
CASE STUDIES OF PROTECTION MEASURES AT ROMANESQUE CHURCHES IN CLUJ COUNTY, ROMANIA

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ABSTRACT

The historical monument and its load-bearing structure reflect the historical, artistic, technical characteristics of a certain period as well as the most important social values. The aim of the current study is to present a brief analysis on the Romanesque churches from Cluj County, Romania, included on the National Register of Historic Monuments from Romania. The case studies will present the historic monuments built in Romanesque style and their structural and architectural characteristics and conformation. The causes of partial or total degradation of these buildings will be revealed along with any known intervention for protection or restoration of the buildings, where it existed. The Romanesque architectural style is considered the first European architectural style after the architecture of the Roman Empire, therefore the effort of in-depth understanding of Romanesque ensembles as part of the built heritage, in the light of the material and spiritual values they carry, represents the first step in their preservation.

Keywords: built heritage; historic monument; Romanesque churches

REZUMAT

Monumentul istoric și structura sa portantă reflectă caracteristicile istorice, artistice, tehnice ale unei anumite perioade, precum și cele mai importante valori sociale. Scopul studiului actual este de a prezenta o scurtă analiză a bisericilor romanice din județul Cluj, România, inclusă în Registrul Național al Monumentelor Istorice din România. Studiile de caz vor prezenta monumentele istorice construite în stil romanic și caracteristicile lor structurale și arhitecturale, precum și conformația. Cauzele degradării parțiale sau totale ale acestor clădiri vor fi reluate împreună cu orice intervenție cunoscută pentru protecția sau restaurarea acestora, acolo unde a existat. Stilul arhitectural romanic este considerat primul stil arhitectural european de după arhitectura Imperiului Roman, prin urmare efortul de înțelegere a ansamblurilor romanice ca parte a patrimoniului construit, în lumina valorilor materiale și spirituale pe care le poartă, reprezintă primul pas în conservarea lor.

Cuvinte cheie: patrimoniu construit; monument istoric; biserici romanice

1. INTRODUCTION

The architecture of a given period can only be fully understood by researching factors related to both geographical environment (land, building material, climate and cultural) and scientific environment. However, the technical factor is the most important element in the full understanding of a construction. The Romanesque architectural style is considered the first well-defined European architectural style, after the architecture of the Roman Empire. The Romanesque monument was considered a unitary whole, without differentiation between its architecture and its structure, so

the construction of an edifice was done empirically only on the basis of the knowledge accumulated over time. This is why the problem of preserving these historical structures becomes a topical one, especially because we are in a period when preservation of heritage buildings has regained its importance and value.

The Romanesque style spread over the architecture of Western and Central European space, which was under Catholic influence. It appeared and developed during the 11th-13th centuries, taking over the forms of Roman tradition with addition and integration of Caro-

lingian, Byzantine, Arab and Barbarian elements. Although these heterogeneous elements have been assimilated and re-elaborated into a unitary vision, Romanesque art has peculiarities based on the local traditions and the contacts between the different European artistic centers.

Romanesque churches follow the basilica plan, with one or multiple naves. The main characteristics are: massive walls, frequent use of round arches for windows, doors or arcades, semi-circular apses, barrel or groin vaults and generally small openings. The massive, round pillars and thick walls of the Romanesque buildings were structural necessities until the professional techniques were discovered (Curinschi-Vorona, 1978).

The Romanesque architecture spread in Transylvania during the 13th century through different ways: the Benedictine sites, the Saxon colonists brought from Germany to strengthen the power domination of Hungarian kingdom, the Teutonic knights and the monastic orders. The ecclesiastical architecture, which is representative for the Romanesque style, presents a complex configuration, through the combination of the Western artistic elements with the Byzantine-Balkan architectural elements and with the local tradition. The Transylvanian Romanesque style, often combined with the early Gothic, due to its delayed to West Wallachia and Moldavia, took over the influences of Byzantine architecture (Fabini, 2009).

On the Historic Monuments List of 2015, drawn up by the Ministry of Culture and National Heritage of Romania, 110 buildings built in Romanesque style can be found. About 90 Romanesque churches were built in the 13th century. As 80 of these buildings have undergone additions or transformations in the following centuries, only 10 are considered to have kept their mark and the characteristics of their original construction style. Over the Transylvanian territory, 8 ruined churches built in the 13th century can be found today. As for the secular, civil or military buildings, 12 fortresses were built in the 13th century, 7 out of which being in ruins today.

