

Two Examples of the Bosnian Chardaklia House in Sanski Most

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Abstract— The bosnian chardaklia house is one of those achievements of awkward architecture which, with its spatial organization, materialization and external appearance, most vividly reflects the nature of bosnian man, the nature of his family and the general view of the world. This house is not just a building. It is a materialized history of man and his family, at the same time as modern as a museum whose content testifies to the past and predicts the future. In the array of overall architectural programs of folk architecture in Bosnia and Herzegovina, the bosnian chardaklia house stands out because its disposition at the time of original construction perceives the future, sometimes four generations of human generations following each other. It is a building designed in the way of the functioning of a living organism, so by its nature it is an example of understanding flexibility in architecture and the forerunner of modern understanding of bioclimatic or sustainable architecture.

Keywords— Bosnian chardaklia house, Bosanska Krajina, Sanski Most.

I. INTRODUCTION

The bosnian chardaklia house is, above all, the house of rich people in the countryside ^[1]. On the one hand, it is firmly rooted in the tradition of folk architecture, but it also has elements of the town house as a transitional form from purely folk architecture to the solution of the city house where the influences of other, often geographically distant cultures and solutions are visible ^[2, 3, 4, 5, 6, 7, 8, 9, 15].

The house he designed and built, in which he lives in the complexity of his overall being, is the most concrete objectified image of a man, his family and the immediate and wider community in which he lives. By getting to know the bosnian chardaklia house, we will also get to know those dimensions of the being of the bosnian man that have not been directly written about ^[10, 11, 12, 13, 14, 15].

The bosnian chardaklia house in the area of Bosanska Krajina is specific in that it is at the same time a habitat for man and his “treasure” (“blago”), ie cattle. This fact largely determined its disposition, ie the manner of use ^[1, 8]. One of the consequences of the house designed in this way is the space of the “vodnica” arranged as a storage room for water (upstairs) and toilet, always located above the garbage dump next to the barn (on the ground floor). The existence of toilets inside the house is a rare occurrence in the disposition of the bosnian chardaklia house (and even the town house) in other parts of Bosnia and Herzegovina from the time of its original origin.

II. AGANOVIC FAMILY HOUSE IN SANSKI MOST

The Aganovic family house is located on the left bank of the Sana river, not far from the new Hamzibeg mosque, in the center of Sanki Most (geographical coordinates: 44°45'48.18"N, 16°39'55.96"E, Elevation: 158 m. Source: Google Earth), (Figures 1, 2). The building was built by Husein ef. Aganovic in the first half of the 20th century¹.



Figure 1. The Aganovic family house in Sanski Most. Location Source: <https://slidetodoc.com/regionalna-podjela-bosne-i-hercegovine-geografske-regije-bosne/> (left) Google Earth: Accessed 3/10/2022 (right)

¹ The author visited this house 7.22.2016. The informant was Mrs. Sema (nee Botonjic) Aganovic (1934), the current owner of the house.



Figure 2. View of the Aganovic family house from the southwest (left) and from the east (right)

Source: Author (7/22/2016)

Spatial and design characteristics of the house. The Aganovic family house in Sanski Most, according to its disposition, belongs to the type of three-tract house which is developed vertically through the ground floor and first floor [1]. Until the 1990s, part of the ground floor was a stable, while part of the ground floor and first floor were used for housing. A solution in which part of the ground floor is a stable and part of the living space is common for Bosanska Krajina (including Sanski Most), where the complete ground floor is a stable, with a staircase to the first floor (Figure 3).

