Modern Approaches to the Restoration of Architecture After the Disasters in Italy

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Abstract. The article raises the problem of implementing the principles of the Venice Charter in the practice of restoring architectural monuments that have suffered as a result of natural disasters and human activities. The carried out restorations of various types of monuments of public architecture were considered. The principles that guided the authors of the restoration project, as well as external circumstances that influenced the course of restoration work, were analyzed. Conclusions were drawn about a significant deviation from the principles of the Venice Charter in practice: holistic restorations predominate with the preservation of the familiar appearance, the use of materials that do not differ from the original, the reconstruction of not only facades, but also interiors of architectural monuments in their previous forms.

1. Introduction
Fundamental changes in cultural paradigms that took place in the world at the turn of the millennium had a noticeable impact on the field of work with cultural heritage, including the methods of architectural restoration. While the majority of specialists formally remain committed to the norms of the Venice Charter, which is a fundamental document in modern restoration activities, a significant number of various deviations from it have been noted in practical work to date. From the standpoint of the implementation of theoretical principles, it is especially important to study the modern restoration practice of Italy as a country with the richest experience in working with heritage. It was in this country that the most important conceptual guidelines of the last century were born concerning the principles of working with architectural monuments.

In the last decades of the 20th century and at the beginning of the 21st century, experts from different countries expressed their attitude to theoretical and methodological issues of architectural restoration, including modern Italian, among which one can single out Jukka Jokilehto [1], Giovanni Carbonara [2], Riccardo Della Negra, Mariano Nuzzo [3], Donatella Fiorani [4], S. Boscarino, [5], and in Russia - Yu.G. Bobrov, K.V. Rytsarev KV, A.S. Shchenkov, [6,7]. However, in the studies of these authors, little attention was paid to the restoration of the architectural heritage damaged by disasters.
There are many seismically active regions in Italy, so the country has encountered earthquakes many times throughout its history. The destruction of architectural monuments was often the consequence of earthquakes. In addition to natural disasters, sometimes architectural monuments have become victims of purposeful destructive activities. What restoration approaches are applied to this group of monuments? Are the principles of the Venice Charter observed or is there a desire to preserve the familiar image? Do restoration additions differ, are they carried out in the forms of our time?

2. Restoration of architectural monuments damaged as a result of natural disasters

In 1997, there was a long period of seismic activity that covered the regions of Umbria and the Marches, due to which many historic towns and villages were subjected to significant destruction. Among the damaged monuments was the iconic Basilica of San Francesco in Assisi. Because of the earthquake in the basilica, the pendentives of the vaults with the famous frescoes of Cimabue (Evangelist Matthew) and Giotto (St. Jerome) collapsed in two places [8]. After a discussion of the situation by the preservation authorities with the participation and assistance of the Central Institute of Restoration in Rome, it was decided to restore the pendentives and return the frescoes to them. The event was named "Cantiere dell'utopia", which can be translated as "Utopia Recovery / Utopian Recovery". At the beginning of the restoration work, a model of the collapsed pendentive was assembled from wood (by analogy with the surviving pendentives), which became the basis for the fresco being assembled. During the work on the Cimabue fresco, it turned out that the original location of the fragments of the fresco could only be determined for 20-25% of the collected material. For the rest of the mass of fragments, it was not possible to determine the position due to their small size, as well as due to the lack of detailed photographs of the fresco. In connection with this situation, it was planned to create an earthquake museum, where all the fragments that could not be found should have been sent, however, after discussion at the international AGENORE seminar in May 2005 in Assisi, it was decided "in any case ("comunque")" to return all parts of the fresco to the pendentives of the vaults, despite the inaccuracy of the final result [9]. Thus, by now we have to say that about 75-80% of the collapsed fragments of frescoes are not in their place after restoration. Numerous gaps in the frescoes were left in "natural" ("al naturale") light gray. The decision was justified by Cesare Brandi's theory of the optical effects of the filled gaps [10]. In reality, Brandi proposed to fill in the gaps with shading, imperceptible from a distance, which would merge in color when viewing the whole canvas, but would be visible upon closer examination. When looking at the restored frescoes with many lacunae in a gray tone, there is a feeling of fragmentation and some deliberate variegation of the image, according to the personal perception of the author of the study.

