



Cultural Heritage Across Borders: A Comprehensive Examination of the Restoration of the St. Nicholas Memorial Museum (2021-2023)

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Abstract

St. Nicholas Church is a remarkable Byzantine structure located in the Demre district of Antalya, in the southern region of Türkiye. The church and its accompanying tomb were built in the 5th century AD in memory of St. Nicholas after his death. It became a sacred cultural center and a pilgrimage site throughout the Middle Ages. Throughout history, the church underwent multiple reconstructions and substantial repairs necessitated by invasions, earthquakes, and other factors. During the Late Middle Ages, a flood of the river Myros submerged the church under approximately 6 meters of alluvial deposits. The excavations, which began in 1862 and have continued intermittently to this day, have uncovered significant remains, which were subsequently restored in accordance with the conservation approach of their respective periods. However, certain ruins persist within privately owned areas. Although the church largely maintains its structural integrity, ongoing excavations within the Ministry of Culture and Tourism's designated areas in the monastery complex continually contribute new insights. This article aims to provide data on the restoration efforts undertaken on the church and its ruins, which now function as a Memorial Museum, preserving their original values during the restoration period of 2021-2023. The primary goal is to contribute valuable insights for future restoration initiatives. Furthermore, the article seeks to advocate for the inclusion of the monument in the World Heritage List, the establishment of Site Management, and the enhancement of its global recognition. By making the newly unearthed spaces accessible to visitors, particularly for Russian pilgrims for whom the church holds significant religious importance, it is envisioned that this will not only foster faith and cultural tourism but also enrich the perception and interpretation of this historic structure.

Keywords:

Demre St. Nicholas Church, Byzantine architecture, Architectural restoration, History of architecture, Cultural heritage

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INTRODUCTION

Situated in the Demre district of Antalya, Türkiye, St. Nicholas Church stands as a testament to the enduring legacy of St. Nicholas, the 4th-century bishop of Myra, who was born in Patara (Anrich, 1913: 51). While the precise date of the church's construction remains unknown, historical records indicate that a church and tomb were erected in the 5th century to commemorate St. Nicholas, who passed away in Myra, on December 6, 343. These structures evolved into significant pilgrimage sites for travelers who headed to Jerusalem in the 6th century (Ötüken, 1998: 85-86; Doğan, 2016: 238). Myra and the tomb, which was believed to be the resting place of St. Nicholas, were ruined by Arab Muslims in 808 (Breyer, 1964:147; Demiriz, 1966: 20). Later, in 1034, Myra was looted by the Zirids from Africa, and the church was destroyed during this plunder (Ötüken, 1998: 86). During the Crusades, merchants from Bari obtained some relics of St. Nicholas and brought them to Bari in 1087. These relics were initially preserved in St. Stephen Church until the Basilica of St. Nicholas was completed around 1105. The Venetians took the remaining relics and are currently preserved in San Nicolò al Lido in Venice (Doğan, 2018a: 44). As a result, St. Nicholas's recognition started to increase in the West (Demiriz, 1966: 20-21). In the 10th century under the reign of Vladimir the Great, not only did Christianity become the official religion of Russia, but also St. Nicholas became the patron of Russia. In the second half of the 13th century, the church was filled with approximately 6 meters of alluvial soil up to its gallery level due to the overflow of the river Myros in Demre, which was under the reign of the Turkish people at that time. In the 15th century, the bishopric moved to the island of Kastellorizo (Megisti), off the coast of Kaş (Rott, 1908: 295-297; Harrison, 1963: 122-124; Doğan, 2018b: 38; Fındık, 2015: 303-305). Following the population exchange between Greece and Türkiye in 1923, some Greeks left Demre and moved to Kastellorizo. St. Nicholas is renowned for various miracles as the protector of sailors and children (Işık, 1996: 460; Doğan et al., 2014: 19-23; Ebon, 1975: 11-13, 50-51; Miller, 1955: 15, 80-81) and has become a legend associated with Santa Claus (Figure 1).



Figure 1. St. Nicholas appearing to Emperor Constant St. Nicholas appearing to Emperor Constantine the Great in a dream (top right), A Sea Miracle (bottom right), Scenes of helping to childless families (left) (Çorağan, 2018: 247-252).

In the contemporary context, the Church, now transformed into a Memorial Museum (henceforth MM), has a crucial role in preserving historical, cultural, and community values. Functioning as the custodian of tangible and intangible cultural heritage, the MM encapsulates Anatolian history from the medieval Byzantine period to the present day, providing visitors with a rich cultural experience and drawing attention as a hub for cultural and religious tourism.

Globally renowned as the church of Santa Claus, the MM holds a coveted spot on the World Heritage Tentative List, emphasizing the need to preserve its universal values, originality, and integrity. The restoration process requires a holistic, interdisciplinary conservation approach, considering beliefs, cultural practices, and social dynamics alongside its museum function.

