



Corn-Markezic villa with pavilion, seen from the garden

Between persistence and change -methodological aspects of the corn- Markezic Villa reuse, Sarajevo

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Old ideas can sometimes use new buildings. New ideas must use old buildings.
Jane Jacobs.

Abstract: This paper examines the questions of *time* (transience) and *space* (persistence) in architecture and culture. The endurance and relevance of these topics are best seen in the integration of architectural heritage into contemporary life. The paper elaborates this by applying a methodological-applicative model to the renovation of the modernist Corn-Markesic villa in Sarajevo's Crni Vrh housing estate, which has been designated a national monument of Bosnia and Herzegovina. The model seeks to achieve a practical and architecturally creative solution for the villa's adaptations. Although changing the Crni Vrh urban context might change the appearance and values of the villa, the opposite is also true: the adaptation of the villa to meet contemporary requirements may change its current context. This paper examines the character of the villa's renovation through field research and the development of an architectural design, to reflect present and future needs, but still faithfully represent the past. The suggested adaptation model follows the lifecycle of a family, and questions the possibilities of transformation at the point at which certain spatial structures and content are no longer needed. The design and research process adheres to guidelines in the European Cultural Heritage Green Paper.

Keywords: port heritage; Silos; architectural adaptation; material flexibility.

1. Introduction

Adjustment of the restored cultural-historical facilities to new living requirements and programme typologies always entails transformation. Today, when intensive and unpredictable climate and social changes impose the sustainability requirements the need for transformation becomes stronger than ever. Integrating old and new is an especially complex process when employed with a facility arising from the recent past, since very often such a facility is not perceived as a spatial and programme construction that requires architectural, historical and cultural valorisation (Uskoković, 2009: 29).

This research examines the possibilities of integrating modernist villas into contemporary living trends while retaining respectfully their architectural features. The model observed is the Corn-Markesic villa in Sarajevo, built in 1933, and being a part of the Bosnia and Herzegovina national monument, the “Crni Vrh” architectural-heritage ensemble. After two decades of its exposure to negligence and devastation, this villa got new owners who decided to restore and reuse it as its home. The conceptual design of the house was developed.

The research is based on the assumption that the restoration process may be used as a complex tool for spatial and programme-functional transformation of a housing unit. Essentially, transformation allows for development of various scenarios of the living space creation, simultaneously depending on the family circumstances and improving them. This inevitably gives rise to the following question: Whether the research results may be resourced to determine the prospective relevance of single restoration project for ensuring a long-term social and environmental sustainability of its neighbored. To answer this question, the analytical-comparative method has been developed by measuring two principles:

- Persistence is observed by contextualisation of the Crni Vrh housing estate (neighbored) cultural determinants as well as its morphological and micro-climate features. The ultimate goal is to ensure *a sense of place* persistence and urban life quality.
- Transformability is observed through analysis of the architectural and structural specificities of the Corn-Markesic villa, and the needs of residents who live in an urban digital era recently (re)shaped by the pandemic. The resulting framework is to underlie assessment of the space eligibility for different types of adaptation.

Hopefully, the research results will suggest reliance on a transformation model providing for a long-term cost-effectiveness grounded on the harmony between

the old and the new structure adjusted to the contemporary requirements. Both narrow and wide perspective observation have been employed hereunder - where the structures have been seen as segments of both the construction unit and overall circulating social developments. (European Cultural Heritage Green Paper, 2021: 16-18).

2. Cultural Dimensions of Lifestyle in Sarajevo

2.1 Historical Analysis of the Crni Vrh Housing Estate

The Corn-Markesic villa belongs to the first planned modernist settlement in Sarajevo, the Crni Vrh housing estate, whose construction instigator, in 1933, was Zeljeznicarska Stambena & Kreditno-Potporna Zadruga (Railway Workers’ Loans & Aid Cooperative and the Housing Cooperative)¹ (Figure 1).

The construction was not only to residentially accommodate the members of Zadruga and their families but also to promote a modern lifestyle reflecting the era it belonged to. Concerned about the widening gap between the urban and rural lifestyle (due to the industrial development), Zadruga tried to offer an urban living concept, which enabled the residents to enjoy gardening and farming. (Kalem, 1934:125). Hence, the very location was not randomly selected as the southern green slopes of the Crni Vrh hill had favourable views, long sunlight exposure, wind circulation and distance from the Marijin Dvor downtown.² The planned construction land allocation (today covering the Kranjceviceva Street, the Kalemova Street and the Omera Stupca Street) anticipated 93 land plots. A review of the city plan, dating back to 1937, revealed that a total of 8 villas and one building apartment were constructed. By the beginning of the 2nd World War, five or six more villas were constructed. The villas and their belonging land (gardens and yards) stood in a proportion 1:2 or 1:3 (built vs. unbuilt space). Following the 2nd World War the estate development continued, but in a way different from the initially planned. Actually, the construction of building apartments increased the population density and the land parcel occupation compared to the planned. Nevertheless, the site research confirmed the continuity in presence of the recognisable urban matrix grounded on the following principles:

- Orderly facility placement and uniformity in small number of floors;
- Shaping, cubic volumes, reduced architectural aesthetics;