The work on the restoration of the basilica took 9 years, during which many questions were raised, for example, about the reality of the plan, about the difficulties of execution, about the color of the filled gaps, about the colossal cost of the work, but there were no questions or disputes about the need for restoration as such. It was implied by default, as if the Venice Charter does not exist, and it does not emphasize respect for the life of a monument in time. "It was a victory over time," said Culture Minister Giovanna Melandri in 1999 at the opening of the basilica after the completion of the first part of the work [11].

A very similar situation has developed around the chapel of the Holy Shroud of the Cathedral of John the Baptist in Turin. In 1997, due to a fire in the chapel's wiring, a fire broke out, as a result of which the interiors of the chapel were damaged, many decorative elements from rare and expensive types of marble were lost. The restoration work began immediately and was completed in 2018. The decorative elements have been restored in the same materials - including the expensive marble from the Frabosa Soprana quarry (Cuneo). The extraction of marble from this quarry, almost completely depleted, was renewed exclusively for the restoration of the chapel, which the authors of the project are especially proud of. Thus, the restoration additions are indistinguishable from the original [12], which is contrary to the principles of the Venice Charter.

In 1996, during an earthquake, the dome of the cathedral in the city of Noto collapsed (completed in 1776). The history of the cathedral is interesting, which had already collapsed twice before the
described case (in 1780 and 1848). In both cases, the dome was restored. During the restoration in the post-war years (1949-1959), part of the cathedral's roof structures was replaced from wooden to concrete, and the interiors were also renovated. In 1996, after a strong earthquake, in addition to the dome in the cathedral, the left side of the nave with columns collapsed [13]. The city committee decided to restore the cathedral "com'era, dov'era" as an essential part of the city's ensemble, referring to the precedent of the restoration of the Campanile in Piazza San Marco in Venice. Indeed, it is difficult to imagine another solution, since the cathedral is located on the main tourist street of the city, opposite the town hall and the buildings of the diocese, being in the center of the city's social and cultural life. In the current rich baroque ensemble, any addition in modern forms would look strange. The restoration of the cathedral was carried out by the LCT Architettura bureau, the architect was Salvatore Tringali, and the scientific consultant was P. Marconi, a supporter of whole forms in restoration. The dome of the cathedral was supposed to be restored in the forms of the last edition (1848), the destroyed columns were supposed to be rebuilt, but the question arose what to do with the surviving columns. They had the same structure as the fallen ones, which means they could collapse in the near future, in addition, they did not allow making a single reinforced mesh in the cathedral to prevent possible collapses. The preservation of the columns was technically impractical, so it was decided to dismantle the surviving columns and reconstruct them while preserving the old masonry technique, slightly improving its internal scheme. Thus, the existing columns were dismantled, reassembled and reinforced, as well as the spans over them; there were specially designed in-wall metal frame structures to strengthen the brick dome. The maximum use of original materials was assumed, and where this is impossible - the use of materials as close as possible to the original, and taking into account modern knowledge about structures, materials and earthquake resistance, in order to extend, as far as possible, the prosperous life of the cathedral [13]. Naturally, the interiors of the cathedral were also repaired; they were painted anew by the Russian artist O. Supereko.

Reflecting on the theme of the restoration of the cathedral, restoration theorist Professor S. Boccarino in 1999 wondered about the need to recreate what was lost in its original forms, saying that the restoration project is not only a technical act ending in strengthening the building in the physical sense for the possibility of its use but it is part of the architecture and must pay attention to the definition of form, resolving the transformation of the interior space of the building gently and according to a common logic. Refusal to reconstruct the dome could have been a sacrifice for the urban panorama, but could have prevented other losses from the architectural heritage, since the funds spent on restoring the ruins could be used to maintain the functioning monuments [14].