The restoration plan encompasses several key components as listed below:

- Gathering data on the building's repair history by scrutinizing the resources and archives of the Ministry of Culture and Tourism (henceforth MoCT),
- A thorough analysis of the current environmental, ground, structural, and material condition of the church and its contextual ruins in a limited area,
- Enhancing the perception, interpretation, and presentation of newly unearthed places through archaeological excavations, integrating them into the museum visit route for public access

Given the ongoing nature of archaeological excavations and the necessity to incorporate the latest findings into the structural considerations, the restoration project is meticulously programmed. The guiding principle is one of minimum intervention, prioritizing the preservation of existing traces while avoiding unnecessary completion and integration unless dictated by structural concerns.

RESTORATION HISTORY OF THE CHURCH

Based on the architectural features of the church, we can date the capitals and the naos back to the late 5th century and early 6th century. However, various sections of the church suffered damage over time, likely due to invasions or earthquakes, leading to subsequent reconstruction in the form of a domed basilica. This reconstruction brought about substantial changes to the upper structure and roof (Perslow, 1975: 347; Ötügen, 1996: 75-76; Demiriz, 1966: 19-20). The church endured further challenges during the Arab invasions between the 7th and 11th centuries (Ötügen, 1992: 294). An inscription found in Demre provides evidence that Emperor Constantine IX and Empress Zoe initiated the renovation of a structure in Myra. St. Nicholas Church is highly likely to be the structure mentioned in this inscription (Rott, 1908: 340). According to these restoration works, the opus sectile floor dates to the 11th century.

A new monastery was built around the church in the second half of the 11th century and enclosed by a wall made of Roman stone blocks. This monastery featured two gates, one facing the sea and the other toward the ancient harbor (Figure 2) (Lethaby, 1915: 17).



Figure 2. The depiction of the Monastery and St. Nicholas Church in the topographic plan of Myra (Lethaby, 1915: 17).

In the western courtyard of the church, an arcosolium dating back to August 6, 1118, showcases a mural depicting scenes from Mary's life, embellishing both the sarcophagus and the vault (Rott, 1908: 339-40; Doğan, 2018a: 44-45). The southern section of the church, augmented with additional structures in the 12th century, accommodates a burial chamber featuring arcosolia and sarcophagi. Over distinct historical periods, the church has been adorned with a diverse array of wall paintings, encompassing depictions of St. Nicholas's life, biblical figures, and festive scenes (Çorağan, 1998: 66-67). During the 12th to 13th centuries, a mural illustrating the 'Communion' was incorporated into the dome of the prothesis located northeast of the church. Simultaneously, scenes portraying the 'Supplication' and the annunciation to Mary were integrated into the 3rd Southeast Chapel (Doğan, 2018a: 47). The catastrophic flooding of the river Myros resulted in the burial of St. Nicholas Church, along with the rock tombs and the hillside theater in Myra, under 6 meters of alluvial soil (Ötüken, 2006: 524). Enduring across centuries, the church's pulpit, believed to trace back to the 6th century, underwent reparations, persisting until the early 20th century (Doğan, 1998b: 323-324) (Figure 3-4).



Figure 3-4. The western facade of the church and the pulpit in front of the apse (Rott, 1908: 325, 331-335).

An inscription from 1798, discovered during recent excavations, pertains to the restoration of a chapel atop the 3rd Southeast Chapel, which is now inaccessible (Rott, 1908: 326; Doğan, 2018a: 48). The Russian Archaeological Institute undertook the first archaeological excavations and subsequent restoration of the church during the reign of Tsar Nicholas I, from 1857 to 1862. These initiatives encompassed thorough cleaning and repairs to the church's interior and courtyard, accompanied by substantial alterations to the original architectural scheme (Ötüken et al., 2000: 224). Key modifications involved the addition of a four-domed outer narthex and the reconstruction of the vaulted roof in the naos section (Doğan, 2018b: 51; Ötüken, 1996: 76). While the dome of the 2nd Southeast Chapel underwent rebuilding, it remained unfinished. The keystone on the south arch of the outer narthex, dating to 1862-63, serves as a pivotal record of this restoration. In 1876, the Greek community facilitated repairs to the administrative building and water facility, along with the construction of a bell tower. Following the Greek community's departure from Demre in 1922, it is postulated that the templon in the naos and the south chapel fell into disrepair (Doğan, 2018b: 325) (Figure 5).

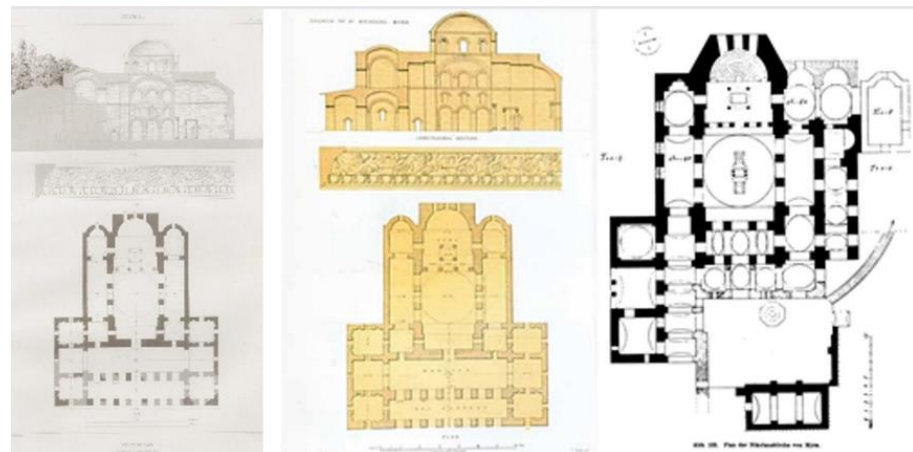


Figure 5. 1839-1849 (Textier), 1867 (Textier and Pulland), 1908 (Rott)