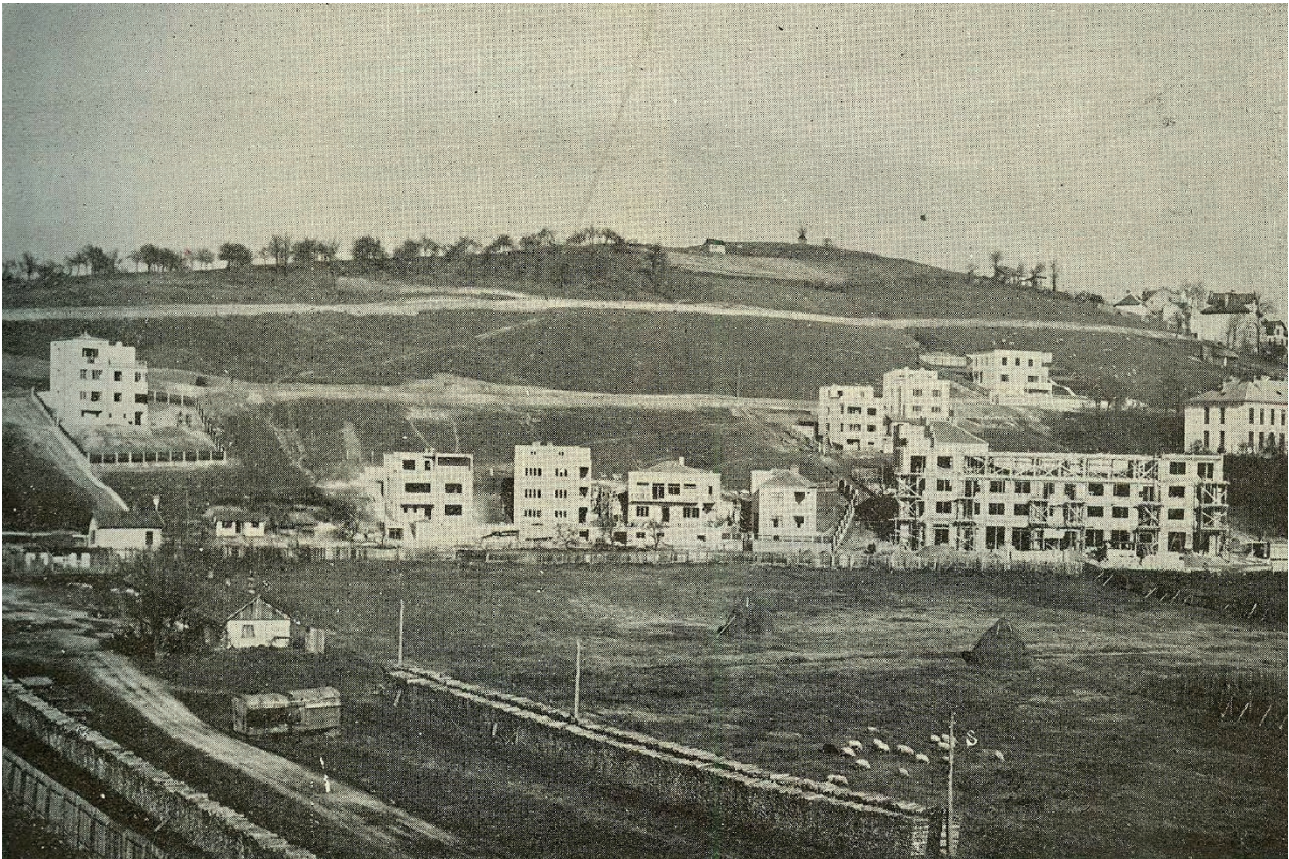


Figure 1 | Development of the Crni Vrh housing estate 1933. (Source: Institute for the protection of cultural-historical and natural heritage of Canton Sarajevo).



- Winding streets parallel to isohypses of the Crni Vrh slope;
- Well-balanced proportion between built and unbuilt areas;
- Relation between private and public space; Street views witnessed the building and street separation by the garden, garden stonewall

The knowledge of architectural perception of the constructed facilities and the possible anticipation of prospective urban complex development may only be sourced from the site observations, the scarce archive and historical data. The architectural tendencies in the construction of the Crni Vrh housing estate, obviously followed the early 20th century international trends in the residential (worker) settlements and urban villas - like the Weissenhof Estate in Stuttgart by architectural aesthetics, the Darmstadt Artists' Colony on Mathildenhöhe by integration greenery and buildings. That manifested in the reduced shaping - aesthetics poor in ornaments - and

space organisation emphasizing the house and nature interaction, especially via huge roofed terraces. (Ugljen-Ademovic, Turkusic, 2016)

Crni Vrh, as the architectural-heritage ensemble, was recognised for the B&H national monument in 2012. At the same time the 1st level protection was determined for the facilities constructed in the period between the Wars and the 2nd level protection for the facilities constructed after the WWII (Commission, 2012) (Figure 2).

Presumably, the majority of those facilities will be re-purposed, reconstructed or annexed by new structures, and each transformation will affect the unit as a whole. Transformation may be an acceptable long-term solution only if it is not observed on the level of physical constitution but in the context of a comprehensive ensemble (neighbourhoods) improvement which does not impair its potential and specificity. Hence, opposite to their (retro) emphasizing, abuse and negligence, the (facility and ensemble) specificities should set the parameters of the (re)design creative process.

01	Villa Smiljanic	08	Villa Sijaskijevic	1. order of protection 
02	Villa Perinovic	09	Apartment building	
03	Villa Mihajlovic	10	Villa Kofler	2. order of protection 
04	Villa Latal - Danon	11	Villa Golubovic	
05	Villa Corn - Markezic	12	Villa Bajlon	
06	Villa Murko	13	Villa	
07	Villa Hajnaki and Atijas	14	Urban villa	

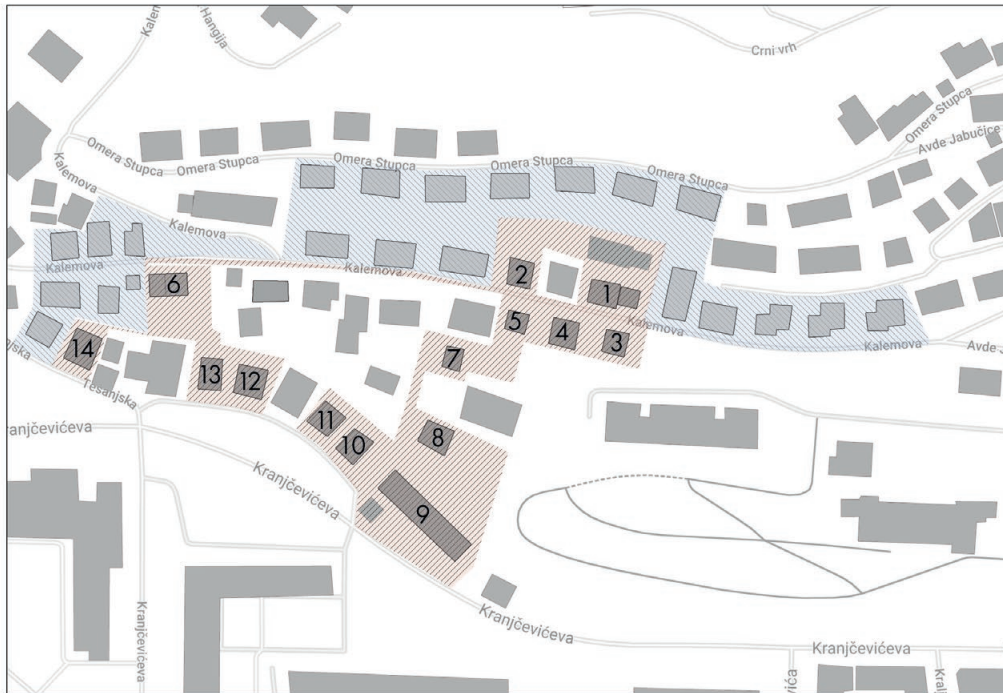


Figure 2 | Urban matrix of the Crni Vrh housing estate (Source: authors).

