INTRODUCTION

Six years after the celebrations around the 800\textsuperscript{th} anniversary of its founding (Subotic 1998) the Imperial Lavra of Hilandar, is now and has been for quite some time, the focus of considerable attention by philologists, historians, art and architectural historians. Moni Hilandariou (Fig. 1) the last-remaining Serbian monastic foundation on Mount Athos [Macedonian Greece] a fire on the night of 3 and 4 March 2004 destroyed 55\% of the main building ensemble of this UNESCO World Heritage Site Fig 1. This catastrophe struck towards the end of a three decade long phase of conservation and structural upgrading work of this architecturally-renowned continuously-inhabited walled enclosure comprising some 20,000 square metres of accommodation within the walls, gates and towers. Two of the pirovo [towers] of the earliest Serbian phase (Nenadovic 1997) of this building ensemble acted as fire-breaks against the huge conflagration from ‘taking’ the riznica [treasury], biblioteka [library], trpezarija [refectory], konaaci [residential ranges] and other communal facilities of the south courtyard [Times]. Emergency crews held the fire back from taking the famed katholikon [main church], which is considered (Mylonas 2000) the ‘the finest on Athos’ and certainly ‘one of the finest Byzantine churches anywhere’, the northwest corner of which was only 8 meters from the four storey 11\textsuperscript{th} century northwest corner tower, known as the Pirg Svetog Dimitrija, which caught early that night and burned out completely. Aerial photographs taken in the first light of the morning shows the extent of damage (Fig 2). The timber fabric of the internal wall, floor and roof structure burned out such that the massive weight of the stone slab-tiled roofs collapsed such that the buildings collapsed into themselves; finally the lighter stone curtain walls fell. In all 15,000sqm of the 14\textsuperscript{th}-19\textsuperscript{th} konaaci and four parekklessia chapels] was lost.
Closely following on from the inevitable shock of the fire the brotherhood of this small ascetic community experienced unprecedented (and unwanted) exposure. Recognized as an historic moment in the long history of this important but fragile community, officials, conservators, and VIPs arrived on the site within hours and within hours some very generous pledges of financial aid to reconstruct this Serbian monastery. Emergency clean-up, damage assessment, and building documentation crews arrived before even the fire brigades left on the boat back to ‘the mainland’. Even so the logistics of the continuance of daily existence overwhelmed the brotherhood especially since in those years Hilandar needed to take in a greater than normal number of novices and brothers to make up for the ‘loss’ and continued ‘isolation’ of the many medieval Serbian monasteries in occupied Kosovo and Metohija, as well of course as the usual flow of requests for diamonitiria (residence permits) from students of theology, and Byzantine and Serbian history, art and architecture. Hilandar, the most significant repository of documents for the study of Serbian monastic, ecclesiastical and diplomatic history, and a very significant resource for Athonite history, is the first wholesale rebuilding of an Athonite complex in modern times.

Notwithstanding the importance of Hilander’s collections (and there is, for example, a full microfiche copy of the manuscript collection at Ohio State University) the chief and most obvious basis of this site’s reputation, its architecture and immovable art, is now of course the focus of scholarly and professional interest in, indeed concern for, the future architecture of the monastery is currently focused on the plans for the reconstruction of the northern courtyard. While the usual variety of reconstruction parameters have come up for consideration including defining the exact description of the loss and unexpected opportunities of the reconstruction, the interests of and complex interrelationship between the brotherhood of Hilandar, the Serbian Orthodox Patriarchate (Beograd), the Mount Athos Heritage Protection Center (KeDAK, Thessaloniki) overseeing all building work on Athos, the Zaduzbina Hilandara (Hilandar Foundation,Beograd) and the Serbian authority for the care of historical structures, the Republici Zavod za Zastitu Spomenika Kulture Srbija (RZZSK Beograd) inevitably describe a design and specification process, even more open than is normal, to vagaries of timing and funding.
2 HISTORICAL AND SCHOLARLY SOURCES FOR THE RECONSTRUCTION

While from a deep historical perspective, considering the fact there have been, since the 9th century, many catastrophic fires on Athos, Hilandar’s loss is not as bad, of course, as it might have been, and it came at a time when a number of measured drawing and photographic documentation programs had just been completed: of the katholikon (Boskovic and Kovacevic 1992) and of the a buildings surrounding the courtyard (Korac and Kovacevic 2002) These are, of course, crucial in achieving the standards expected of a contemporary reinstatement project but the historical sources for contemporary reconstruction also have a particular importance here as archaeological excavation is proscribed on Athos. For example recent conservation (ie the Beli Konak) and reconstruction (ie. the Biblioteka) based on the study of the structure in situ as well as on historical images (Milojevic, 2003) and this is especially important for those elements reconstructed since the 18th century the date from which we have topographical and prosopographic imprints which detail the buildings (Papstratou and Tavlakis 1997). The recent multi-volume compendium on Athos (Mylonas 2000) devotes a section to this issue.