The Ministry of Culture and Tourism (MoCT), in collaboration with the Antalya Archaeological Museum, conducted extensive excavation efforts aimed at removing soil fillings from the southern and eastern sections of St. Nicholas Church during the years 1963-64 and 1966-67. Simultaneously, the German Archaeological Institute, as part of the Myra project, performed a comprehensive architectural assessment of the church in 1965 (Borchardt, 1975: 30; Peschlow, 1990). In 1968, recognizing the need for protective measures, a roof-tiled canopy was erected over the South Burial Chamber, 2nd and 3rd Southeast Chapels, initially safeguarding their murals. Subsequently, in the 1980s, this canopy transformed, evolving into a steel construction with a plastic-coated roof (Doğan, 2018a: 57) (Figure 6). Given its below-sea-level location, the church faced the detrimental effects of water exposure, especially during rainy periods when groundwater levels increased. Responding to this challenge, a pump discharge system was implemented

in the 1980s to regulate groundwater levels and divert water away from the church. Between 1989 and 2009, subsequent excavations brought to light additional structures within the northern area, including the Episkopeion (bishopric structure), sites associated with the daily lives of monks, and various graves. Conservation efforts from 2000 to 2009 primarily concentrated on fortifying mural surfaces. Building on this foundation, ongoing work from 2013 to 2021 has encompassed a spectrum of activities, including excavation, preservation, and systematic exploration. The architectural evolution of St. Nicholas Church spans three significant construction phases dating back to the 6th, 8th, and 11th centuries. Remarkably, during the 18th and 19th centuries, the church underwent restoration and expansion with the incorporation of new elements. It retained its functional use until the early 20th century (Ötüken 1996: 76) (Figure 7).



Figure 6-7. Tile and metal protective roofs, Construction periods proposal (AMoCT-PR)

St. Nicholas Church's complex reflects multiple construction phases, prominently featuring a well-preserved domed basilica dating back to its second period. This architectural marvel not only exemplifies the influence of the Byzantine era but also draws from Mediterranean civilizations, as noted by Ötüken (1996: 75). The church stands out for its remarkable frescoes, representing the exclusive St. Nicholas cycle – a distinctive feature unparalleled on a global scale, as highlighted in the work by Ötüken (1998: 87). Recognizing the profound cultural significance of St. Nicholas Church, it was accorded legal protection as a first-degree Archaeological Site in 1993. Furthermore, its historical and architectural importance is underscored by its inclusion in the UNESCO World Heritage Tentative List in 2000.

SPATIAL LAYOUT AND ARCHITECTURAL FEATURES

The MM cafeteria, sales unit, and restrooms occupy the western section of its courtyard. Access to the Church's entrance from the courtyard is facilitated by a southern ramp. It is noteworthy, however, that the original entrance to the Church is situated on the western side. Unfortunately, due to the presence of privately owned parcels adjacent to

this entrance (refer to Figure 8), its current use is not feasible. The architectural layout of the church encompasses a ground floor and a gallery floor (Figure 9).

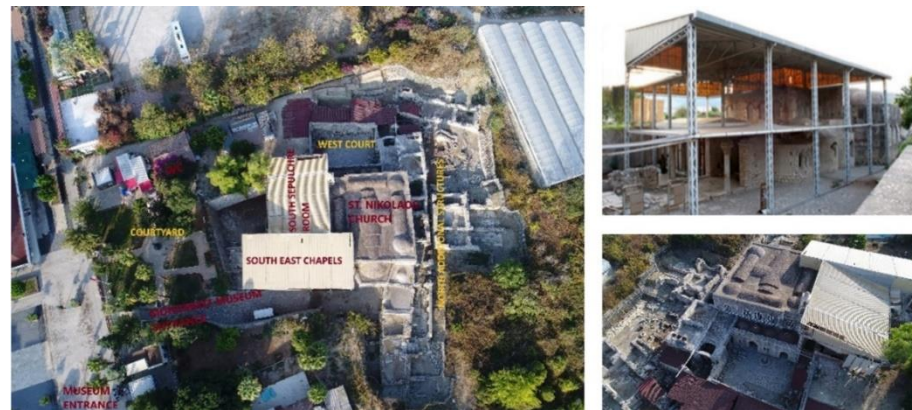


Figure 8-9. The church and its surrounding remains, the south and west facades (AMoCT-PR-4).

Three chapels, designated as Chapel III, Chapel II, and Chapel I, are intricately linked to the entrance hall in the southeast direction. Additionally, situated in the western direction is the South Burial Chamber (henceforth SBC). This architectural arrangement highlights the spatial configuration of the chapels to the entrance hall and the strategic placement of the South Burial Chamber (Figure 10).