A little more than a decade later, J. Carbonara writes that the restoration of the Cathedral in Noto, in the way in which it was carried out, despite the fact that its authors speak of it as a restoration example for everyone who works in Italy and abroad, is a product of economic considerations. It was followed by the economic recovery of the region, which was in agony before. Carbonara writes about a 30% increase in tourist traffic after the restoration of the cathedral compared to the rest of Sicily. He believes that the cultural motive of restoration, even if it is controversial, has become an economic motive with grace and a sense of tact, and history has become the background of regular tourist consumption [15].

A different opinion was held by the Deputy Minister of Culture Vittorio Sgarbi, who, one might say, expressed a public position on the restoration of the country's religious heritage: “… here the Church and the State together carried out the revival of the Cathedral. At a time when ... the Muslim world threatens the Christian world, the revival of the church has the most important symbolic meaning, because it is not only our past, but also the present, which indicates the presence of God and Christian values in our lives” [16].

P. Marconi (consultant for the restoration of the Cathedral) also argues that the restoration is absolutely necessary, but he approaches from the other side, saying that restoration is a requirement of philology, and that it was philology that led the authors and consultants of the restoration of the Cathedral in Noto more to the restoration than to the conservation of the Cathedral. Marconi is confident that there is no need to refuse manual labor, albeit expensive, with the subsequent loss of
traditional techniques that thousands of years ago made it possible to build the pyramids of Egypt, or the Acropolis in Athens, solely through the use of human hands and ingenuity. He writes that it is better to restore in stone the stone pillars in Noto Cathedral, destroyed by the earthquake, instead of reinforcing them with cement injections, the effectiveness of which is now in doubt. Marconi advocated the use of thatched wooden structures in the construction of the main vault, as was done in the 18th century in Noto Cathedral, and in the construction of countless Italian and non-Italian basiliicas. He believes that it is necessary to abandon the flattering "modernism", the product of "modern technologies" from the global market, which are quite indifferent to the environmental and economic consequences of their own choice. Marconi urges not to succumb to the temptation to use the comfortable achievements of modern technology, since they are used for financial reasons, where the durability degree of crossing the traditional methods with modern market technologies is not taken into account [17].

3. Restoration of architectural monuments damaged as a result of terrorist acts

Besides the monuments that have suffered from natural collisions, the group of victims of the consequences of disasters can include monuments damaged during terrorist attacks. This group is small. The 1990s in Italy were marked by a series of explosions (1992-1993) organized by members of the Cosa Nostra group. The churches of San Giorgio in Velabro, San Giovanni in Laterano, the Uffizzi gallery, the pavilion of modern art in Milan, as well as some modern buildings were damaged. In the case of this group, there is also a noticeable desire to preserve the original appearance of the buildings and get rid of visual reminders of what happened.

Next to the Roman Church of San Giorgio al Velabro in 1993, there was an explosion that destroyed the entrance to the building. The complex of restoration work included the reconstruction (restoration) of the portico, which was completely destroyed by the explosion. In the course of research, the possibility of re-installing one of the original arches over the portico entablature was confirmed, since, having fallen to the ground, it almost did not suffer. The fallen arch was returned to its place above the central span of the portico and reinforced on the frame. Also, all collected decorative elements, parts of the marble entablature and Ionic capitals were used during the restoration; in addition, a fragment of early medieval frescoes was collected. All the original surviving bricks were used for the reconstruction of the external surfaces (exterior) of the porch, and new bricks were used for the internal space. They repeated the type and size of the original ones, were made by hand using ancient technology, and the date of their installation was put on them for identification. The interior of the church was restored, the hole from the exploded bomb and the part of the masonry that was exposed after the explosion were laid and plastered. Thus, the portico was reconstructed in historical forms, using the principle of anastilosis, however, the principle of readability of the restoration additions was ignored, and all evidence of the incident that occurred was erased, at least for the average viewer (layman). Perhaps the reason for such an architectural decision was the desire to preserve the architectural ensemble, but it is also likely that the reason was the desire to forget about what happened, that is, about a series of explosions organized by the Italian mafia and to rip the unsightly thread of this story from the architectural fabric of the city. It remains unclear what the authors were guided to a greater extent when making the decision - the provisions of the restoration or political motives. If the latter is true, then there is some deceit in relation to the indisputability of the principles of the Venice Charter, reference to which occurs everywhere.

