major terms: restoration and conservation. For J. Ruskin, restoration and conservation were incompatible, for Viollet-Le-Duc they were synonymous, and for Camillo Boito they are complementary [17]

Creative restoration in the context of the modern concept of restoration highlights the progress of each period along the targeted edifice's life and also identifies the contemporaneity of the considered ideas and concepts [18]. In creative restoration, objectivity, recognition of the uniqueness of the historical monument, the need for ethics in the field of heritage, the importance and the primordiality of conservation, the need to understand the role of memory as a link between past and present, represent the foundations that prevail in the restoration process, validating the method as currently opportune for the considered objective, namely the Church of the Franciscan Monastery from Arad, with particular regard to its floor.

A creative restoration project must find ways to recognize, capitalize on, evaluate and maintain the monument in an ongoing management process. Creative restoration is thus a process of transformation and modeling, the value gained from the juxtaposition, respectively the association of scientific conservation with contemporary architecture, archeology, design, urbanism, material science and technology of cast in place, modern graphics and three-dimensional visualization or other current arts and sciences. Supplementary, it can be stated that the creative balance is found in the personal register of the restorer by philosophically and creatively recalling the concept [18].

International Regulations for Monument Protection: Restoration charters

The first law regarding to the historical monument dated in 1887 and till 1913, when a significant text of law is issued in the sensitive fields of conservation and restoration of the historical and cultural heritage of humanity objectives, the road of recognition of the historical monument, stating its defining values and its meaning, was continuously paved. Thus, the 1964 Venice Charter [4] and subsequent charters, especially the 2006 I.N.T.B.A.U Charter [19], define and regulate the protection of monuments [20-23]. The 1964 Venice Charter calls for a contemporary dialogue to address issues specific to restoration and conservation by seeking to reconcile them in a real, creative and effective way in favor of the monuments concerned. Further on, the 2006 I.N.T.B.A.U Conference in Venice addresses the promotion of pluralistic concepts, which allows considerations about continuity, collective memory, tradition, and also the need for completion, in harmony with the novelty as materiality [24].

The legislative framework in the field of restoration, including at national level, is generally thorny, sometimes prone to elusion and abuse by ignoring particular situations, sometimes conservative and limiting by its considerations, which constrain applied innovation

in this topic and implicitly limit possible solutions, sometimes to the detriment of the goal. The proposed concept of creative restoration by preserving quality and unequivocal application of principles, emphasizing conservation, restoration with other types of interventions when the necessary information is not available, are solutions based on the documents of the Restoration charters [4, 19]. The proposed method of creative restoration for the effective use on some surface floor of the Franciscan Monastery can be evaluated as involving certain restorative dangers, because it does not respect a regulated framework of protection, especially at national level. To dismantle such hypotheses, a relevant example of Carlo Scarpa's intervention with a creative restoration effect is further presented [18].

Presentation of the Carlo Scarpa Creative Restorative concept

The *Carlo Scarpa Creative Restoration* finds support in a personalized creative model in which the emphasis shifts conservation within a context. In the landscape of modern restoration, Carlo Scarpa is a generator of non-invasive creative models based on respect for the old and new intervention as well, considering the cultural identity. Carlo Scarpa's monument is embodied in an architectural model in which the value of conservation is maintained over time through the quality of the concept's creativity, that specific modality of approaching specific cultural elements by simultaneously accessing tradition and modernity. The proposed restoration mode is an extension of the context, not of the content based on the reflection drawing of the mental project used for reasoning purpose.

Scarpa conceives a personal commentary using the scientific knowledge of conservation and consolidation, identity, remembrance, personal history of the work of art, the architectural space of the historical monument that becomes a reflection of the historical context within a new project. His restorative conception has three personal themes:

- *The Design,* which is the conceptual stage trespassing through drawing, sketching, concept arranging of the new image of the monument, but with deep respect towards architecture, classical shapes and to the historical monument, generally.

- *The subject of restoration is reopened as an exact science* and, at the same time, proposes an art form, revealing the importance of the architect in the interpretation of historical material. The mechanism of Carlo Scarpa's thinking in restoration is based on creative reassemblies and decompositions [25].

- *The reassembly of spaces through areas of spatial communication,* resulting via differently directed spaces, different spaces, from the detail as a formal event marking the creation (the floor), by superposition or juxtaposing individual elements, by using the ornament in a modern register, achieved by using basic but powerful symbols: the spiral, the ziggurat, the eye, etc.

In creative restoration, the dimensions of authenticity are related to different aspects, beyond the artistic and historical values. There are aspects of authenticity related to: location, the definition of form, conception and design, the use of materials, crafts, construction techniques, engineering and stratigraphy, etc. [4].