2.2 Housing Culture Specificities

The traditional housing culture of Sarajevo is characterised by single housing neighbourhoods located across amphitheatrical upland terrain surrounding the historical city centre. These neighbourhoods were developed under the Ottoman governance,³ in line with the philosophical - religious beliefs and understanding of topographic and micro-climate factors (like the *Right to view*, an unwritten rule that allows unobstructed views to the city and greenery from every single house). These historical residential areas (*mahalas*) are up-to-date and attractive for (family) living. They justified their high ranking during the recent social isolation and usual winter days when air pollution is high, as they allow for enjoying in the garden, offer privacy, sun-light exposure and wind circulation (contrary to the low city terrain).

It is not easy to interpolate and integrate the contemporary living requirements in the historical matrix, unless its key features are recognised, accepted and employed. A formalistic shaping, the space dominating volumes, the application of non-inherent elements, suppressing the limit between public and private, all this leads to the negation of the ambience, which is paradoxically, should be preserved and restored. (Figure 3) While they do not contribute to either cultural or energy sustainability of the location and thus are unacceptable, these procedures are wide-spread across mahalas and in the Crni Vrh housing estate.

Due to its features, the Crni Vrh housing estate may be observed as a potential interconnection between the natural (topographic and micro-climate) and cultural values of Sarajevo lifestyles (Ugljen- Ademović, Turkusic, 2010: 433.) (Figure 4).



Figure 3 | Changed modernist appearance of the Kranjčevićeva Street, 2022. (Source: authors).



Figure 4 | The Murko villa is one of the three villas that retained their authentic appearance, 2022. (Source: authors).

Within that scope, the variable social needs arising from demand for continuous quality living, may be examined and efficiently addressed. The logic behind spatial and structural facility organisation of the Crni Vrh housing estate, is determined against the traditional urban scheme of mahala neighbourhood (facility placement on the terrain, sun exposure, views, privacy level, distance from city noise and pollution, distinction between the public and private domain).

Once acquired, the persistent living culture elements (family life intimacy, interaction with nature, human-friendly ambience) contribute to balancing the location (local community) requirements and the prospective facility users with every new interior change.

3. Facility Reuse Possibilities

3.1 Characteristics of the Corn-Markesic Villa: Authentic State Analysis

FACILITY=PROPORTION+GARDEN+3-LEVEL APARTMENT

The Corn-Markesic villa consists of three-level residential facility (basement, groundfloor and 1st floor), an annex

(auxiliary basement premises) to the eastern facade, a yard surrounding wall, stretching from the northern façade, and a yard inclined towards the south. The supplied blueprints and surveys provided an insight into the existing physical structure, materials used and other architectural-compositional characteristics of the facility. The weather exposure, due to the lack of any roof construction for almost a decade, combined with no maintenance works, brought the facility into the state of partial devastation. Consequently, the structure itself was damaged, whereas, the brick walls, wooden floor separating and roof construction were partly demolished. Moreover, the wooden openings (windows and doors) were either damaged or removed from the facility. The horizontal concrete or ring beams were used for additional structural reasons. The inner concrete spiral stairs were preserved to a satisfying level. The final facade coverage was made of white plaster. (Figure 5).

Such an assessment was contributed by the new construction requirements (imposed after the devastating earthquakes recorded in the region; Banja Luka, in 1969, and Skopje, in 1963), entailing an active observation of the impact of horizontal forces on the facility to ensure proper horizontal and vertical ab beam installation. The proposed intervention was to include: reconstruction of



Figure 5 | The Corn-Markezic vila current condition, seen from Kalemova Street and from villa's garden, 2021. (Source: authors).

the facility in line with the original shape, aesthetics and materials; structural recovery, conservation and restoration relating to the highest possible extent on the original materials and elements preservation.

The villa itself is a real representative of its birth architecture as it combines the contents and functions, the plastic volume play and the full and void composition principle. Its authenticity is manifested in the following:

- Introvert modern living concept (the facade closed towards the street and open towards the garden, city views, sunlight and greenery).
- The facility volume analysis has revealed that the southern facade square dimensions are almost equal to the square dimensions of the facility layout. Additionally, the length of the northern yard wall is almost half the length of the northern facade with which it creates a compositional unit. The entry eaves installation has been developed in the same rhythm, while the entry itself has been additionally emphasized by the implementation of the same three-part composition (window-door-window) principle. The yard wall height is half the northern facade height. The asymmetry axis, passing through the upstairs window and the entry door, stretches along the one third of the facade surface.

Among the same age facilities around Sarajevo, thus facility is a rarity for its insistence on the volume harmony achieved by application of the geometrical patterns and simple rhythmical composition principles.

Considering the poor current state of the facility, the interior organisation may only be presumed by its comparison to other facilities of the modernist period. Thus, the potential premise disposition might include: a sleeping area on the 1st level, a salon and a living room

with kitchen on the 2nd level and work room and terrace on the 3rd level. However, the site examination (unsupported by any archive traces) may not confirm that this is an exceptional sample of a modern functional living organisation that might be found with few residential facilities around Sarajevo originating from the same period (like used to be the nearby Baylon villa).

3.2 Contemporary Residential Needs

The current social development trends strongly affect the skill of creating a private, intimate and secluded space. Global interconnection allows for high movability of both people, goods and data. Consequently, the space development and cultural patterns are applied in the environments to which they are not originally inherent. (Lefaivre, Tzonis, 2012)

Digital transformation has upgraded the space control possibilities (e.g. smart houses), interest group aggregation and intensive virtual social relation maintenance. The overall accessibility (at every place and at every time) produced new work models and even cultural and educational programmes. Their effectiveness has been tested and verified during the recent pandemic. Moreover, the increasing exposure to noise, urban pollution and problems has urged additional contemplation over benefits of spending more time in nature but also of bringing nature inside the private living space. The pandemic also contributed to recognising the psychological aspects of the natural environment exposure.

Considering all these factors, the authors constantly examining the models and problems of living in various social transition contexts, inevitably have to ask themselves the following question: How to feel at home in the world that is under intensive change and alienation? (Philips, Erdemci, 2012: 253-273).