Figure 10. Access to the southern entrance and SECIII (AMoCT-PR-4)

Access to the interior narthex is facilitated through the 2nd Southeast Chapel (henceforth SEC I). The southern hall boasts a sturdy stone pavement and is distinguished by the presence of three columns. The architectural layout of the 3rd Southeast Chapel (henceforth SEC III) adopts a cruciform plan aligned along the east-west axis (Figure 11). Despite the dome's complete state of ruin, a portion of its drum remains preserved. The apse, adorned with three arched windows, is notable for its intricate murals. Access to SEC II is facilitated through a north-side arched opening in SEC III, while an opening on the south side allows passage from SEC I to the naos. The chapel's dome underwent renovation in the 19th century; however, its top was left uncovered (Figure 12).



Figure 11. The apse of SEC I and its connection to the SBC from the west (AMoCT-PR-4).



Figure 12. SEC II, the arcsoolium in SEC II, and its dome (AMoCT-PR-4)

The entry point for the SBC is a gate situated in the western arm of the cross, characterized by a rectangular plan segmented by north-south arches. The intact northern and southern walls, extending to the commencement of the vault, are covered in canvas. Entry to the western courtyard is granted through a doorway in the western wall. Marked by embellished arched niches, the northern and southern walls also feature two facing arcsoolia containing sarcophagi in the western segment (Figure 13). Notably, the transition to the vault cover hosts 12th-century murals depicting scenes from the life of Saint.

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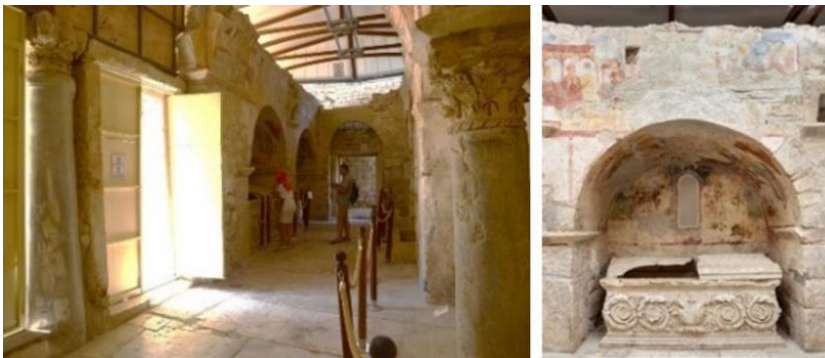


Figure 13. SBC and the sarcophagus (AMoCT-PR-4)

The naos, characterized by a rectangular plan and east-west orientation, features an apse with a semi-circular interior plan, adorned with three windows boasting semicircular arches. Within the apse niche, a synthronon with accompanying steps graces the interior, its lower section forming a passageway. Centrally positioned on the highest step of the synthronon is a cathedra, serving as the bishop's seat, supported by a pedestal. The bema, distinguished by its elevated rectangular plan and stylobate, showcases two columns with capitals erected on pedestals. At the heart of the bema rests a pedestal bearing an altar table. Notably, recent restoration efforts have introduced four ciborium columns surrounding this central pedestal (Figure 14).



Figure 14. The apse of the naos, the ciborium, the altar, the bema, and the cathedra (AMoCT-PR-4).

The naos is partitioned by two primary pillars into northern and southern side naves. Access to the northern side is facilitated by way of two arches, while the southern side is entered through three arches. Semicircular arched windows illuminate the side naves. Within the northern nave, a sarcophagus is positioned on the top of a Roman theater seat, strategically situated between the two main pillars (Figure 15).



Figure 15. The openings of Naos (AMoCT-PR-4).

The original dome of the naos, likely destroyed by an earthquake, along with the half-dome of the apse and the barrel vault of the bema, underwent replacement with a cross-vaulted roof during the 19th-century Russian renovations. This comprehensive restoration extended to the vaults and domes of the gallery level, commencing from the arches. On the western side of the naos, three door openings—of which the central one is wider—grant access to the inner narthex. Simultaneously, three arched openings on the west side of the gallery floor establish a connection with the naos, offering both access and natural illumination. The decorative murals adorning the barrel vaults and arches within the

inner narthex exemplify the meticulous attention to detail during the renewal. Additionally, the flooring of the naos is adorned with an array of square limestone tiles (Figure 16).



Figure 16. Western inner narthex, murals, and view toward the naos (AMoCT-PR-4).

Accessing the western courtyard from the inner narthex involves passing through the outer narthex, which is divided into four sections by arches (Figure 17). The Phiale (Fountain), initially positioned at the courtyard's center, has been relocated in front of the structure to accommodate the extension of the outer narthex in the complex. The courtyard is encircled by burial chambers, and remnants of the monastery are interspersed throughout the surrounding area.

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Figure 17. The western outer narthex, Phiale in the courtyard (AMoCT-PR-4).