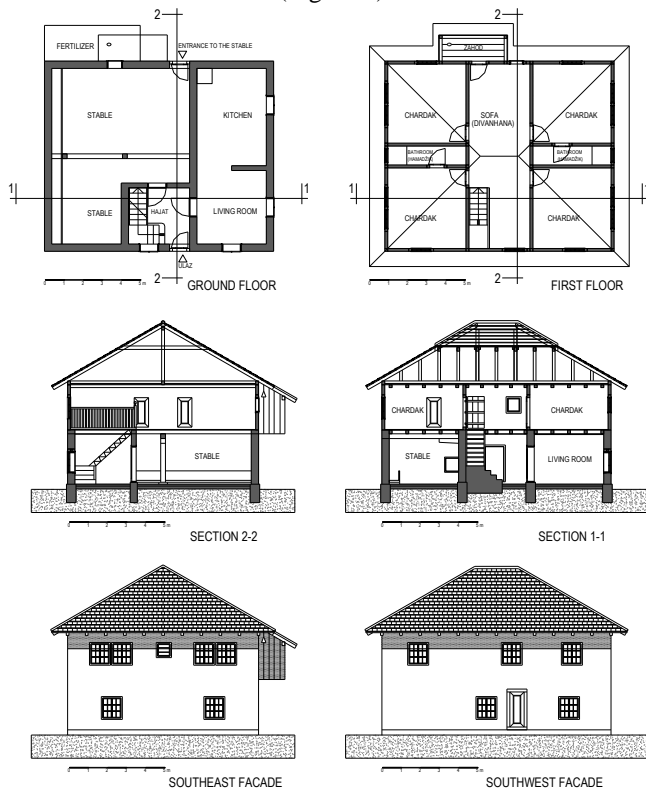


Figure 3. The Aganovic family house in Sanski Most. Disposition
Source: Author (drawing, 2016)

On the ground floor there is a living room (former “house”/”kuća”), an entrance hall for the residential part of the house with a staircase to the first floor and a barn with two entrances, from the house and from the yard in the backyard (Figure 4).

Upstairs, in the central wing of the house, there is a spacious divanhama from which access to four chardaks, two in each of the other two tracts of the house, and to the toilets which are

documented above the garbage dump, in the yard (Figures 3, 5, 6). The two chardaks have separate bathroom spaces (hamamdžik), which is a characteristic of an oriental-type city house, which in this example confirms the high culture of housing of the house owner (Figures 3, 9).



Figure 4. The Aganovic family house in Sanski Most. In the part of the ground floor (former space of the “house”/”kuća”) there is a living room with kitchen (left and middle) and a hayot on the ground floor with access to the living room, barn (today pantry) and staircase to the first floor (right)

Source: Author (7/22/2016)



Figure 5. Upstairs divanhana space oriented to the courtyard and the Sana river (left) and street divanhana space oriented (right)

Source: Author (7/22/2016)



Figure 6. Toilet in the space of the “vodnica” with access from the sofa area on the first floor

Source: Author (7/22/2016)

Construction and materialization. The walls of the ground floor of the house are made of baked brick (25 cm thick) and plastered on both sides, while the walls of the first floor are made of wooden skeleton (bondruk) with unfired brick (brick) filling (Figure 2). The mezzanine structure ground floor-first floor and first floor-attic is made of wooden beams, with a floor of massive wooden planks (Figures 7, 8). The roof is four-pitched, with a small slope, with tiles as a cover (Figure 2).



Figure 7. The floor is made of thick, roughly worked boards. Fire protection of flue penetration from the ground floor into the attic (left) and floor-attic construction in the sofa area (divanhana)

Source: Author (7/22/2016)



Figure 8. Floor-attic construction in the chardaks area

Source: Author (7/22/2016)

Surface treatment and space equipment. All interior surfaces (floors, walls and ceilings) are treated in natural materials, in accordance with the purpose of a particular space.

The floor covering of the ground floor (barn space) is made of cement glaze. This is fully in line with the purpose of the ground floor space as a place of intensive communications and storage for roughage (Figure 9). The floor covering in the upstairs rooms (chardaks and divanhana) is primarily made as a ship's wooden floor which, due to the need to feel warm, is covered with woolen rugs of domestic handwork (Figure 5).

The ceilings are treated in natural wood with visible wooden ceiling beams and thick planks (which are the primary floor covering), (Figures 8, 9).

The interior wall surfaces were plastered and painted with lime milk (Figure 10). The wall surfaces in the former barn space (on the ground floor) are unplastered, where a brick wall can be seen (Figure 9).



Figure 9. Former proctor barn (ground floor), now large pantry

Source: Author (7/22/2016)



Figure 10. Hamamjik door in one of the balconies (left) and demolished space of one of the hamamjiks (right), now a pantry

Source: Author (7/22/2016)

Doors and windows. All elements of the openings, both doors and windows, have been preserved in their original archaic design. The door leaf is made of full finely worked boards with a frame and one board as a filling. Over time, the wood acquired the color of honey (Figure 11).