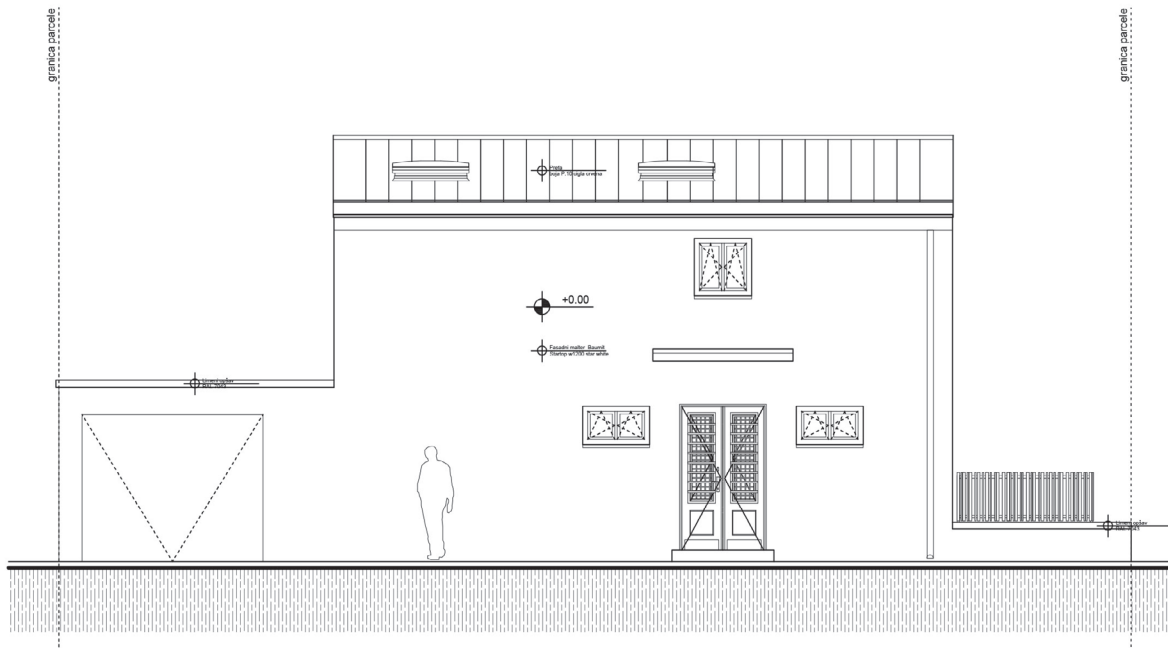


Figure 6 | The Corn-Markezic vila street facade. (Source: authors).

Home has become a place of work and study, intensive children play; home has become both primary and secondary place of residence. But above all this, home it to remain a sanctuary, a place of enjoying harmonious family life, a framework for quality and healthy habitus with awareness of the time and climate changes. In terms of space, such a habitus is to appropriately respond to the changes in the family life cycle, redefine the “obsolete” and reinforce the “current” programme-functional structures. At that point, the knowledge of the resident needs turns into contemplation over the process of “fluidity”, which according to Bauman, determines the essence of our present (future). Considering the “current” and “short” character of the space occupation, time flow is the principal determinant of the current (social) processes manifestation (Baumann, 2011:10).

4 Levels and Attributes of the Transformation

4.1 Initial Practical Elements Applied at All Levels

The analysis of the space’s adaptability was governed by the demands of a family of five (two parents and three children), as the new facility owners. The family currently lives between two locations – Sarajevo and a European city – but intends to reside in Sarajevo more frequently after the parents retire. The development of our scheme

was based on a set of demands: space for family gatherings; parent-child interaction; workspace creation; time spent preparing food and sharing meals; and individual space for each family member: i.e., allowing each person to withdraw to his/her “own world”.

The proposed scheme is based on:

1. Defining non-transformable spatial structures:
 - a) Fixed spatial elements (stairs and the vertical line of sanitary blocks).
 - b) Retaining the facility’s cubic form.
 - c) Retaining the yard wall in the street facade proportion (Figure 6).
4. The realisation of lasting interventions that create a high-quality and healthy living space:
 - a) Because of the poor condition of the facility’s physical structure, reconstruction of its thermal insulation is required, without altering the volume, layout or the height of the eaves, the peak of the single-pitched roof, or the attic.
 - b) Changes to the façade relate to windows on the southern basement wall: even three-part windows are to be replaced by windows of the same width and three-part separation, but without a parapet. This is necessary to improve the quality of the

residence, and the psycho-physical health of residents. The basement is extremely low, with a height of 247.00 cm, and a window height of 130.00 cm. Unless replaced, the windows will not provide sufficient daily light penetration, especially during the short and foggy winter days. The photo-ratio of the existing basement space is ca. 1/15. This is far below the architectural urban standard, which ranges from 1/5 and 1/7 for premises of this type occupied on a daily basis. The proposed window replacement would also better connect the indoor space with the garden, and is in line with the modernist principle of human living that returns nature to everyday urban life.

To satisfy the micro-climatic requirements, views were opened from all parts of the house, and the inner and outer spaces were connected directly, thereby retaining the facility's character as a "green oasis".

4.2 Transformation schemes

The proposed transformations are classified into three groups, and are open to further re-adaptation and development, or the recovery of the original design. (Figure 7)

Group 1 comprises the interior interventions, including the installation of assembly/separation elements to change the purpose of particular rooms. The garden is exclusively a place for outdoor activities. Sub-variant 1a concerns the residence requirements of all five family members (including the distribution of sleeping rooms across floors, and common vertical elements), while sub-variant 1b focuses on the comfort of the parents (a bedroom with a work area; an open-plan living room and kitchen, which function as integrated gathering spaces; and the guest rooms on the upstairs floor) (Figure 8).

Group 2 involves the annexing of new single-floor structures to the facility, and the interpolation of the glazed pavilion in the east part of the garden, to be connected to the house via a heated corridor. The interpolated garden pavilion will be devoid of ornament and added details. This variant offers the highest level of comfort for the whole family, and active garden usage. Sub-variant 2a focuses on the house's private character. It anticipates a living space in the pavilion, and additional interaction with the kitchen through the garden. Sub-variant 2b stresses the house's public character, and the gathering of residents and guests. It entails: the vertical connection of the 1st and 2nd levels via a mezzanine; and the development of different scenarios (ambiences) within the living space. Sub-variant 2b has been developed in detail, as the residents currently find it the most appropriate solution (Figure 9).

Group 3 is characterised by its vertical separation of the facility into two residential units, with separate entries but a common garden. It is suitable for two families composed of parents and an independent child. The smaller unit would occupy the 1st floor, and would have a better connection with the garden; the larger unit would occupy the remaining floors, and would have access to the roof terrace (Figure 10).

The proposed variants will be thoroughly tested, and multi-purpose spatial elements will be retained.

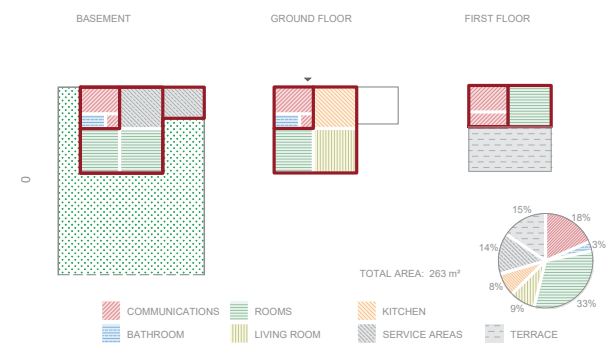


Figure 7 | Possible scheme of the original residential organization. (Source: authors).