2. INTERVENTIONS ON THE ROMANESQUE STRUCTURES IN CLUJ COUNTY

In Cluj County can be found today around twenty such buildings, built in Romanesque style, both churches and fortresses. In this paper, as a first step, we will do a brief description of the current situation of some of these historical monuments: the Reformed Church in Bontida (13th century), the Reformed Church in Orman, the commune of Iclod (13th-15th century), the Reformed Church of Tiocu de Sus, Cornești (13th-15th century) and Bologa Fortress of Poieni (13th-15th century). Based on the field research of these monuments, the description will be accompanied by pictures of the buildings and of their degradations. In the second part, based on the documentation from the archives of the Department of Historical Monuments (DMI) in Bucharest, a brief presentation of the repair, consolidation or restoration interventions carried out at the church in Sâncrai, Huedin (13th-15th century), the church in Luncani, Luna village (13th century), the Church of Nireș, Mica commune (13th century), the Church of Nima, Mintiu Gherlii commune (13th century), the Church of Sic (13th century) will be presented. The descriptions will be accompanied in this case by ground floor plans and sections through these monuments. Other examples of architectural, cultural and religious heritage in the territory include a series of Reformed and Roman Catholic churches from the medieval period such as Aghireșu, Dârja, Chidea and Boteni, which are less documented. There is also a number of castles and fortresses that can be points of interest. Some of them are in a bad condition, requiring urgent rehabilitation. The fortress of Bologa was abandoned and had a high risk of collapse until the beginning of last year, when a complex rehabilitation process started, while the Lita fortress in Săcel is in ruins.

2.1. The Reformed church of Sâncrai, Huedin

The original church in the village of Sâncrai was dedicated to Saint Rego (Stephen I of Hungary). The existing church today is the

result of several phases of construction, but the basic forms and the construction method admit its dating in the beginning of the fourteenth century. The nave is medieval, while no clear evidence has been found for the altar. The church was affected considerably during the Turkish expeditions of 1657 and 1622. The date of disappearance of the sacristy from the northern side of the altar is unknown. The tower was built in 1762, as shown on an inscription on the west façade.

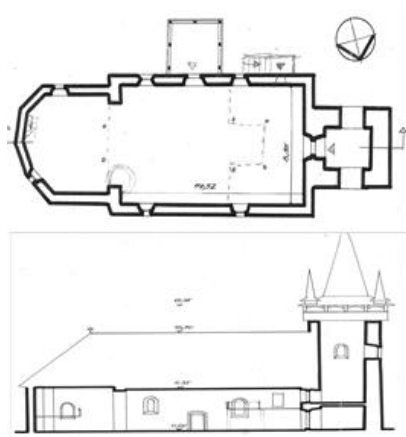


Fig.1. Plan and longitudinal section

During the events of 1848-1849, the church was burnt down and devastated. Later, in 1856, some interventions were done, such as covering the church and the construction of the portico. Smaller modifications were made in the 19th century, along with the construction of the exterior staircase to the east gallery. Later, in 1936, the window in the southern wall was transformed, while in the northern wall another window was cut. In 1956 the entire construction of the tower strip was changed.

The central nave has average interior dimensions of 8.35×15.50 m. The interior height today is 5.45 m. The wall thickness varies between 96 and 100 cm. The altar has an irregular square plan, continued to the east end with a polygonal apse with four sides. The thickness of the walls varies between 100 and 105 cm. The space of the nave and the altar are united by a triumphal arch. The light brightens through six windows: four in the nave and two in the altar. The nave and the altar were covered with a flat ceiling with juxtaposed beams;