The northern section of the nave within the naos exhibits a rectangular layout, encompassed by an east-west barrel vault. Three windows adorn the northern wall, while the flooring is paved with limestone tiles of varying dimensions. Adjacent to this region, towards the east, lies a rectangular space identified as the Prothesis, fulfilling a dual role as both an independent area and a passage from the bema. The Prothesis is capped by a dome supported by pendentives, featuring an evocative "Communion" scene (Figure 18).

The northern side nave of the structure is linked to the west corridor through an arched passage, segmented into four sections in the north-south direction. The central portion of the west corridor, defined by three primary pillars, is demarcated by the subsequently added western wall of the outer narthex. Originally featuring a barrel vault, the roof of the

western section suffered a collapse during 19th-century repairs (Figure 19), leading to damage in specific areas of the floor in that region.

Figure 18. The northern nave and the dome painting (Prothesis) (AMoCT-PR-4).



Figure 19. The outer narthex that closes off the western corridor arch and its collapsed vault (AMoCT-PR-4)



The southern outer nave, covered by a barrel vault, is characterized by a quadrilateral plan divided into four sections by arches. Within the eastern section's southern wall, a remarkable feature is the Late Roman sarcophagus positioned within an arcosolium niche. The barrel vault ceiling above is adorned with motifs of floral patterns and crosses, serving as symbolic representations associated with the concept of the afterlife (Figure 20).

Figure 20. The southern outer nave, its vault, and the sarcophagus (AMoCT-PR-4).



The church features twenty in-situ panels created using the opus sectile technique. Among these, nine panels adorn the naos, while an

additional five panels are strategically positioned in the bema (Figure 21).



Figure 21. Examples of opus sectile floor from SEC I and the naos (AMoCT-PR-4)

The gallery floor of the church, which envelops the naos in a U-shaped configuration and is positioned above the northern side nave, inner narthex, and southern side nave, is accessed from the north via exterior stone steps. Originally, the burial of the naos under soil rendered it nonfunctional, prompting 19th-century Russian excavations that led to the transformation of the western windows of the southern gallery into doors. Simultaneously, stone steps were strategically added in front of these windows to enhance access to the gallery (Figure 22).



Figure 22. The western side of the gallery and view to Naos (AMoCT-PR-4).

In the 19th century, a bell tower was added to the southwestern section of the church. This tower, characterized by a two-story rectangular prism shape, features arch openings on each floor and is capped with a small dome atop a drum. Adjacent to the narthex, towards the north of the naos, remnants of a priest's dwelling and the monastery are accessible.

PROBLEMS OF ST. NICHOLAS CHURCH AND ITS SURROUNDING REMAINS

St. Nicholas Church and its surroundings are situated at a lower level than the current settlement, enclosed by privately owned parcels used for greenhouse cultivation. The drainage system around the church, which lost its efficiency over time, has resulted in elevated groundwater levels and increased water infiltration during heavy rainfall, leading to occasional floods within the church. The interventions undertaken to address these issues have caused major changes and damages to its original components. The roof of the church was renovated by the

Russians in 1862 and covered with a thick protective layer. Due to inadequate slopes in certain areas of the protective layer, the cracks in the vaults caused moisture to infiltrate, resulting in salt efflorescence. Subsequently, a steel-framed and plastic-covered protective roof was erected over the church's south wall, supported by concrete pillars (1986-1989). However, these pillars impeded the drainage of roof water, resulting in the closure of gargoyles (Figure 23).



Figure 23. Mortar of the protective roof (AMoCT-PR-4)

The utilization of cement-based materials across different restoration periods has accelerated the deterioration of materials due to moisture-related issues. Climatic factors have induced a repetitive wetting-drying cycle, contributing to the partial deterioration of arches and lintels within door and window openings constructed with bricks. Moreover, lintels crafted from stones have suffered from fractures and cracks.

A series of fundamental physical tests, including assessments of hardness, unit volume weight, and porosity, were executed on samples extracted from diverse components such as stone/stone tessera, soil, brick, mortar, plaster, and pigments sourced from St. Nicholas Church. Additionally, comprehensive archaeometric investigations were carried out, encompassing analyses to establish the aggregate/binder ratio, aggregate particle distribution (aggregate granulometry), weight loss through heating, fine-section optical microscope examinations, and PED-XRF analysis (Figure 24).

The structural components of the church are composed of limestone exhibiting a highly carbonated and saline nature, as determined by previous studies. Over time, the physical properties of these stones undergo changes influenced by both intrinsic factors and environmental conditions. Stone samples from SBC display the lowest unit volume weight of 2.15 g/cm³ and the highest porosity of 13%, attributes associated with the prevalent high humidity in the region. The varying salt content (0.41%-2.47%) within identical rock types signifies distinct

stages of deterioration. We observe repairs with cement-based mortar in sections with high salt content, including the central nave. (AMoCT-PR-1).