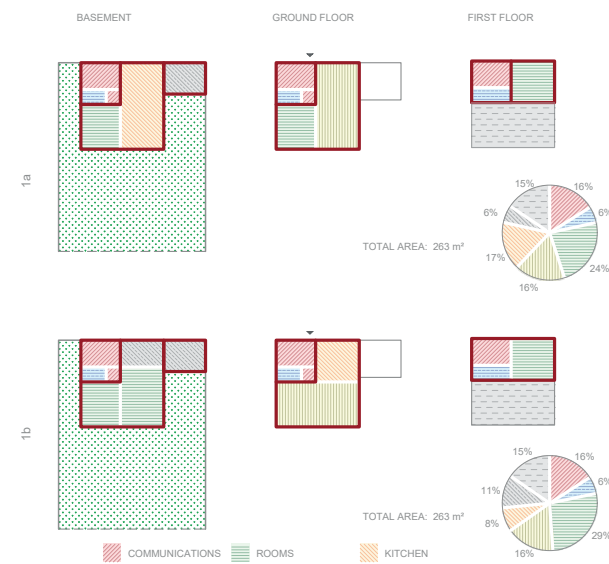


Figure 8 | Transformation scheme group 1. (Source: authors).

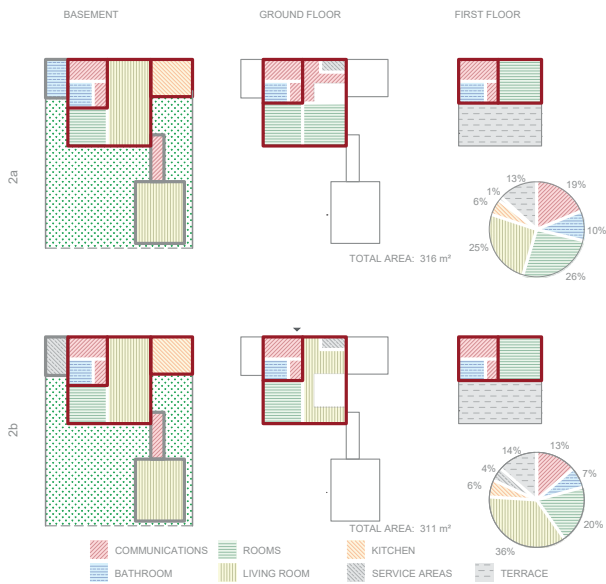


Figure 9 | Transformation scheme group 2- with garden pavilion (Source: authors).

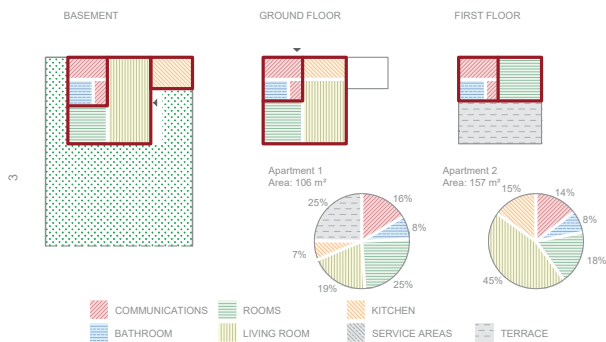


Figure 10 | Transformation scheme group 3 - with two apartments (Source: authors).

5. Results

The three transformations (and their subvariants) proposed include not only spatial changes, but also progress in the form of more efficient, more complete and longer-term use of the space. Subvariant 2b was selected for final development because it offers:

1. Diversity and greater representation of public content (living areas).
2. Vertical and horizontal flow throughout the house.
3. Diverse and experiential use of the garden and outdoor space, and direct contact with nature from the glass pavilion.

4. Combination of progressive modernity and respect for the old/existing: use of the interpolation and addition principle (through the garden pavilion and annexing single-floor structures). Both the form and visual treatment of the newly-designed elements will be adjusted to fit the volume and proportion of the existing structure. (Figure 11) To preserve the villa’s architectural composition and authenticity the same materials will be used as in the original, but their colour (a monochromatic treatment) and structure will be distinct from the existing white facade. All new elements will be treated as additional “biological layers”, and developed using new technologies. They will neither imitate nor pretend to belong to the original facility, nor will they decrease its value.

Finally, the selected variant includes: the adaptation, the reconstruction and redesign of other elements.⁴ Its careful implementation will preserve the visual and structural integrity of the house, and the architectural ensemble as a whole, with no visible changes from the main access roads. This means that despite these interventions, the Corn-Markezic villa’s importance to the city will be unchanged. (Figures 12-17)

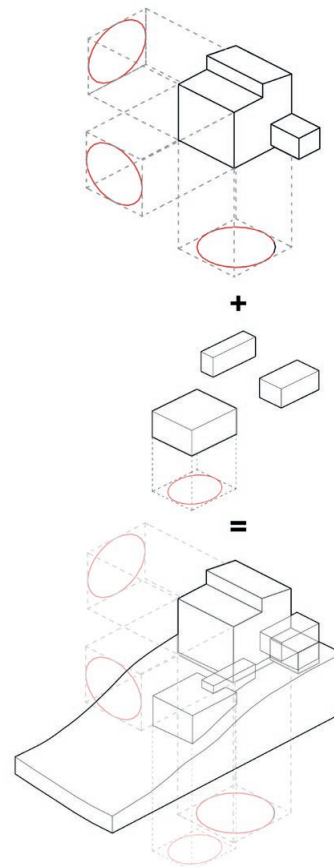


Figure 11 | Transformation subvariant 2b: Diagram of harmonization of old and new structures (Source: authors).

