The Restoration of the Wooden Elements of the Handanija Mosque, Prusac, Bosnia-Herzegovina

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Background

The Handanija Mosque is situated in central Bosnia-Herzegovina in the village of Prusac. Prusac has special importance in the history of Bosnia since the Islamic philosopher, Hasan Kjafija Pruscak, (1544 - 1616) came from the village and returned there in the latter part of his life. Through Hasan Kjafija Pruscak the village blossomed and became an important cultural and religious centre in the late 16th and early 17th centuries. Hasan Kjafija Pruscak was the most important Muslim Bosnian intellectual of his time. He was a prolific scholar, writing works on philosophy, Islamic dogma, history and politics. He has been called ‘the most outstanding personality of Islamic academia in the intellectual life of Bosnia at the end of the 16th and beginning of 17th century.’ Apart from attracting writers and translators who wrote in Bosancica, Arabic, Latin and Cyrillic scripts, Prusac was also the home of famous school of calligraphy.
Another element in its importance in the spiritual life of present-day Bosnia is the town’s role in the annual pilgrimage to Ajvatovica, the most important pilgrimage site in the country for Bosnian Muslims. Prusac has been described as the ‘the Bosnian Mecca’ by the noted German scholar, Dr Franz Babinger. The pilgrimage begins its journey at the Handanija Mosque.

**The building**

According to extant documents The Handanija Mosque was built in 1617 and named after its founder Handan-aga. It is situated on the main road through Prusac and is the only mosque in the town still in its original form, except for the roof which was destroyed in the war of 1992-1995. It is also the only mosque in the village with a stone minaret, which has a polygonal shaft on a rectangular base.

The mosque itself is roughly square in shape, approximately 11 x 11 metres in the interior, constructed of stone with a wooden roof and an interior wooden dome. The roof was originally covered by wooden shingles and later changed to tiles. The Handanija Mosque has two features making it unique in Bosnia. First is the arcaded porch with its five pointed arches and four compressed columns, the capitals of which are decorated with so-called “folded” decoration, chevron capitals (Turkish triangles), while their bases have semicircular cut sides. The second unusual feature is the interior octagonal wooden dome with broken sides, ending in a central flat-octagon which rises out of a flat ceiling. The ceiling was originally formed by small wooden pieces held together by a wooden frame.
From Material to Structure - Mechanical Behaviour and Failures of the Timber Structures
The Condition of the Mosque Prior to the Restoration Work

The only documented restoration works prior to the war took place in 1972 when major restoration work concerning securing the building from earthquakes was conducted. Steel ties were introduced and the facade was plastered with cement plaster. Direct shell impacts during the Bosnian War of 1992-1995 destroyed the entire roof construction and the minaret roof was lost through fire. The minaret became perforated with grenade holes and the upper part had to be dismantled due to its instability, while the stone walls of the mosque received a considerable amount of smaller or bigger holes from grenades and artillery shells. The minbar was damaged also damaged by the shelling. After the war the interior was exposed to weather for several years – the heavy snows of central Bosnia, rain and wind – causing considerable further destruction and destroying the wooden balcony (mahvil) and part of the mihrab. Despite the historic and contemporary importance of the Handanija Mosque, it was the only mosque in Prusac which had not yet been rebuilt or restored since war, although emergency roofing to protect the structure was erected in 1999.
The Restoration Work

Introduction
In 2003 restoration and reconstruction work on the Handanija Mosque was started as a project of the Swedish NGO Cultural Heritage without Borders with finance from SIDA, the Swedish International and Development Agency, and the Barakat Trust; the works were completed in 2005. The project leader for the restauration was Tina Wik assisted by a team of local architects: Lejla Hadzic, Amra Sarancic, Elsa Turkusic and Damir Hadzic. The project’s structural engineer was Krister Berggren from Sweden, who was assisted by a local engineering firm. The local contractor who carried out the work was Omer Karahmet with his company Karadrvo.