A similar case is the explosion in the Uffizzi gallery, where eight halls were damaged by a bomb. About two hundred works of painting and sculpture were damaged, and the interiors also suffered from it. The restoration work began very quickly and went on for three years - until 1996, the interiors of the halls and the paintings were restored. At the end of the work in 2015, no traces of damage remained after the terrorist attack.

A special theme in the Italian architectural restoration at the turn of the century were the works on historic theater buildings. Some of them did not escape the sad fate of structures with an abundance of wooden structures - they became victims of fires.
In 1991, a fire broke out at the Petruzzelli Theater in Bari. The outer walls have been completely preserved, giving a deceptive impression of well-being, while the interiors have been destroyed. The auditorium and the stage car were almost completely burned out, only some balconies and the decoration of the proscenium partially survived. The lobby suffered the least. The Petruzzelli Theater was the largest in Bari, and performed a representative function in the city, which is why it was decided to restore it. In this context, the main goal of the project was its preservation "in the authenticity" ("dell'identità") of the building's architectonics, which meant its recognizability. The elements of recognizability are the space of the auditorium, the foyer and the decoration of the interiors. In the process of restoration and functional adaptation to the modern requirements of theatrical art, the project was divided into two key areas: the first was the conservation of the object, the preservation of the quality of its spaces and materials, the second was the integration of the lost parts, as well as the integration of new functions. The basis of the conservation project was the assertion that the authenticity of spaces and materials constitute the main value of a historic building. And this attitude gave rise to the need to supplement the missing decorative elements with the same materials (although, according to the ideas of modern European restoration, the supplement doesn’t mean authenticity, but a tradition and historicity of the material) and techniques that were used in the construction of the theater, and where this did not contradict safety requirements. It should be noted that when the ceiling was restored, the paintings were only partially reproduced - a "dividing" decorative pattern was written on the ceiling, and the space, where there were panoramic views, was left blanc. At the same time, the places for the integration of new spaces and functions: wardrobe, cash desk, bar, staff entrance - were designed in an emphatically modern style in order to be absolutely recognizable and distinct from the historical interior. The result is a familiar mix of contemporary design and historic interiors. It should be noted that at the entrance to the theater, modern inclusions are not noticeable, and the visitor is immersed in the atmosphere of the lush theater interiors of the early 20th century, but not for long. This atmosphere dissipates when the visitor enters the secondary rooms - when descending into the modern LED-lit wardrobe located in the basement and not visible from the foyer; as well as when climbing minimalistic side stairs; at the entrance to the cashier. The effect of theater in the theater appears - not only what is happening on the stage, but also the place where the spectator is, seems to be a performance.

6 years after the described incident, there was a fire in the La Fenice theater in Venice. The theater, built in 1792, burned down in 1996 due to the negligence of the workers and was rebuilt by the decision of the city authorities "com'era e dov'era" by analogy with the case of the St Mark's Campanile.

It should be noted that the author is forced to constantly mention the St Mark's Campanile in Venice, as if repeating, but does this only because the Italian Committees, architects and representatives of the Soprintendenza themselves constantly refer to the case of San Marco when it comes to the reconstruction or recreation of the lost objects. The Campanile is a well-known case, one might say, a precedent that has been a success for more than a hundred years, both among theorists and practitioners of restoration. This precedent of the restoration of 1902/3 happened before the adoption of the Athene, Venice, Washington Charters. The charters, it would seem, should have changed the idea of restoration during their existence, since they are the product of established positions, the opinions of the community, but, despite their existence, there is a constant return to an earlier event that does not fit into them in any way.