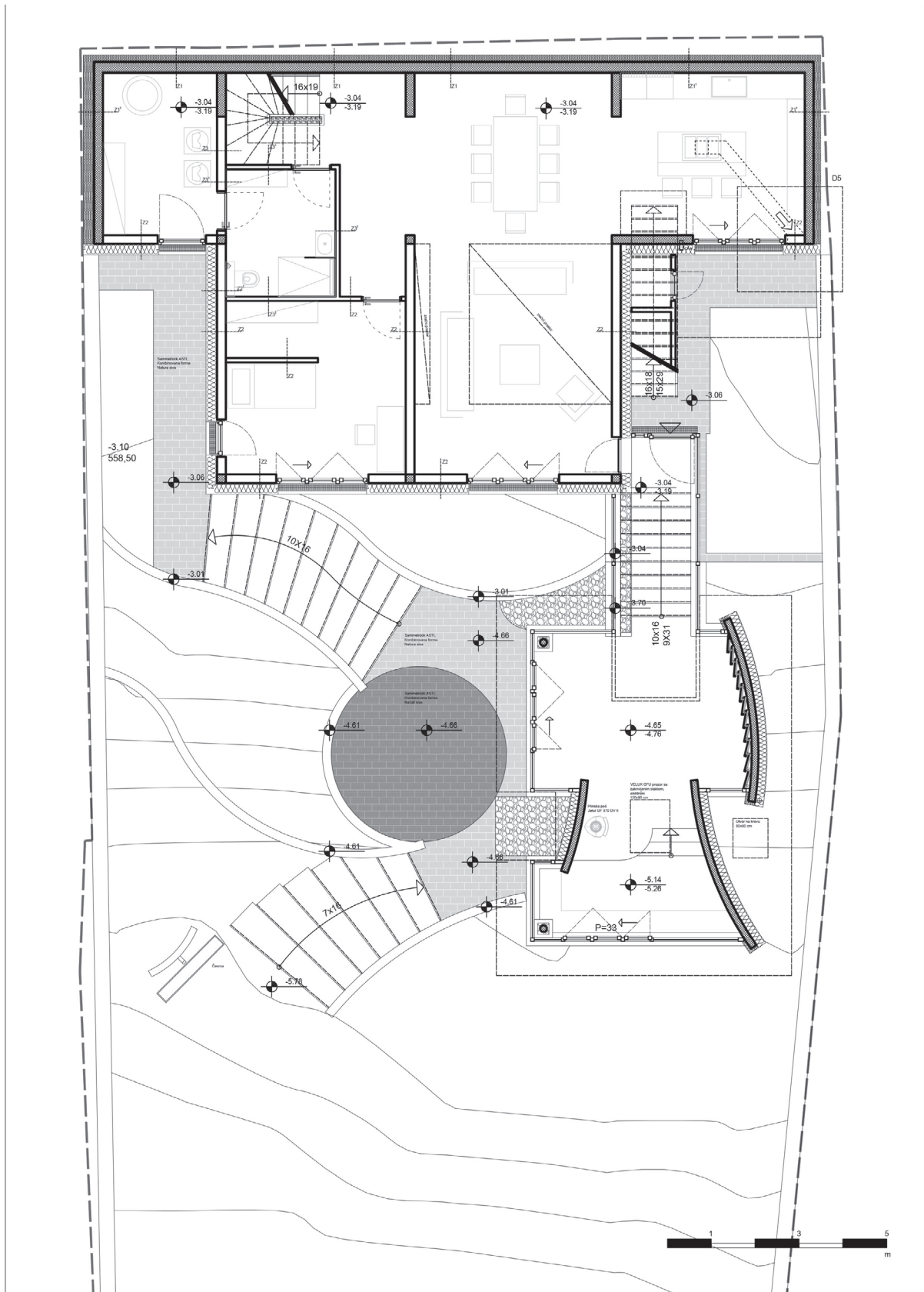


Figure 12 | Basement and garden pavilion (Source: authors).

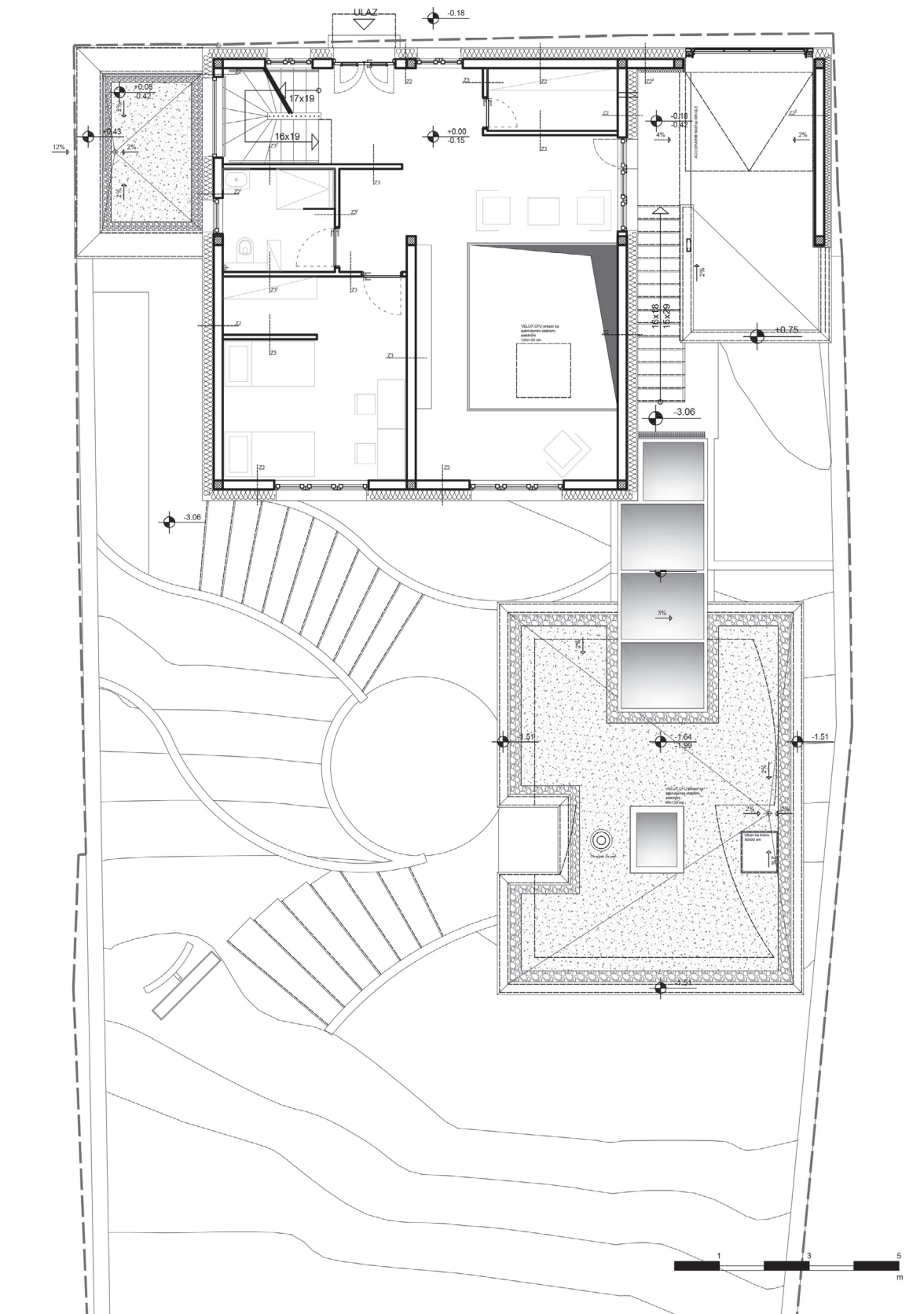


Figure 13 | Groundfloor (Source: authors).