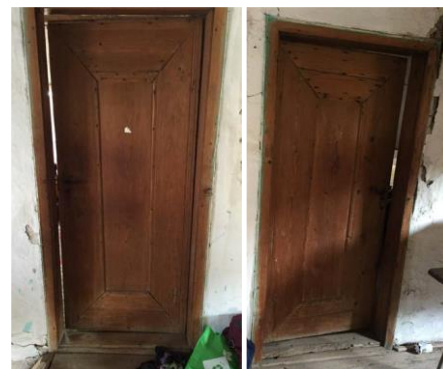


Figure 11. Archaic door design

Source: Author (7/22/2016)

The windows are double-leafed, where each wing is divided into three panes. Glazing is single. All windows, both on the ground floor and the first floor, have protective wrought iron railings (Figure 12).



Figure 12. Gallery of window design solutions

Source: Author (7/22/2016)

Today's condition and purpose of the house. The Aganovic family house in Sanski Most is an extremely valuable example of a preserved bosnian chardaklia house. The value is reflected in the fact that this is both an urban and a rural house at the same time, for which it was necessary to find a thoughtful and creative solution to its horizontal and vertical plan, and its design and materialization as a whole. Today, the house is in relatively good condition, and given its location in the center of Sanski Most, it has great value as a property. The future of this house depends on its owners, their economic condition and a valid assessment of the use value of the house.

III. THE MUJAGIC FAMILY HOUSE IN SANSKI MOST

The Mujagic family house of the in Sanski Most is located in the center of Sanski Most, in the residential district of Mahala, on the left bank of the river Sana (44°45'30.24"N, 16°40'04.96"E, Elevation: 158 m. Source: Google Earth), (Figure 13). The house was built (1928) by Mr. Ferhat Mujagic, and the main master builder was Fehim Bilajbegovic. The stone

for the construction of the ground floor was brought from the Brda quarry.

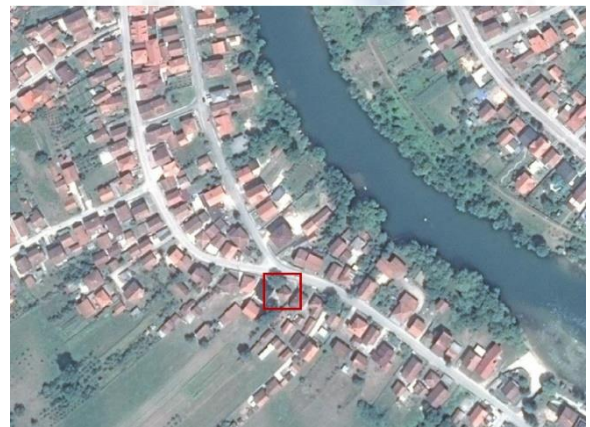


Figure 13. Mujagic family house in Sanski Most. Location Source: <https://slidetodoc.com/regionalna-podjela-bosne-i-hercegovine-geografske-regije-bosne/> (left) Google Earth: Accessed 3/10/2022 (right)



Figure 14. Mujagic family house in Sanski Most. View of the house from the northeast and from the north Source: Author (7/22/2016)

Spatial and design characteristics of the house. According to the characteristics of its horizontal plans, the Mujagic family house in Sanski Most belongs to the type of two-tract (on the ground floor) and three-tract bosnian chardaklia house with the specifics of the house of the Bosanska Krajina.

Spatially unique ground floor base is structurally divided into two tracts, where a strong wooden pillar, placed in the center of gravity of the ground floor base, carries a strong wooden beam (over a wooden saddle) which is the central support for wooden beams (transverse to this beam) ground floor – floor structure, while the other two supports of the beams

of the interfloor structure are mutually inconsistent stone walls of the ground floor (Figures 15, 16, left).

The horizontal floor plan is divided into three tracts, with the central tract reduced to a corridor between rooms which, two on each side of the corridor, are arranged in the other two tracts (Figures 15, 17, 19, 22).

The specifics of the Bosanska Krajina house are evident in the purpose of the ground floor, as a barn, and the annex of the main building of the house which consists of a staircase that leads from the ground floor to the first floor, first on the divanhana, where the “vodnica” and toilet, and then into the hallway of the first floor with separate entrances to the four chardaks (Figures 2, 18).