The Walls
The Handanija Mosque was built of different calcitic limestones with a mortar of a low hydraulic or a non hydraulic lime and sand. Hard ‘sedra’ limestone is used on the front facade, the minaret and the parts of the window openings around the architraves of limestone. The walls were originally reinforced at different levels with horizontal wooden ties called hattula. One piece of wood is placed along the inner surface and one piece directly inside the outer stone shell.
Wooden binders connect these two wooden pieces through the wall. This is a typical way of constructing masonry walls in seismic areas. In the Handanija Mosque one can see traces of these binders about one metre above floor level, directly above the windows and at balcony level. Originally there was probably at least one at the top of the wall. The wooden reinforcement over the windows and the one at the balcony level remained more or less intact, but some parts were missing and the joints and connections out of function.

The new seismic protection with steel ties from 1972 were also kept, cleaned and protected. All *hattulas* were checked and the rotten parts replaced with new wood. The vertical connections were also checked and replaced or repaired with new wood where it had disappeared or been damaged. The wood for the *hattulas* had to be dry, with maximum 16 % relative moisture content and of high quality oak, as was the existing wood.
The Interior
The upper floor consists of a u-shaped wooden balcony (mahvil) supported by eleven slender wooden columns, probably from the nineteenth century – a speculative conclusion made due to the details and the form of the capitals and bases of the columns. The mahvil was badly damaged by weather exposure and a major part of the wood was rotten and had to be replaced. We were able to save more of the pine beams than the wooden floor boards since they had been partly protected. The dimensions of the wooden boards are large. The proposed quality for the new boards was pine of 2nd quality but with a relative moisture content not exceeding 10-12%. The bases of the column were all rotten and had to be replaced.

The roof, dome and ceiling of wood
The main wooden elements to be reconstructed were the roof and the interior wooden dome. Some traces of the roof construction remained in one corner but much of the wood had been stolen during the war for heating and cooking. The opening for the octagonal dome was supported on three sides by the exterior walls but the fourth side was above the mahvil about three metres in from the entrance façade. We tried to locate the placement of columns which we could see had existed on the mahvil. They were not situated directly above the columns supporting the mahvil construction. This led to the conclusion that we needed a large span construction to support the fourth side of the dome opening. Our main problem was to find out how this large span construction originally had been solved since nothing of the loft ceiling construction remained. We visited similar countryside mosques. These mosques are influenced by domestic architecture with similar structures, sometimes in a larger scale, sometimes, such as the ones we have worked on in the historic town of Jajce, even smaller. We did not find any original structures left in any of the mosques we visited. If they had not been destroyed in the recent war they had been changed in the 40s – 60s when the original roof covering was changed from wooden shingles to roof tiles. After long discussions we therefore chose to solve the span with a trestle construction not unusual in Nordic medieval constructions. Tina Wik found a similar solution in Istanbul which demonstrates that this type of construction was wide spread.

All structural wood, both for the roof and ceiling beams was of pine wood of quality 1 and the relative moisture content was not allowed to exceed 16% in the core of the wood. All structural parts were checked prior to starting the work.

The roof cover was originally of wooden shingles. Our first intention was to use this material. Traditionally spruce is used for shingles in Bosnia-Herzegovina, 10 – 28 mm thick and about 400 mm long, cut not sawn. The shingles are nailed so that moisture movements are possible without causing cracks or damage. However, it is very difficult to get good quality shingles in Bosnia-Herzegovina today, so in the end we chose roof tiles, the same as prior to the war. This was a conclusion that followed the Dayton Peace Agreement stipulating restorations to be rebuilt to the same appearance as before the destruction.

The mosque was re-inaugurated the 14th of October 2005 by the Mufti Reisul-ulema Mustafa ef Ceric and the Swedish Ambassador Lars-Erik Wingren. This was a happy event for the villagers who regained one of the most important mosques ten years after the war.