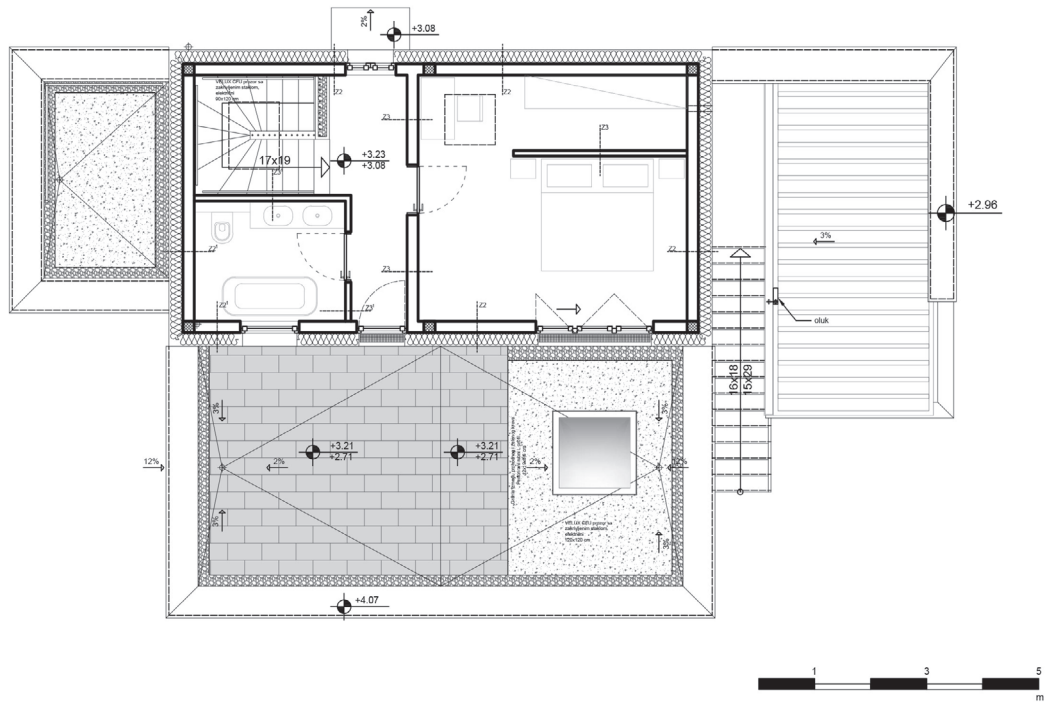


Figure 14 | First floor (Source: authors).

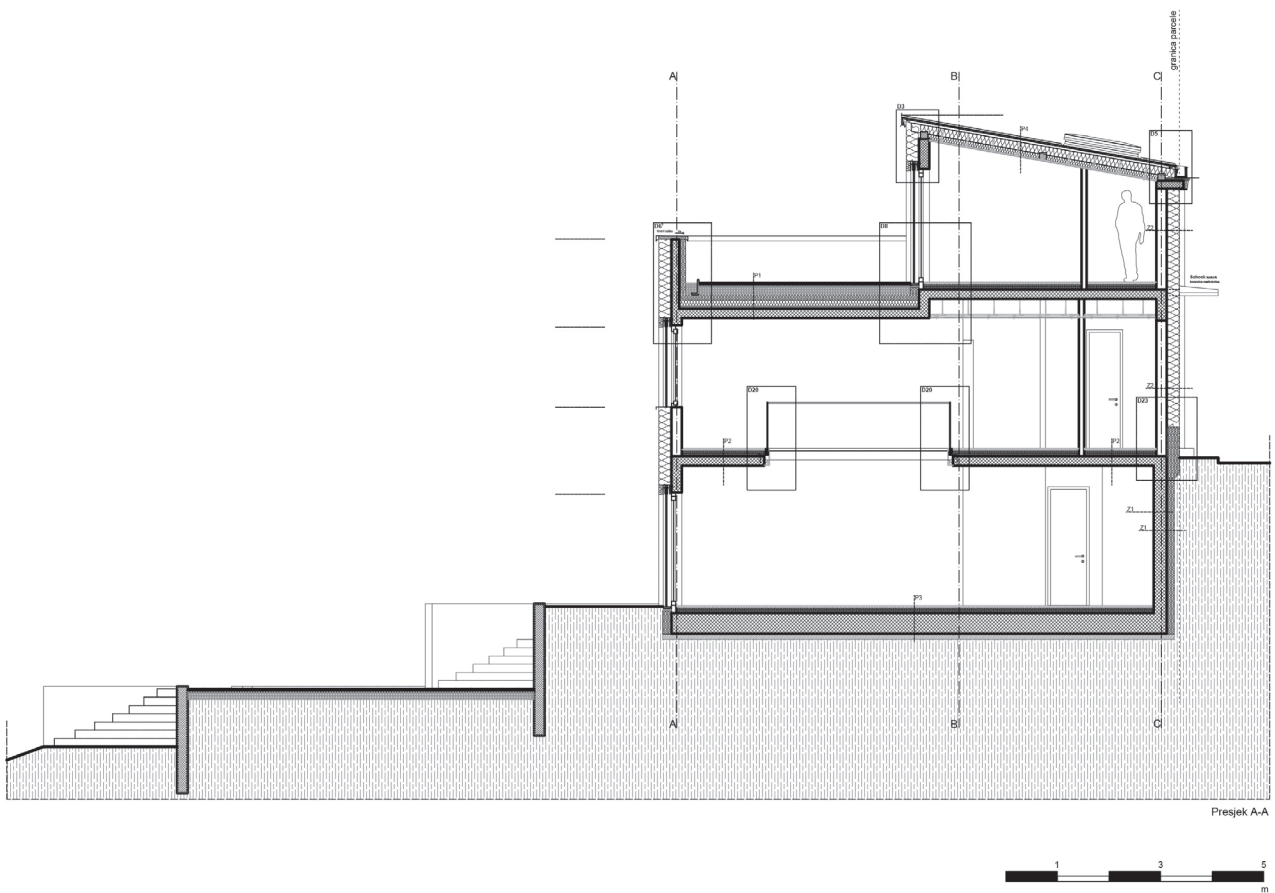


Figure 15 | Section through the villa and garden (Source: authors).