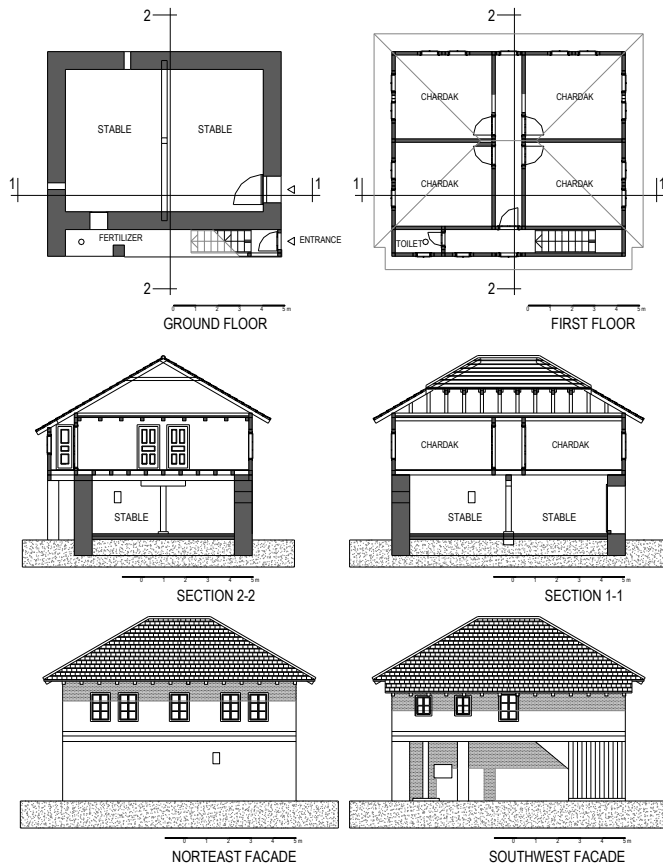


Figure 15. The Mujagic family house in Sanski Most. Disposition
Source: Author (drawing, 2016)



Figure 16. Former barn on the ground floor (left) and staircase (basamaci) ground floor-floor (right)
Source: Author (7/22/2016)



Figure 17. Chardak with street view (left) and chardak with garden view (right)

Source: Author (7/22/2016)



Figure 18. Guide and toilet in the annex (floor), and arrangement of sewer installations in the toilet

Source: Author (7/22/2016)



Figure 19. Hallway of the residential floor on the first floor (left) and exit to the attic space, in the hallway on the first floor (right)
Source: Author (7/22/2016)

Construction and materialization. The walls of the ground floor (barn) are made of relatively large pieces of stone, which is not often the case for a house in Bosnian Krajina, and which can be attributed to the “habits” of people from Lika (Croatia) to build in stone (Figure 20).

The walls of the residential floor on the first floor are made of a wooden skeleton (bondruk) with a filling of solid baked bricks. The use of brick as a wooden skeleton filling is not a common case in the construction of a house in the Bosnian Krajina, where adobe is mostly used (Figures 14, 20).

The roof of the house is four-pitched, of medium slope (about 45°), with tiles as a roof covering.

According to its architectural physiognomy, the Mujagic family house in Sanski Most looks like a town house, and the impression is contributed by the design of the street-oriented facade, where the decoration in plaster (accentuated window frames, for example) wants to imitate the details of They arrived in Bosnia and Herzegovina with the Austro-Hungarian administration (Figures 14, 20).



Figure 20. Construction and materialization of walls

Source: Author (7/22/2016)



Figure 21. Interfloor structure in the part of “vodnica” (left) and the roof structure is of the type “horns with a crucifix” (right)

Source: Author (7/22/2016)

Surface treatment equipment space. In the bosnian chardaklia house, the applied natural materials give each element of construction an honest expression, in accordance with the complex of properties that each material possesses, from physical-mechanical to aesthetic-expressive. Rarely is paint used as a coating in any building element to make a “better impression” than one that leaves the material in its natural expression.

The main building materials used in the bosnian chardaklia house are: stone, wood and earth (such as adobe, charge in the walls of wooden skeleton and wicker and in mezzanine structures). These are elementary materials that we find in nature, so their application in creating the spatial-constructive

structure of the house has an extremely strong aesthetic and psychological effect that establishes a direct and intimate relationship between observers from the side and the house. And the materials that man gets by a certain intervention on natural materials (lime, brick, tile, ceramic “pots” for lining kilns ...) are not much “away” from their natural sources, so they also seem intimate, tailored to man.