Figure 24. Microbiological formations on the internal walls (AMoCT-PR-4)

In-depth analysis of mural pigments and plasters involved documenting samples and employing advanced analytical techniques, including Raman Spectroscopy, XRD, and FTIR. Petrographic analysis characterized small-sized plaster samples, while calcination analysis and acid/sieve tests identified binder and aggregate tones, as well as sieve distribution. Results indicate the activation of salts and sulfates from alluvial soils in humid environments (AMoCT-PR-2). Additional concerns encompass the removal of supporting plaster layers, surface dust accumulation, and abrasions on salt-painted surfaces. The church showcases both opus sectile and cosmatesque techniques, with notable deteriorations such as variations in the ground settlement, partial loss of opus sectile panels, microcracks, fractures, stone loss, surface accumulations, microbiological formations, burn marks, missing joints, and bedding mortars, and past repairs with incompatible mortars in various colors and textures (yellow, gray, white, and pink).

Geophysical studies indicate the presence of silty clay, gravelly, and silty sand transported by the Demre Stream from the neighboring area. Given the church's location in a region with moderate seismic risk (M: 6.8) and an elevation in groundwater levels during rainy seasons, the likelihood of soil liquefaction in the area is notably high (AMoCT-PR-3).

On the other hand, the MM, situated in the center of Demre, attracts considerable attention from both local and international tourists. Throughout the tourist season and particularly during ceremonies commemorating the death anniversary of St. Nicholas on December 6, the influx of visitors places immense pressure on the building, hastening its physical wear and tear. Challenges arise from spatial constraints at the museum's entrance security point, prolonged sun exposure during ticket queues, insufficient rest areas in the courtyard, and unhygienic conditions in the toilets, all of which detrimentally impact the quality of services provided. The MM is often incorporated into tour packages

offered by operators, bundled with visits to the ancient cities of Myra and Simena, as well as boat tours. However, due to the rapid group visits guided by tour operators, local shopkeepers struggle to fully capitalize on the economic advantages of tourism in Demre.

¹ As the Director of Antalya Surveying and Monuments for the Ministry of Culture and Tourism of the Republic of Turkiye, the author managed the restoration of St. Nicholas Church in 2021-2023.

RESTORATION INTERVENTIONS AT ST. NICHOLAS CHURCH AND ITS SURROUNDING REMAINS¹

In the UNESCO World Heritage Convention Implementation Guide, operating under the framework of the Convention concerning the Protection of the World Cultural and Natural Heritage (1972), it is explicitly stated that the nominee's outstanding universal values form the central focus and constitute the primary element of evaluation. Guided by the principles outlined in the Nara Document on Authenticity (1994), the assessment of authenticity extends to considerations such as form, design, material, usage, construction technique, and other facets related to the asset. Integral to this assessment is the concept of integrity, a metric evaluating the extent to which unique qualities endure (Articles 79–80), thereby serving as a measure of the completeness of the heritage (OG 87–95). The 2005 revision of The Operational Guidelines for the Implementation of the World Heritage Convention (Articles 96-118) introduced more comprehensive provisions for the management systems of assets boasting outstanding universal value. This revision emphasized the imperative of formulating a meticulous management plan for cultural assets. St. Nicholas Church stands as an exemplary representative of medieval Byzantine architecture, strategically positioned at the convergence of east-west trade routes and diverse cultures. Its pivotal role in Myra's evolution into a focal point for the development of Christianity underscores its exceptional universal values. The preservation of the church's ruins, both in structure and context, maintains their originality and integrity within contemporary borders (Criteria iii-iv) (UNESCO, 2000).

The restoration works on the church adhered to both national legislation and international agreements. Insights gleaned from recent excavations informed subsequent restoration work. Guided by principles of minimum intervention, reversibility, and the capacity to distinguish from the original structure, in alignment with the museum's function, the restoration aimed to preserve past repairs as period additions. Additionally, the restoration work included reinforcing the perception of the church's architectural value and optimizing service spaces to align with its current function as a museum.

Consolidation Implementations

These consolidation implementations aimed to ensure the stability of the walls by preventing the widening of structural cracks by employing hydraulic lime-based mortar and grout compatible with the original mortar content in terms of color, texture, and quality. The masonry materials in the deteriorated sections of the roofs, particularly in SEC II, were cleaned and replaced with materials resembling the original ones. This approach effectively contributed to stabilizing the walls that had begun to degrade. Throughout the process, great care was taken to preserve the integrity of the original intact joints. In instances where joint

deterioration occurred, the restoration strategy considered various repair periods in the structure's history. Material consistent with the original content, as determined through material analysis results, was applied. To maintain authenticity, smaller dimension stones were introduced during the restoration (Figure 25).



Figure 25. Southern Nave and the Naos after implementation (AMoCT-PR-4)

For protection against external weather conditions, a stone and lime-based capping was applied to the remains uncovered during the excavation process. As part of the 19th-century Russian restoration, a lime-based protective mortar layer containing brick fragments was preserved on the dome and vaults of the church. To treat the cracks in the mortar layer, hydraulic lime-based material was used by applying the microinjection technique. In addition, a protective coating with vapor permeability and water-repellent properties was applied to fortify against the deterioration process. The deteriorated joints within the domes and vaults were filled utilizing original materials. Furthermore, slopes were arranged in necessary areas to allow effective drainage of accumulated rainwater on the upper structure. The enclosed gargoyles were restored to functionality, and the addition of titanium-zinc rainwater pipes at the gutter ends enabled the water to be directed to the drainage wells to prevent water flow onto lower-level spaces (Figure 26).