It is though a measure of this lavra’s repeated misfortune that our understanding and appreciation of the monastery’s building fabric is still hampered by earlier significant, if not nearly as dramatic, losses. In the century and a half between the life of the peripatetic early 18th century monk and pilgrim Vasilija Grigorovic Barskij, and his (indeed the) first monograph on Hilandar (Barski 1887) extracted from his four volume Stranstrovanija (Barskij, 1814), his unique axonometric-type view of Hilandar [and two others] were lost. Barskij’s texts, while they are a key source for the later history of pre-Modern Athos, are most well known for the author’s famed bird’s-eye views, carefully-observed and -contextualized they were drawn with an eye for key spatial relationships (Mylonas 1997). While both before and after Barskij important visual records were made of the monastery [in the larger sense as well; Hilandar comprises some thirty-five structures representing hundreds of individual building campaigns] but none as valuable as Zaharije Orfelin’s 1779 detailed copperplate panorama of 1779 (Davidov 1988).

The first sustained scientific study of the architecture of Hilandar: begun by Tatic, and continued from the early ‘60’s, by teams led by Boskovic, Deroko, Nenadovic and most recently Subotic. When, in 1966, the Akademija launched the scholarly Hilandarski Zbornik journal the monastery could be said to constitute its own research field. Hundreds of scholarly articles addressing various aspects of the architecture and immovable art of the monastery (Medakovic, 1978), have paralleled the complete microfiche record of the library by the Hilandar Research Center Ohio State University and conservation work by the Institute for the Protection of Cultural Monuments. Apart from the profusely illustrated editions summaising the Hilandar’s riches, a regular publishing event since the 1970’s, and only relatively recently have measured drawings of the katholikon (Boskovic and Kovacevic 1992) and the annular ring of buildings around (Korac and Kovacevic 2002) been completed and published. New spherical image technologies have allowed new resources for the katholikon (Hostetter 1968) and for the architecture of the entire complex (Milojevic et al. forthcoming).

3 PRE-FIRE CONSERVATION AND STRUCTURAL UPGRADING

While regular maintenance, repair and modernisation had not been undertaken at Hilandar during the four decade Communist era in Yugoslavia from 1945 since the early 60’s the RZZSK developed the momentum for an architectural conservation plan addressing specific short-term and long-term requirements. The most urgent requirement was the physical security and the improvement of the environmental conditions for the riznica (Karakatsanis 1997) and biblioteka in order to prevent further damp stress to icons, vestments and liturgical items which had been placed in a building constructed (Nenadovic 1997) using seawater in the mortar mix. Priorizing the next-most urgent projects were potentially disastrous instability of some outbuildings: the six-story freestanding 14th century Milutinova Kula; shoring-up the seawall and southeast wall of the 10th century Hrusija fortress; To cope with new requirements the conservation program focused on restoring the accommodation of the arcana Jovanica where the new and much larger passenger and car ferry service disembark from Ouranopolis; badly-needed lay accommodation was restored at the Arsenica Metoh at Kakova near Ierissos just outside the Athos border for
teams for the construction projects. The upgrading and servicing of the pilgrims’ accommodation, in the years 1994-1998, including the *hestia* [kitchen], *trpezarija* [refectory], *gostionica* [pilgrims’ reception house] as well as the *novi konak* [new accommodation range] gave the monastery modern plumbing, heating and electrification in to develop the monastery’s income. The conservation of the 18th century north-eastern Beli Konak, 2002-2004, the last major component of the long-term program of the main enclosure, was substantially complete and about to handed over when the fire struck.

For the purposes of this short paper, I will only outline the structural retrofitting techniques used by Kovacevic et al for the RZZSK and the Zaduzbina Hilandara to secure the dilapidated towers of the main enclosure and on the road from the abandoned Hrusija fort [and the same process used to secure the walls of the Sveti Vasilije *parekkleseion* in the Hrusija] and thereby indicating the nature of the work on the larger project.

![Figure 3: In-floor anchors, Pirg Sveti Djordje, Moni Hilandariou, Mount Athos. (Kovacevic 1992)](image1)

![Figure 4: Under floor tie-rods, Pirg Sveti Sava, Moni Hilandariou, Mount Athos. (Kovacevic 2000)](image2)

To prevent further splitting and serious cracking and movement in the massive stone and brick corner towers two (Pirg Sveti Djordje in 1992-1993 and Pirg Sveti Sava in 1999-2001) of the three towers were stabilized against potentially-disastrous earthquake damage. And to prevent further water damage (Korac and Nenadovic) to the timber building fabric the 3,500 sq m of stone-clad roof surfaces and their timber [chestnut] structure were progressively repaired.
and at Manastir Nova Pavlica (near Brvenik, Serbia, together with Nenadovic) Kovacevic bound
walls to floor, walls to walls and ‘stitched-up’, with steel reinforcing bar, the serious cracking in
the middle of the Djordje tower by drilling through the heavy-buttressed walls and floors at lev-
els three and four inserting 20mm dia stainless steel reinforcing bars and plates into new loca-
tions within the depth of the wall (and re-covered with the same masonry) from the outside and
inside the bars were anchored into a new concrete mass (Fig 3) replacing the pre-existing dry
rubble fill found between the top of the ceiling structure of the floor below and removed for the
purpose of the this operation and subsequently reinstated the floor surface and masonry infill on
top of the vaults.