Figure 22. Chardaks with wooden ceilings

Source: Author (7/22/2016)

The use of stone in the construction of the Mujagic family house in Sanski Most is visibly emphasized on the walls of the ground floor. The stone blocks were finely worked, and the beauty of the stone came to full expression as the wall surfaces were unplastered (Figure 20). The walls of the floor (made of wooden bondruk with brick infill) are plastered on both sides and painted with lime milk (Figure 20). The noble properties of wood are most pronounced in the treatment of ceilings, floors and elements of the opening (Figures 23-26).

The ceilings in all rooms are carved in wood. Sometimes these are visible wooden beams with thick wooden floors (Figures 16, 19), and sometimes added wooden cladding (bottles) stacked “on herringbone” (Figures 22, 23).



Figure 23. Wooden ceiling (bottle) in one of the balconies (left) and in the hallway of the floor (right)

Source: Author (7/22/2016)

Doors and windows. At the house of the Mujagić family, three groups of doors can be seen: the door to the basement, the main entrance door, and the door inside the architectural space (Figures 24-26). The door at the entrance to the barn is rough, while the door at the entrance to the residential part of the house is "finer", but of old design, typical of the Bosnian house *čardaklija*. The doors on the premises of the residential part of the house (upstairs) are of a newer design, apparently of "european influence" that came during the Austro-Hungarian rule in Bosnia and Herzegovina (Figure 26).

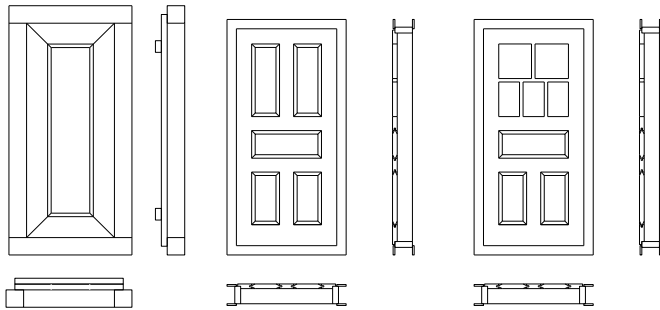


Figure 24. Different door design

Source: Author (drawing, 2016)



Figure 25. Entrance door to the barn (left) and entrance door to the house (right)

Source: Author (7/22/2016)



Figure 26. Door annex-hallway of the residential floor on the first floor (left and middle) and door on the loggia (right)

Source: Author (7/22/2016)

The windows are double-leafed, where each wing is divided into three panes. The dimensions of the window are 100 x 130 cm, and the glazing is single (Figure 27).



Figure 27. A harmonious row of windows on the street front of the house. Message to the environment

Source: Author (7/22/2016)

Today's condition and purpose of the house. A new house was built next to the Mujagic family house in Sanski Most, presented here. The old house has a relatively well-preserved physical structure, and serves as a large family pantry. The current owners do not even think of removing the old house because they not only do not mind it, but it is a kind of "family stabilizer" and a link with previous generations of the Mujagic family. The well-to-do, modern Mujagic family (where some of the members work in Western Europe) are aware of the value of this house, which testifies to the continuity of life of the Mujagic family in Sanski Most.



Figure 28. View through the window on the divanhana on the spacious property of the Mujagic family (left). Old and new in the Alagić family are in natural continuity (right)

Source: Author (7/22/2016)

IV. CONCLUSION

Two examples of houses in Sanski Most are examples of traditional Bosnian *čardaklija* house and examples of

bioclimatic architecture. In accordance with the natural and social environment, these houses are examples of a more modest variant of the Bosnian chardaklia house, which is smaller than the more developed type of this house and without semi-open spaces - divanhana (specific solutions of uncovered terrace on the first floor). Here is a divanhana enclosed space with the function of a hall.

Features of bioclimatic architecture of these houses can be read in:

- Construction and materialization of the facility, where traditional methods of construction are used in many years of experience and the use of all materials from the immediate natural environment. In this way, this house looks like a “natural environment created by man” [1, 2, 3, 16, 17],
- Ensuring comfort in the house (in all seasons) is achieved by adequate design of the house, materialization of its envelope and the use of energy from the immediate environment (firewood, beeswax candles or sheep fat - before introducing electricity into the house),
- Recycling of generated waste in the house. All residues of human food are given to domestic animals, while other types of waste are used as firewood (wood residues in the manufacture of household tools, for example),
- Use of rainwater to maintain the hygiene of people and premises,
- “Embodied spiritual energy of houses” (memories of childhood, parents and relatives, precious events) relaxes people and makes them especially confident in their devotion to their ancestors.

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