the roof structure consists of two slopping roofing surfaces with clogged eaves. The bell tower is built near the west wall of the nave, but separated from it. The plan is square with average exterior dimensions of $5.85 \text{ m} \times 5.85 \text{ m}$. The overall height of the masonry is 13.50 m. The thickness of the ground floor wall is between 142 and 149 cm. The ground floor is open to the south and north and covered with a vault. Part of the masonry is crowned by a guard gallery (with open arches), the dimensions of the sides being 6.80×7.20 m. Above the gallery there is an eight-sided pyramidal strip, surrounded by four turrets at the corners. The height of the strip, together with the gallery and the tip, is 15 m; the total height of the tower is therefore 28.50 m. On the walls, the building material is rough stone. The outside staircase is made of fir and oak. The cover for the church, for the porch and the staircase is the fir shingle, while for the tower's front galvanized sheet is used. The exterior wall surrounds the church in line with the polygonal front. The total length of the wall line is 148 m, the average height is 2.50 m, and the wall thickness is 8 cm. The wall is supported by a total of 11 buttresses. At the north-east gate a garrison is applied, made out of stone carved in Gothic style. This is built of rough stone and is covered with fir shingle.

Between 1971 and 1973, a repair project for the church in Sâncrai was recorded in the INP archive, DMI, with file number 8414. The constructions of the assembly did not show structural defects at that time; therefore only repairing interventions were made, such as: repairs of the exterior plaster, renewal of the interior and exterior spoilage, repairs of the exterior stairs from the western gallery and of the shingles or window frames. The soil level around the church was lowered to the level of the church floor and zinc plated trusses and jetties were introduced to protect against rain-water (NIH, 1971-1973).

2.2. The Reformed church of Nireș, Mica commune

The church was built in the 13th century. The nave was extended in the first part of the 14th century. The altar is entirely built of

carved stone and the triumphal arch has capitals similar to the ones that can be found in the cathedral of Alba Iulia.

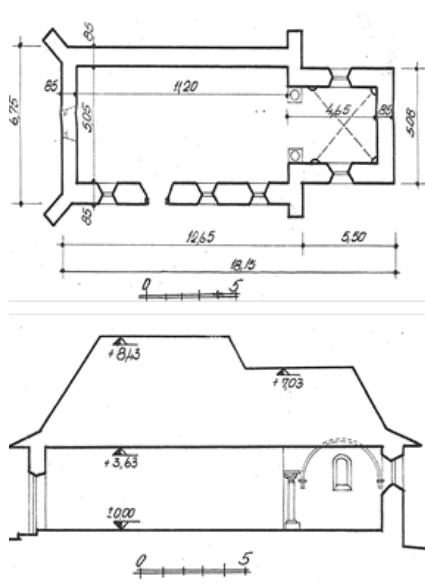


Fig.2. Plan and longitudinal section

In 1959, a general restoration project was carried out, after observing the need of an elevation to the altar subsequent to the dislocation of the south-east corner due to soil overhaul. Since 1955, actions as consolidation and renovation works have been conducted for the restoration of the dislodged masonry, repairs to walls, plaster repairs, new coatings and spoilage.

The major part of the church walls was in good stand, only the south-east wall was dislodged and the connection with the other wall was broken, probably because of the inadequate soil, which broke and the water seeped into it. Before starting the interventions on the masonry in the specific points for the reconstruction of the wall, it was necessary to dig some deep pits near those specific points, in order to be able to determine the depth of the foundation or whether the ground under the foundation was massively weakened or not. At the indicated places, the masonry was removed to the appropriate depth in order to determine the rate of displacement of the blocks, if necessary until reaching the foundation. The dismantled parts of the foundation were redone with cement mortar. Parts of the roof were in

good condition, only the shingle roof that was outdated was replaced (NIH, 1974-1976).

2.3. The Reformed church in Sic

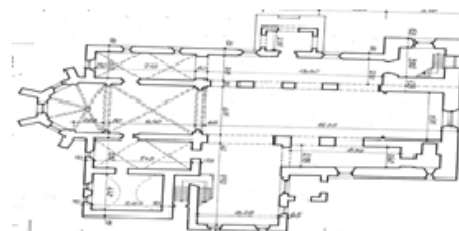


Fig.3. Ground plan

Following the project report and the brochure signed by Entz Geza and Sebestyen Iosif, it turns out that in 1964 the church went through important transformations, which negatively influenced its stability. The demolition of the old tower walls, located on the longitudinal axis of the building and the execution of a new tower in lateral position, towards the south, were part of the mentioned interventions.