Figure 26-27. After the application of the cleaning, conservation, and capping of the remains (AMoCT-PR-4)

The collapsed floors in the western courtyard were systematically numbered, dismantled, and reinstated to their original positions following the correction of the underlying layer. In instances of extensive fracture in the stone pavement, particularly evident in the southern

entrance hall and front of the southern chapel, in-situ improvement procedures were undertaken without removing the stones (Figure 27).

The unskilled implementations on the opus sectile floors of the church underwent a thorough cleaning process, with particular attention to the examination of the rudus (coarse mortar) and nucleus (fine mortar) layers in regions affected by ground subsidence. In addition, the bedding mortar layers and gaps between the opus sectile elements were completed. Chemical cleaning methods were applied to heavily soiled surfaces exhibiting calcification, while mechanical cleaning procedures were employed to address microbiological formations and surface accumulations. To address structural issues, broken pieces within the opus sectile unit elements were reinforced. Fragments obtained from excavations, with identifiable positions in areas exhibiting losses, were carefully placed on panels. In cases where positions were indeterminable, mortar filling was utilized to complete the restoration (Figure 28). Concerning murals, reinforcement of gaps between the plaster and the support layer was executed using the injection method following the removal of dust accumulations and salts. Borders were strategically applied to the edges of the plaster to prevent separation between the plaster and the support layer. It is noteworthy that previous repairs had involved the application of Paraloid B72 to the painting surfaces, creating a film layer that posed a potential risk to the paint layer during removal. Consequently, no intervention was undertaken in this regard (Figure 29).

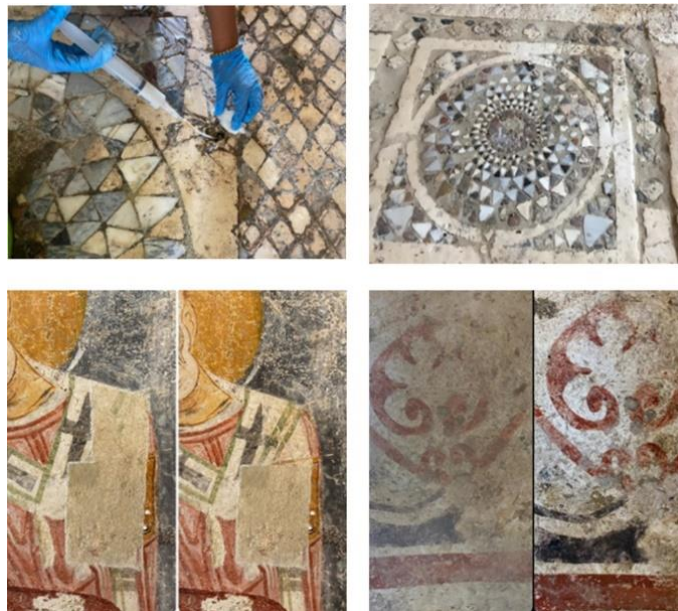


Figure 28-29. Conservation applications on opus sectile panels and wall paintings (AMoCT-PR-4)

Reintegration Implementations

The restoration initiative included the reintegration of a segment of the missing western corridor vault, employing stone materials and hydraulic lime mortar. This approach aimed to ensure compatibility with the original materials, thereby reinstating the architectural integrity of the structure in terms of its original form, materials, and intricate details.

Section losses resulting from masonry deterioration and voids on the walls were addressed by completing those by using smaller-sized stone materials that were compatible with the original composition. Furthermore, efforts were directed towards the consolidation of columns, integration of broken floors, and the comprehensive repair and leveling of damages to the infrastructure (Figure 30).



Figure 30. Reinforcement of SEC I dome drum and completion of columns (AMoCT-PR-4)

Liberation Implementations

Previous unskilled applications made with cement-based mortar were cleaned utilizing non-damaging mechanical methods to preserve the integrity of the original materials. Interventions were carried out based on the original material content, details, and application style. Unskilled repairs at the pulpit location within the naos, opus sectile panels, and natural stone paved floors were dismantled. Archaeological excavation was methodically conducted on the floor, with the acquired information informing subsequent restoration efforts. The excavation site within the naos, serving both worship and museum functions, was conscientiously resealed, preserving the historical traces of the pulpit's original location, and a new floor was laid using contemporary stone materials (Figure 31).

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Figure 31. Floor and the traces of the pulpit in the naos (AMoCT-PR-4)

The protective roofs over the church and visitor platforms, as well as security-oriented metal doors and window frames, were systematically removed during these restoration efforts. Subsequently, they were reconfigured with designs that harmoniously blend with the architectural aesthetics, ensuring a complementary integration with the overall structure.

Cleaning Implementations

The extensive growth of Deep-rooted vegetation on the church walls was removed using herbicide-type pesticides. To preserve the integrity of the outer stone patina, a series of trials involving water, mechanical, steam, and chemical cleaning methods were conducted (Figure 32). However, surface cleaning of exhibited archaeological remains was not carried out in this restoration process.