The principles of creative restoration proposed by Carlo Scarpa can be identified in a relevant example where they were successfully applied, namely the restoration of Castelvecchio (Verona, Italy). The restauration process was performed under the trademark of the Venetian architect Carlo Scarpa and it took decades (Fig. 6) [26].

It is perhaps his most important work and it gracefully emphasizes the influence of modern art on the restauration concept. The intense effort put into detail reflects the applied method, as a way of working that seeks new configurations of constantly developed ideas (Fig. 7).

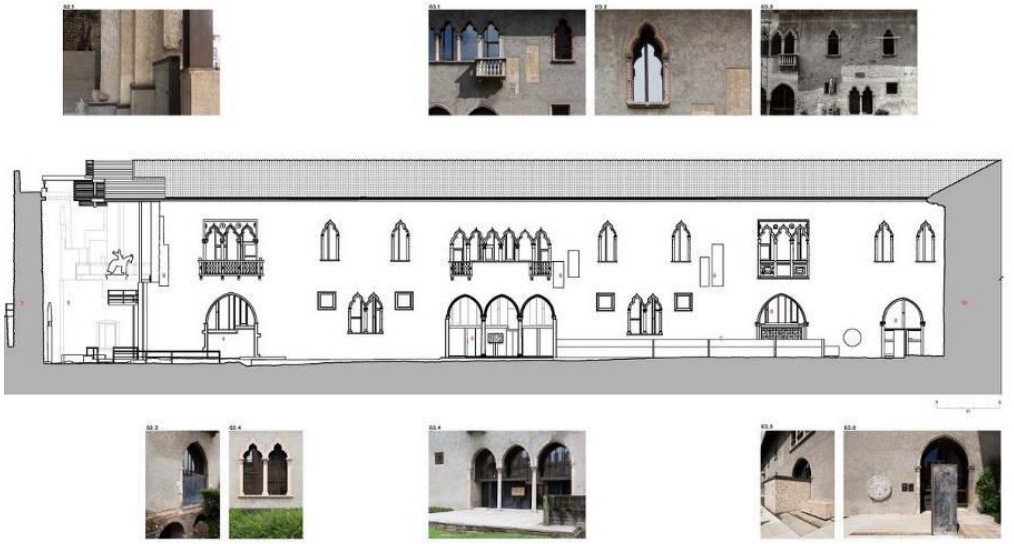


Fig. 6. Carlo Scarpa Conceptual scheme - exterior aesthetics
of restoration of Castelvecchio (Verona, Italy) [26]

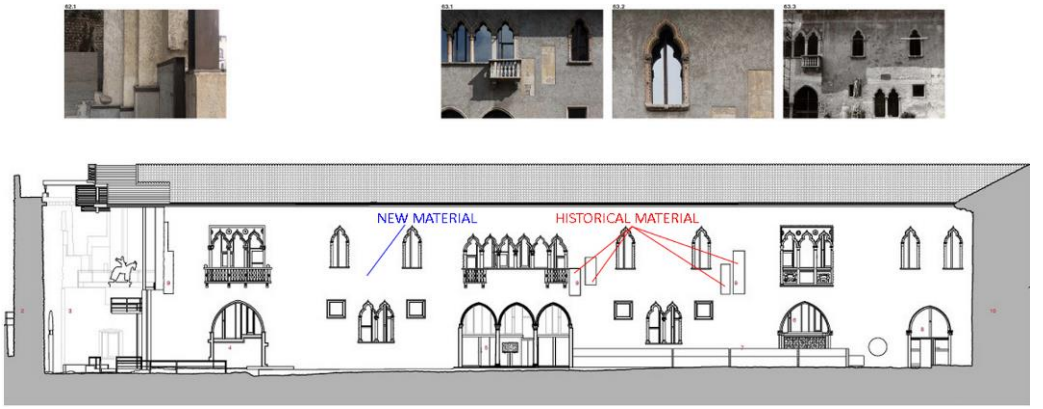


Fig. 7. Carlo Scarpa Conceptual scheme - exterior aesthetics
of restoration of Castelvecchio (Verona, Italy) –
detail for insertion of novelty into the original, after [26]