One of the shortcomings was that the longitudinal walls from the middle were stuck to the rigid connection formed by the inner wall of the old tower and there have been ground settlements that have affected the old walls. The vertical deviation of the longitudinal walls occurred mainly due to some initial construction defects. It could not be admitted that these distortions occurred over time, due to the magnitude of the observed ones. Over the time, the initial defects were accentuated and dangerous cracks appeared, therefore the stability conditions changed, imposing the need of consolidation works.

In 1958, the supporting walls of the northern exterior wall have been executed without prior approval in the space between the main façade and the first corner, which contributed to the accentuation of existing cracks.

A first proposed consolidation solution did not ensure the stability of the high longitudinal walls, both because of the inclined position of the metallic ties, which could not work efficiently, but also because of the small section of the pillars placed at the top of the wall. The same consolidation system treated the two

longitudinal walls separately without considering their binding. Thus, it was proposed the study of a sufficiently rigid transverse reinforcement system, to reduce the free length of high deformed walls. At the same time, the longitudinal reinforcement of these walls and the injection of all cracks with slurry cement have been proposed to restore the necessary continuity. The transversal consolidation system was planned to be unitary, both for the central part and for the outer walls of the collateral galleries. It was decided that the substructures were not necessary, although in the project it was shown that the existing foundations were deepened up to a maximum of one meter.

At the altar it was considered necessary to provide a reinforced concrete belt at the top of the outer walls where the overlaying layer of the vaults was connected. It was necessary to remove the cement plaster from the base and to solve the irregularity of the roof on the northern side, which led to the deposit of a large amount of snow difficult to clean. The proposed works were indicated to be done by avoiding the destruction of paintings that could have been found or of older inscriptions (NIH, 1961-1963).

2.4. The Reformed church of Mănăstireni

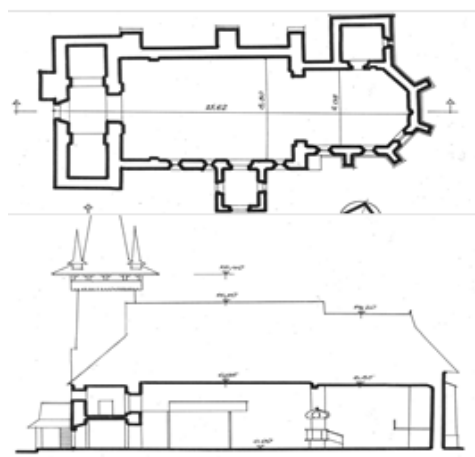


Fig.4. Plan and longitudinal section

The church existed before the Tartars' invasion in 1241. The church was restored and extended in 1442. The eastern part of the church was made in Gothic style, and the west

side and the tower in Romanesque style. The west side is the oldest. In 1660 the church was burned down by the Turks, and in 1765 it was severely damaged by the earthquake, when the Gothic vault was demolished. In the 18th century the tower's roof structure was built in the characteristic style of the reformed churches. In 1930 the church was restored. The ceiling was made of wooden planks in 1748, the pulpit dates from 1752 and the crown of the pulpit was done in 1788. The church was renovated in 1891 and repaired in 1936. It was built with an exterior wall that was made in 1734. The walls are built of plastered limestone. The ceiling is made of wood with shingles. The surrounding wall is made of quarry stone covered with shingles.

The church consists of a polygonal altar supported by buttresses, a sacristy in the northern part of the altar, a triumphal arch and a rectangular nave with semicircular entrance from the south. Of the two original towers, the one from the north was preserved with its Romanesque elements, while the southern was not rebuilt. The windows of the altar have gothic moldings and the windows of the nave are semicircular in Romanesque style. In the apse of the altar there is a wooden gallery with an organ and a wooden gallery for the flames on the west end. The altar's ceiling is plastered and ornamented and the nave has a boarded ceiling. The existing tower has 5 double Romanesque windows and four triple Romanesque windows. The tower frame has a central strip, four turrets at the corners and an open wooden gallery.