In the Sava tower four major cracks to either side of the diaphragm arch on all levels was sta-
bilised using three processes: ‘stitching-up’ the wall cracks by drilling diagonally through the
through the stone, brick and mortar wall fabric in both the horizontal and vertical axes and in-
serted the same type of tie-rod and plate technique (Fig 5) buried in the wall such that the result
is totally sealed and invisible; binding the wall structure of each of the towers levels by running
the same tie-rod and plate steelwork orthogonally across the underside of the timber internal
floor structure in both axes (Fig 4); and pressure injecting elasticised Pozzolana mortar into the
walls’ internal voids by drilling to the wall’s interior on a grid of 50-60 cms of the interior walls
vertical surface.

Two other large structures, both relatively distant from the monastery itself, were retrofitted
in this way with earthquake-resistant reinforcement: the Parakkleseion Svetog Vassilija in one
corner of the Hrusija fortress (where the new tie-rods were made to bind the walls of the building
to the heavier walls of the fortress) and Milutinova Kula, the fortified tower structure half-
way between the sea and main enclosure. In the case of all these towers timber structure was re-
newed where rotting had made this necessary: for example the stacked anchor timbers in the pier foundations (Fig. 6) and almost half of the chestnut roof rafters (Fig. 7) of the Pirg Sveti Sava (Nenadovic 2003).

Figure 7 : Roof structure as found, Pirg Sveti Sava, Moni Hilandariou, Mount Athos. (Kovacevic 1999)

3 POST-FIRE STRUCTURAL STABILISATION AND REINSTATEMENT

The post-fire reconstruction and preservation plan developed in the last eighteen months by Kovacevic is currently under consideration and remains subject to the approval and financial backing of the various parties involved on an annual basis. The first element of the reinstatement program to be commenced will be the smallest and most discrete structural element of the annular complex: the so-called 1814 Konak, the most prominent building element on one’s approach to the monastery’s main gate. While this is under is pending the monastery has activated another long term goal but now with added significance: to provide pilgrim accommodation in two outbuildings by conserving their carcasses and fitting-out the interiors: a konak in the Hrussija near the arcana on the eastern shore, and the stale and senara [stalls and hayloft] just below the ramp up to the main enclosure. The stale hostel will be completed in June this year. From June 2004 the cleaning of the 1700 sq m fire site of superficial fire damage to the masonry was accomplished in eighteen months; meanwhile the site has been cleared of fire debris and the materials [in the storage at ground level] caught under the collapsed stone roofs.

The architects’ and engineers’ documentation and study of the remaining substructures and standing masonry structure left exposed by this unexpected and unprecedented ‘opportunity’ has led to speculation about the possible reinforcement of damaged structure. Among the numerous structural-technical options now is to coordinate pre-fire structural retrofit reinforcing and bracing [late 20th century techniques] and on-going plans maintenance and conservation work on the parts of the complex unaffected by the fire and those sections to be completely reconstructed. But as no timber structure of any kind survived the fire the reinstatement program has commenced with the stabilisation of the standing masonry structure of the open carcasses of the all the burnt-out konaks (Fig. 8) in order that these structures are secured against further destruction. Given the rebuilding process may take fifteen to twenty years to complete this structure has been engineered to withstand a considerable seismic event.

The fire has brought on many abrupt changes to the way conservation work has been undertaken at Hilandar. Varied, and often conflicting intentions, put the monks, the church authorities, the architects, building authorities and the various heritage organizations and financiers at odds. While the monks are looking to avoid reconstructing the structure in timber, the Greek authorities require that Kovacevic now, considering the scope of work, associate himself in collaboration with Greek-licensed architects. As Hilandar’s 2000 ha of chestnut forest will provide the building material, as it always has done, the contemporary Greek building code requires the major structural elements to be re-sized to contemporary code standards which conflict with historic dimensioning. As the stabilisation project was required by Greek authorities Serbian finan-
ciers don’t wish to own this considerable investment in a temporary and redundant structure. The unexpected and wholesale reconstruction of ‘a Serbian building on Greek soil’ has the many stakeholders involved in a highly diplomatic negotiating game.

![Temporary stabilisation, Gostionica Moni Hilandariou, Mount Athos. (Kovacevic, 2006)](image)

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