Case study - Franciscan Monastery Church - Arad, Romania

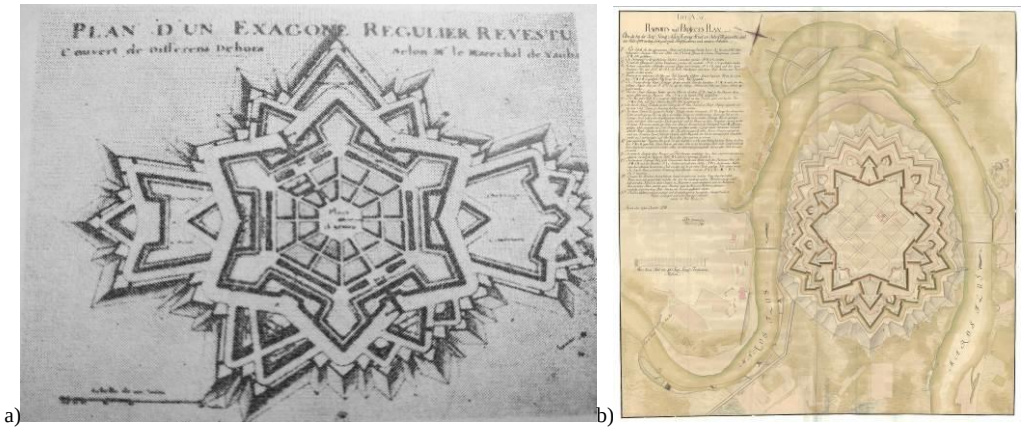
General objectives

The principles of creative restoration, whose viability is conclusively demonstrated by the Venetian architect Carlo Scarpa in the process of restoring the Castelvecchio monument (Verona, Italy), can also be used in the case of the Franciscan Monastery in Arad, Romania, its church and with particularization on the church floor, as an essential structural and architectural element within the specified monument (Fig. 8).

Fig. 8. Main facade of the Franciscan Monastery, Arad, Romania: then (left side); and now (right side) [27-29]

Short history of the Franciscan Monastery, Arad, Romania

The church of the Franciscan Order was built by the monks of the St. Francis Order of Assisi, the year of consecration being 1734; later on, the two side wings were built, including the fortress. The construction of the Vauban-Tanaille-style fortress (Fig. 9) started in 1763, in the river Mureș loop, around the Franciscan Church already existing at that time. The construction of the fortress lasted twenty years, following the plans of the architect Ferdinand Philip Harsch [30]. This type of fortress (Fig. 9a), which allows the multiplication of angles, was already known since antiquity, the construction of side fortifications appears in Persia, 6th centuries BC, as well as in ancient Greece. Starting from this origin point, one can reach the fortress with double enclosure and staggered towers, including the works in the corners with the route of the fortifications developed at certain angle, defining the star-shaped route perfectly conceived by Vauban. The Arad Fortress is a fortification in the shape of a double star in six corners. The map provided by the Vienna State Archives in 1780 demonstrates the thoroughness of the design, which ensured the efficient use of 300 pieces of artillery.



a) b)

Fig. 9. Identification data regardin the Franciscan Monastery, Arad, Romania:
a) The star-shaped fortress design of Vauban-Tanaille-style fortress;
b) Construction report, 1870 acc. to Vienna State Archives [27]

Subsequently, the entire architectural ensemble was sold to the state for 15,000 florins, becoming a military hospital. During the First World War and the Second World War, the church and monastery were transformed into a military hospital. After the war, the fortress was occupied by Soviet troops until 1958. During this period the church loses its character as a place of worship. It is transformed into dormitories for the military, a stable, then into a driving school for soldiers in the fortress, later into an ammunition depot. After the departure of the

Soviets, the Romanian army arranged the laundry of the military unit here. In the meantime, the church organ had disappeared. Since 1989, the former Franciscan church and the monastery have been abandoned, suffering major damage. Currently, the precinct is still a military objective and it is desired to be transferred to the patrimony of Arad City Hall [27].

Restoration intervention proposal - the floor of the Franciscan Church

The creative restoration applied to the Franciscan Monastery monument and explicitly associated with the pavement, started considering the lack of clear, proven and argued information of some defining elements related to the aesthetic aspect of the monastery, essential in its restoration and also to the desire not to generate a false model. The creative restoration emphasizes the differences, the discontinuities and the subsequent additions offering a non-invasive creative model based on cultural identity and respect for the old and the new. Although the monastery building has changed its function countless times (hospital, Orthodox church, dormitories for soldiers, driving school for soldiers in the fortress) over time the original character rendered by the materiality of surfaces and finishes, has largely remained clear and obvious. This identifies the physical substance as a key starting point for the restoration project.

The proposed measures aim preserving in the spirit of minimal intervention, pursuing reversibility, according to the Venice Charter and the documents accepted by the Romanian state. The interior intervention will conform to the proposed restoration concept, being focused on the floor of the Franciscan Church (Fig. 10). Attempts will be made to restore it in the absence of the historical witness.