At the time when the repair project has begun, in 1954, the church was in good condition. Even if the roof of the tower was rebuilt in 1894, a new roof was planned, given that the shingle was damaged and for the need to protect the beams of the tower against rain. Considering that the tower is also a historical monument, it was planned to cover it with shingles. The roof of the tower is of pyramidal shape. Near the main tower there are 4 smaller towers placed on the corners, with a height of 2 meters. The exterior plaster of the walls, that was damaged and detached from the wall, has been restored. The floor level inside the church

was 30% lower than the outside, due to the elevation of the ground around the church (NIH, 1954-1974).

2.5. The Reformed church of Bonțida

The church has two naves covered by a bordered ceiling with ribbed wooden beams. The two naves are separated by a series of arches, which stand on the rectangular and circular pillars. The stone consoles existence at the top shows that the church once had a groin vault. The altar is square covered with a bordered ceiling and is separated from the nave by a triumphal arch. The church is made out of stone masonry and the foundations are of cut stone. The church is surrounded by a stone wall, which has a tower that has been added later. The existence of the so-called "restoration windows" inside the church and the existence of inscriptions, which are still preserved, shows that the church went through restoration works in 1893 and 1983.



Fig.5. Exterior degradations

Today the stone foundations, which are preserved since the 13th century, are in a rather bad condition and some parts are missing. Exterior plasters are severely damaged. The walls of the nave have cracks on the exterior at the top, most likely due to ground settlement. The opening of larger windows, which are replacing the small and narrow Romanesque ones, led to the appearance of cracks. The fence wall shows cracks in certain points and one area collapsed.

2.6. Reformed church of Tiocu de Sus



Fig.6. Degradation of northern and southern facade

The church dates from the end of the thirteenth century or the beginning of the fourteenth century. It is a hall-church with a single nave and a rectangular altar. The tower is located on two levels and it was probably built in the same century as the church. The altar preserves two Romanesque windows with stone frames. The church shows cracks at the intersection between the tower and the nave and cracks in the northern wall of the nave and the altar. The stone buttress placed in place of the sacristy is severely damaged. The western façade is a "blind façade" with a single small window of rectangular shape. The portal has an ogival arch which is a characteristic of the early Gothic style.



Fig. 7. North facade and south facade

2.7. The Church of Orman

Today, only the ruins of a church from the end of the 13th century are preserved, as shown by the signs of sanctification inside. The church is of the hall type, with a single nave and a rectangular choir reinforced with external buttresses. Both the walls of the nave and the choir, but also the buttresses are made of raw stone masonry. In the altar there are traces of vaults. The church keeps two narrow windows of Romanesque type with stone frames. The traces left by some restorers are evident through the "open windows" made in order to discover the painting signs.



Fig. 8. Ruins of the Church

3. DISCUSSION

The presented churches are the result of several phases of construction. The initial phase of construction belongs to the Romanesque period, but most of the churches have undergone additions or transformations under the mark of the characteristic architectural style of the period when they were built. The historical events that occurred over time, together with many other degradation factors, have affected the structural stability, proving the vulnerability of the historical buildings through partial or total collapse. Thus, in 1982, the need for the re-establishment of the "Commission of Historical Monuments" came out; this operated until 1977, when it was abolished. (Opriș, 1994). During this period, a series of interventions or consolidations were proposed regarding the historical monuments. The churches from Sâncrai, Luncani, Nireș did not show major structural damage, therefore the interventions carried out were such as maintenance and repairs, in the years 1971-1973, 1974-1976. Churches in Nima and Sic went through larger consolidation works: sub-structures works, respectively wall consolidations, in 1959. The churches of Bonțida, Tiocu de Sus and Orman are less documented and the existing information regarding the monuments is limited. Thus, any intervention proposal nowadays is complicated to be made. The

church in Orman is a beautiful example of Romanesque architecture from the 13th century that today is in ruins.

4. CONCLUSIONS

The restoration of historical monuments has become a very important issue in the preservation of cities and communities. Well-preserved and maintained historical buildings improve the quality of community life with which they coexist. They influence the development of tourism and thus economic development. Cultural heritage can be destroyed by many factors, so inventory and documentation has become essential for its protection. The way of intervention on a monument ranges from simple maintenance work, to protection, consolidation and re-wholing actions, to complex restoration or partial reconstruction interventions (Toader et al., 2018; Ionescu et al., 2018). Thus, preserving the authenticity of the structure during interventions is essential in the complex effort of preserving historical monuments.

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