Figure 32. Liturgical materials before and after cleaning (AMoCT-PR-4)

Usage-related Applications

Due to its high number of visitors, the church spaces were closed off in stages to visitors for the implementation of the works. During the removal of the roofs, temporary access was provided to the upper-level courtyard from the east of the church, through a metal construction bridge leading to the northwest podium, ensuring visitor safety. The new protective roof of the church, designed not to impose any additional load on the structure, was applied as a steel construction with titanium zinc coating, with its carriers placed outside the building. Still, it covers SBC and southeast chapels, providing natural ventilation while preventing rainwater from entering through its eaves located at appropriate distances. Wooden shingle roofs, previously used in various periods in the excavation areas, have been replaced with metal coverings to ensure visual consistency in the excavation site. After the completion of repairs, the entrance was restored from the southern direction, and the northern arcades were included in the visitor's route (Figure 33).



Figure 33. Temporary visitor entrance (AMoCT-PR-4).

In regions characterized by elevated ground levels surrounding the parcel, drainage systems were systematically established along the contour lines and enclosed by rubble stone walls. Enhancements were made to the pre-existing water drainage wells and pumps adjacent to the church, both in terms of quantity and functionality. Furthermore, the restoration efforts incorporated the revival of the authentic Byzantine water channel located to the north of the church, seamlessly integrating it into the expanded drainage system (Figure 34).



Figure 34. View of after the implementation (AMoCT-PR-4).

CONCLUSION

St. Nicholas Church, resilient through time with multiple reconstructions and the addition of new spaces, stands today amidst an ongoing archaeological excavation, revealing insights into its intricate history and the surrounding monastery complex. This excavation has provided valuable information about both the church and its surrounding complex. Therefore, a comprehensive conservation approach has been adopted, considering both the principles of monument conservation and archaeological site preservation during these excavation processes. This holistic conservation approach focuses on preserving the church's original values historical traces and related structures, employing archaeometry and engineering assessments during structural repairs. The overarching objective is to counteract past unskilled interventions, ensure harmony with original materials in restorations, and halt ongoing deterioration, all aimed at preserving these structures for posterity. Throughout the implementation, the guiding principle has been minimal intervention, prioritizing the preservation of original materials, details, and forms within the structure. Moreover, the completions were applied in faithful adherence to the original, mainly in unadorned sections with reliable historical information. In its role as a memorial museum, meticulous design considerations were given to productions,

emphasizing contrast to illuminate architectural, historical, and aesthetic values without burdening the structure. These new materials in contrast with the original architectural style, materials, and details ensure they can be removed or replaced. The presentation of visitor routes has been organized to enhance public comprehension of the church and its surroundings.

Areas previously inaccessible, including the gallery floor, the ruins of the northern extension, remnants of the eastern temple, and the original western entrance, have been opened to the public for the first time. The unveiling of limestone-coated murals adds a new dimension to the cultural offering, which is shared with both the scientific community and visitors.

Between 2021 and 2023, the MM's restoration process was essential to preserve the economic benefits derived from local and national cultural tourism while acknowledging the museum's international religious significance. Therefore, the spaces of the MM were partially closed and implemented according to the restoration program. Meanwhile, necessary security measures were taken, and tourists were able to visit the MM without interruption.

Within the framework of sustainable conservation and management, in the Short Term, ensuring the MM's integrity requires limiting and regulating visitor numbers and duration to prevent physical damage. This measured approach can also contribute to the local economy by providing waiting visitors with the opportunity to explore local products. In the Medium Term, site management should be established to ensure sustainable preservation for the MM, which has been a world heritage nominate since 2000.

Site management should determine conservation and promotional strategies along with encouraging the participation of local people. The boundaries of the monument's management area and the buffer zone, regulating privately owned lands, and supporting archaeological excavations must be determined within the management plan. Archaeological excavations should be supported to reveal the cultural heritage of the region accurately. Establishing a cultural route plan, connecting key locations associated with the life of St. Nicholas, can heighten the region's appeal and cultural experiences for visitors. A cultural route plan should be established within the framework of religious tourism by creating tourist routes connecting significant points such as Patara, Myra, and Demre, which are the key locations associated with the life of St. Nicholas. These initiatives can increase visitors' interest in the region and enhance their cultural experiences. The establishment of a site management plan is of paramount importance to the MM, as it is a prerequisite for being included on the World Heritage List. Such an inclusion would not only increase the international recognition of the MM but also strengthen the region's tourist appeal.

ACKNOWLEDGEMENTS/NOTES

Special thanks are also extended to the technical team of the Antalya Directorate of Surveying and Monuments, the members of the St. Nicholas Scientific Committee, the Directorate of the St. Nicholas Excavation, the project contractor Cumhuri Gürel and his team, and the implementation contractor UCA Construction and their team for their collaborative efforts in this work.

The restoration interventions of the St. Nicholas Church for the year 2021-2023 were carried out by the Ministry of Culture and Tourism of the Republic of Türkiye, Antalya Directorate of Surveying and Monuments.

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Resume

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