Fig. 10. Interior image of Franciscan Monastery Church - example of the floor covered by the layer of fallen plaster [27]

Due to the fact that the access to the monastery was difficult, its proper analysis was not possible; thus, at the time of the development of the proposed method, the floor (Fig. 10) was covered by a thick layer of fallen plaster and other materials collected over the years. However, it is possible that this layer, collected in a fairly large amount, has ensured an effective role of protection on the floor and, when initiating the sanitizing activity of the area, to identify a fairly well-preserved surface.

In the last about 70 years, no activity has taken place inside the church, the traffic being non-existent or sporadic, this being mostly induced by unauthorized persons. This allows the

immerge oh a hypothesis, namely that the surface of the floor, being covered by the thick layer of plaster, is in a proper state of preservation. Recommendations for the sanitation of the church nave's interior should take this possibility into account and prohibit access with heavy machinery until the hypothesis has been verified. The plaster of the vault and the walls at that time was made of lime, this being naked eye observable, at a simple analysis of the building, and these pieces and particles of different sizes could provide good protection against water infiltrated through the fallen dome, helping to dissipate it. The plaster that fell on the floor thus created the protective layer due to the action of external factors.

The restoration proposal, after establishing the concept of intervention, allows the development of a creative space, by combining historical elements, with symbolic, aesthetic value, which give identity to the monument, with contemporary elements, by marking the intervention (where the historical witness is missing) and with unexpected, surprising, reversible elements, able to mark the moment and the power of the present time, respectively with elements produced by technology and art of the present moment.

At floor level, the intervention area requires two proposals:

a) The first proposal refers to the previously mentioned hypothesis, identified by means of visits and photographic documentation, in which the floor surface is the direct beneficiary of an important level of conservation made of fallen pieces of lime plaster, and requiring specific cleaning actions and additions on different surfaces' dimensions, according to those found in the in-situ status of the monument, at the beginning of the project.

The proposal emerges from the perspective of the creative method practiced by Carlo Scarpa on the Castelvecchio building, previously mentioned, namely the vertical segment of the surface of the wall covered with natural stone (Fig. 6). The treatment is carried out by preserving the original material, the intervention being made through areas of intercalation of the new material, with a difference in texture and shade (Fig. 7). The additions come as a new, expressive continuity, these differences marking the restoration in an aesthetic way, without losing the historical essence of the existing elements. (Fig. 11).

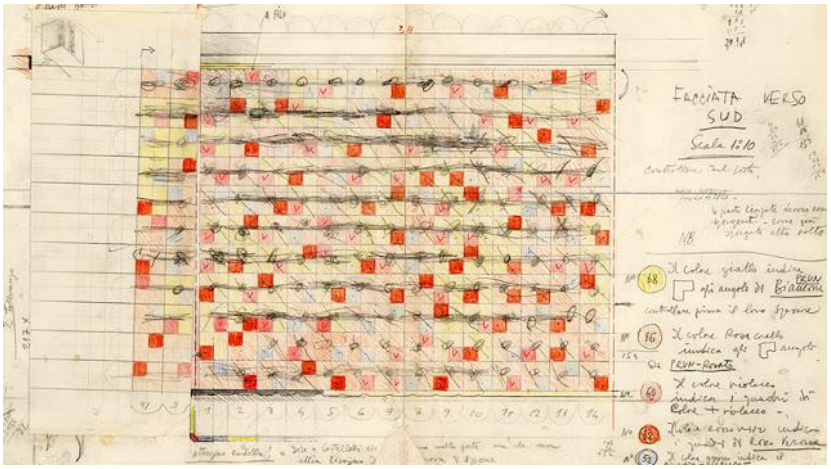


Fig. 11. Carlo Scarpa Intervention sketch (Materiality), Castelvecchio (Verona, Italy) [31, 32]

This example of intervention is proposed at floor level, determining the delimitation of the old and the new (Fig. 12). The proposed intervention is creative, reversible, in accordance with the requirements of conservative restoration and, at the same time, it allows the application of continuity promoted by Scarpa, giving the public the opportunity to look inside the architecture and restoration, by visualizing the elements and materials. The restoration proposal

is built on the principle of authenticity, wanting to highly combine the conservation, the scientific restoration and the contemporary design.