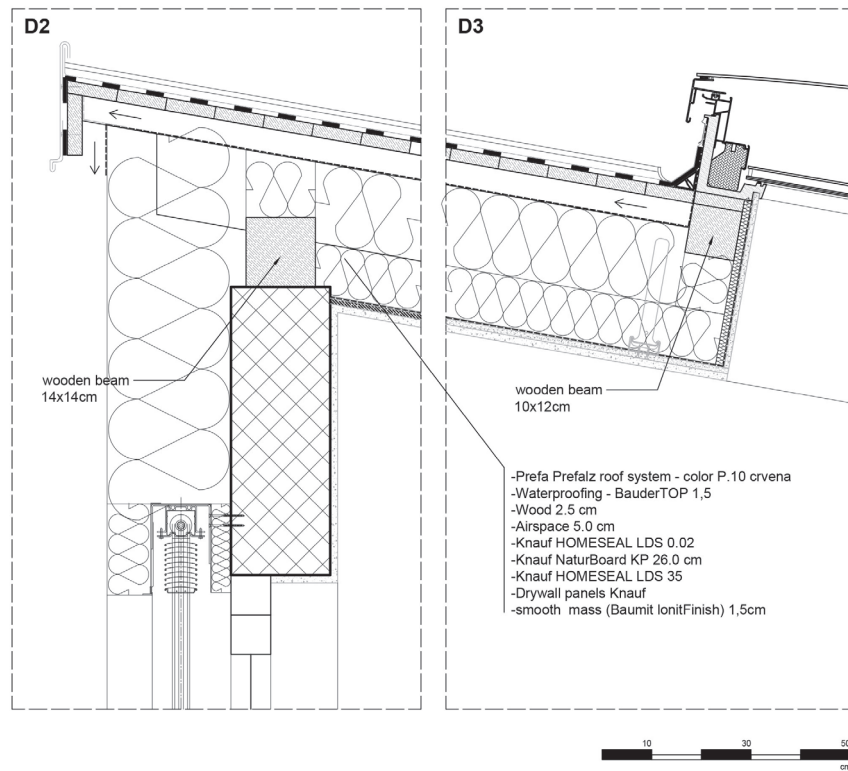


Figure 16 | Sloping roof detail (Source: authors).

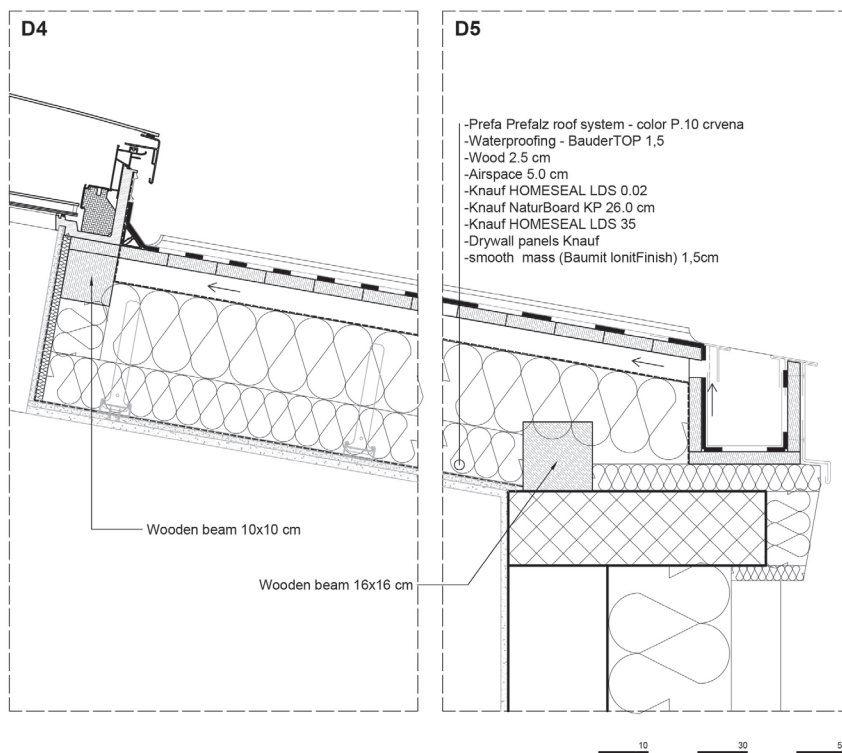


Figure 17 | Detail of the hidden gutter (Source: authors).

6. Conclusion

The Crni Vrh housing estate, of which the Corn-Markezic villa is a part, originates from the period of development between two World Wars. It is a rare example of a modern urban evolution that aims to create a community with a more humane way of life: urban living with the benefits of the outdoors. The architectural and cultural context of the neighbourhood is different today than in the period of its origin, but its recognisable features have been retained. Comparative analysis has shown that some of these features can be found in traditional residential neighbourhoods. This chronological and typological comparison has proved necessary at the present time of intensive change, as it indicates the stable and continuous permanence of architectural-urban structures within the city's matrix. A re-examination of the value and potential of these structures reveals them to be instigators of cultural and social awareness, harbouring elements with which the local community can identify. Modern lifestyles and changing social circumstances need fluid spaces. The proposed adaptation of the Corn-Markezic villa offers this, while at the same time enabling the realisation and spatial reification of previous enduring architectural, urban and cultural parameters (the connection with nature; its gardens on Sarajevo's

slopes; privacy; views [including the "right to a view"]; healthy living spaces;).

The house requires reconstruction of its supporting structure. Although its design is specific, the proportion and rhythm of the openings and the size of spatial segments make the house's internal organisation flexible and open to innovation. This enables several transformations:

- Fluid arrangement of residential contents
- Changing the size of the openings on the southern basement facade to achieve healthier living conditions, without affecting the composition of the house;
- Designing a new structure in the garden, using existing geometric patterns; selecting materials that would not disturb the villa's harmonious cubic shape. (Figures 18-19)

The proposed adaptation consolidates the enduring residential-cultural elements, which makes innovations easier to accept, and strengthens the sense of place. Our conversations with the family (the owners and ultimate



Figure 18 | Final transformation: Section through the site (Source: authors).



Figure 19 | Final appearance of the Corn-Markezic Villa: Views from the street and the garden; the interior of the pavilion (Source: authors).

users of the house) and their understanding of the whole site's value and importance, contributed greatly to a mutual understanding of the house's future purpose. This proves that an adaptation that emphasises the site's potential and the preservation of cultural patterns in its modern reinterpretation can contribute to the social

and environmental sustainability of the neighbourhood and the city. It can increase awareness among those who inhabit the house about the quality of the space and environment, and incite more active, organised and efficient actions to preserve the architectural ensemble.

Notes

- ¹ The the Housing Cooperative was founded in 1925, as a part of the Railway Workers' Loans & Aid Cooperative (Željezniciarska Kreditna i Potporna Zadruga - abbrev. Z.S.O.J.), founded in 1923.
- ² The Crni Vrh housing estate represented the western city border dominated by buildings whose construction bridged the centuries (throughout the Austrian-Hungarian Monarchy rule 1878-1918). Those included: the National Museum Pavilion, the Marijin Dvor Residential Palace and the Tobacco Factory Complex (today location of the Sarajevo City Centre).
- ³ The period of the Ottoman governance (late XV - late XiX century) was characterised with an intensive urban development based on the functional zoning principle. Mahalas were residential areas and carsija (down-town) was the public centre. Houses in mahalas were single floored and surrounded by wide fenced yards and gardens.
- ⁴ The process of producing the final design of this project, a selected variant of which is presented here, took place in 2021. It was led by (Author 2), architect and supervisor; (Author 1) architect; and associates/architects Tarik Begovic and Irma Bogdan.

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