The reconstruction of the theater and its restoration was carried out by a group of architects led by Aldo Rossi and took 7 years. The project was conventionally divided into 3 parts: the first part - work on draining and preserving the surviving part of the theater (after the fire, the theater stood in the open air for almost a year, which caused additional damage to it); the second part - constructive, which included the restoration of walls, a new roof structure, reconstruction of the stage box, recreation of the wooden structures of the auditorium, re-equipment of utility rooms (dressing rooms, fitting rooms), creation of a new stage, as well as reconstruction of the interiors of nearby buildings to accommodate the administration; the third part - works related to decorative finishing. It should be noted that during
the large-scale reconstruction work, much attention and scrupulous care was paid to the conservation of the survived parts: almost all the existing stucco decoration elements, artificial marble walls and the remains of the marble floor were preserved. In the Dante Hall (13 dicembre 1836), which before the incident was decorated with frescoes depicting scenes from the poet's works, the remnants of the frescoes were completely preserved, and where the murals did not survive, tinted blank spaces were left, on them, in the style of a sketch, the missing elements were outlined. At the same time, all the stucco decoration was recreated and gilded. The new gilding will never show the patina so characteristic of Italian historic interiors, as the patina in the theater is due to the soot and smoke from the candles, which now cannot appear thanks to electricity and the new air conditioning system. It is impossible not to notice that the absence of patina somewhat destroys the idyll of an exact repetition of the interior of the 18th century, but on the other hand, the authors, perhaps, unwittingly, follow the principles of the Venice Charter - the 12th article, which states that modern additions should be different from original. Actually, all the work on the interiors of the theater is distinguished by some ambiguity: the murals in the Dante Hall clearly separate the fragments of the original from the deliberately conditional additions, the architectural part is performed according to the principle of doing "as it was", only the mentioned absence of patina violates this principle. At the same time E. Fabri, who was responsible for the restoration part of the work, highlights her adherence to the principles of the Venice Charter, some deviations from which she explains by the circumstances. Nevertheless, the desire to recreate does not always resonate with contemporaries, sometimes causing rejection. This is the case of the civil tower in Pavia. In 1989, a massive bell tower, overbuilt in the 16th century, repaired many times, but still retaining the original appearance of Italian Romanesque, suddenly collapsed, taking the lives of people under its fragments. Only a small part of the wall remained from the tower, everything else turned into rubble of bricks. The rubble was cleared after a while, and the tower was forgotten for several years. However, in 1994, from V. Sgarbi (the future Deputy Minister of Culture) there was a proposal to restore the tower by analogies [16]. The purpose of the reconstruction was to preserve the urban dominant, familiar to society, and preserve the ensemble. In this presentation, one reads a reference to the St Mark's Campanile. However, despite its height the tower in Pavia was not the main city-forming object, this role was played and is performed yet by the city's grandiose cathedral. When comparing the shooting of the city panorama before and after the collapse from a bird's eye view, practically nothing has changed: the cathedral still dominates over low-rise buildings of the city, and the absence of a tower is not striking. The proposal was quite controversial, considering the centuries-old history of the building and the construction techniques used in its raising, which most likely would be difficult to reproduce in modern times. In addition, the surface of unplastered bricks has a peculiar texture, bears traces of time that are impossible to reproduce, and without them the building becomes a life-size model. It is difficult to know for sure what the city council was guided by when making a decision, but somehow the bill did not pass in the council. In the same year, a commemorative bas-relief about the history of the tower appeared, and a little later - a new architectural composition with a fountain dedicated to the lost monuments. Thus, the story with the reconstruction of the tower received its logical end.

4. Conclusions
The material considered allows us to conclude that there is a certain conditional unity of approaches to the restoration of architectural monuments that have suffered as a result of disasters. With regard to this group of monuments, restorations are especially often carried out in the tradition of post-war reconstruction, when architects tried to completely hide or minimize traces of destruction, to restore the "previous" historical appearance, resorting to the possibilities of modern technologies at that time. There are significant deviations from the principles of the Venice Charter, which prohibits stylistic recreation. But such stylistic recreations for the sake of preserving the familiar image take place and lead to the actual reproduction of an architecture that is very similar to the existed one, but, in fact, is not the same. When justifying decisions on the actual reconstruction, references are made not to international documents, but to the precedent with the St Mark's Campanile in Venice, which was
restored “where it was, as it was” - in its previous forms and materials in order to preserve the historical ensemble. However, with such restoration / reconstruction of monuments, justified by the need to preserve the ensemble, not only the facades are reconstructed, but also the interiors, which in no way affect the urban planning situation.

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