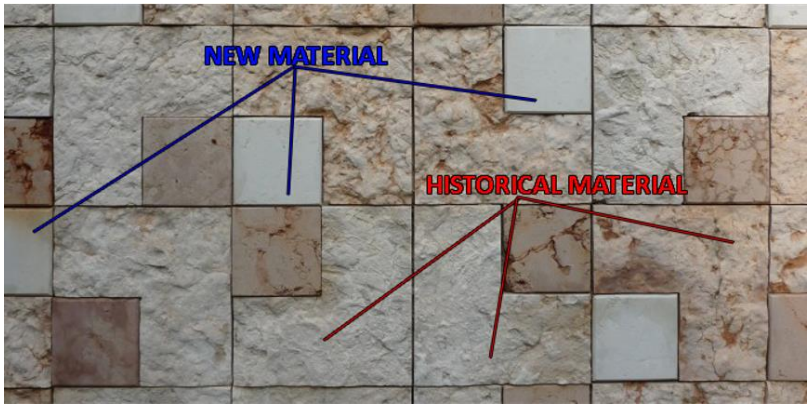


Fig. 12. Proposal - Sketch of creative restoration intervention,
for the floor of the Franciscan Church, Arad - scenario 1, after [31, 32]

Figure 13 represents the perspective of a creative restoration in the conditions of a relevant historical witness.

Fig. 13. Proposal - Creative restoration simulation when the historical witness is available

b) The second proposal for restorative intervention comes in the context in which the historical finishing layer is completely compromised, and its preservation is impossible, this fact generating the need for a new floor surface. The design of the new floor is built based on the historical and cultural sources of the site, identified and consulted by the restoration team: architectural description, history of Baroque art, Baroque architecture and historical influence on the building, to which the creative concept identified as appropriate for implementation is added. Thus, the proposed concept sketches a baroque polychrome marble floor, with inlaid mosaics (Fig. 14).

Fig. 14. Sketch proposal - polychrome marble floor with inlaid mosaics as solution for the nave of the Franciscan Church

The marble floor is representative of the Baroque period, associated with the monument and it was extremely used in the religious buildings of that period. A representative example, with a relevant aesthetic for the proposed solution, is the St Peter Basilica (Vatican), in which the floor has similar finishing elements (Fig. 15).

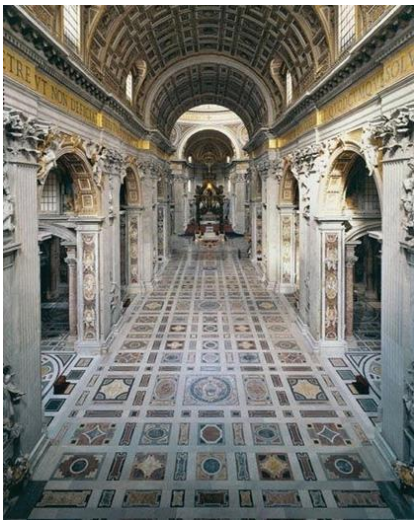


Fig. 15. St Peter Basilica, Rome, Vatican - baroque floor example [33]

The memory is used as a message from the past, the symbolism and the atmosphere of the historical monument is evoked via the link emerging from the material components. The proposed concept respects the authenticity of creative restoration related to spirit, emotional impact, religious context, history, all these various values developing the creative processes that can restore the atmosphere of the past in the present context (Fig. 16).

Fig. 16. Proposal - Creative restoration simulation when the historical witness is ***not*** available

Conclusions

The current paper performs an analysis of the theory of concepts and methods of conservation and restoration, as well as the possibility and opportunity of applying them on historical monuments, in Romania, European Union and worldwide, considering the in-force legislation and also the agreed practice in the mentioned topic. Restoration proposed by Carlo Scarpa and performed within the national and international theories and legislation in the restauration field gives us the opportunity to preserve and enhance historic beauty throughout creative restoration. The best possible scenario is to have available the historical witness of the surface/space considered for creative intervention, so that the reporting to the witness could be easily performed. The historical witness can be a floor surface sample, which can provide information related to materiality, texture, color, degradation, and nevertheless the overall aesthetic components associated to the edifice, personal artistic drive of the original artist being also included in the mix. In this case, the historical witness can be preserved with minimum intervention and the rest of the restoration process can be executed via direct applicability of creative restoration tools. The second scenario assumes that, within the same architectural space the historical witness does not exist, determining that a proposal would be made in order to create a completely new surface, complying from an aesthetic point of view to the architectural style of the original monument. This example is applicable following an in-depth historical study of the monument.

Future research in the creative restauration process, in the topic of the Franciscan Church in Arad and not only, considers the use of Virtual reality (VR) tools, for a more accurate state of proposal, which allows fast and accurate changes in accordance to the decision making process as well, of all involved parties: local authorities, experts, architects, historians, society representatives etc.

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