

## Residential architecture of Novi Zagreb on the example of Siget settlement

Adnan Zoranić

Architecture Department, International University of Sarajevo, Bosnia

### ABSTRACT

Zagreb was fertile land for development of modernism and internationalism in architecture thanks to very strong modernist scene from the period before the World War II. Numerous prominent architects just continued to work and to promote their ideas in socialist Yugoslavia when social realism was rejected, and modernism was established as cultural mainstream in newly established Yugoslavia. The decision to spread the city on the south over the river Sava was used for creation of new town totally in accordance with modernist principles of urban planning and architecture, Athens charter and Le Corbusiers visions. Progressive and innovative ideas were implemented with strong support of entire society and state structures oriented to modernization and urbanization as tools for creating industrialized and future oriented society. After decades of existence Novi Zagreb survive critics and challenges of social and economic changes and become to be attractive living area for different social groups of people which offering decent and functional spatial concepts of flats and urban living. On the example of one of Novi Zagreb settlements Siget that was developed through several decades and built accordingly to first urban plans we can follow realization of modernist ideas and their progressive evolution in heterogenic concepts of residential units, materialization, and adoption to human needs. Urban design solutions and different layouts of flats settled in different kinds of residential buildings in Siget create real picture about range of modernist architecture realized in Novi Zagreb and give us opportunity to reconsider human oriented, socially responsible, and sustainable residential architecture instead current, investor and profit directed approach.

**Keywords:** Modern architecture, modern urbanism, Novi Zagreb, Yugoslavia, residential

### Corresponding Author:

Adnan Zoranić

Architecture Department, International University of Sarajevo

71000 Sarajevo, Bosnia

E-mail: [azoranic@ius.edu.ba](mailto:azoranic@ius.edu.ba)

### 1. Introduction

Like other major cities in Yugoslavia after World War II, Zagreb was faced with rapid population growth and a great necessity to construct many new housing units. The expansion of Zagreb to the south of the historical center and formation of Novi Zagreb created the preconditions for implementation of modernist ideas about urbanism and architecture that will change the environment and circumstances of every day leaving in the cities. The urbanism and architecture of Novi Zagreb are defined according to a detailed urban plan from 1959, and they are fully determined by the principles of the Athens Charter and CIAM. Le Corbusier's principles of the "radiant city" find their embodiment in the realization of Zagreb's new neighborhoods. Vast fields filled with cubes of new Zagreb blocks, surrounded by greenery, formed an interesting agglomeration of modernist urbanism.

### 2. Modernism as new concept of living in definition of Novi Zagreb

The tempo of new blocks construction, and their previous design, did not leave too much room for serious studies on the socio-psychological harmonization of new urbanism and architecture with the newly arrived urban population of various social profiles. Sandra Križić Roban emphasizes the necessity for consideration of the humanity and sociological harmonization of new settlements:

"The order and rhythm of the masses, the counterpointed volumes and defined traffic directions, which in the models evoked the appearance of future newly built settlements, reflect the determined attitudes of urban planners and architects and their abstract thoughts about people who have to live in such organized communities. Within the conveyor belt process, which on a symbolic level can serve to present the idea of creating the required (expected) number of apartments, the question arises - what is the place for man and how to develop an attitude of personal freedom within the formally equal paradigm of urban framework. Urban "omissions" are justified by the lack of a definite and determined theoretical attitude, which is why urbanism is always late in relation to existing needs. The order, which was established in the new settlements, seemed to many alienated and foreign, and man was placed in a situation of his unconditional acceptance. Some of the problems faced by new users are the differences and moves in the social structure, noticeable in mutual relations and the way of accepting new ways of life [1]."

Of course, there were and there are other considerations that describe the real intention of the designers of Novi Zagreb.

"Locations, layout of buildings on individual plots, their interrelationships as well as detailed instructions for the quantity and layout of urban facilities and apartments, for the appearance of the facade, were determined according to the detailed urban plan of Novi Zagreb in 1959 made by Zdenko Kolacio, Mirko Maretic and Josip Uhlík. Studying and analyzing their plan, we should reject the criticism of the construction of Novi Zagreb as a "dormitory", because they planned all the necessary supply, educational, health, transport, recreational and social services [2]."

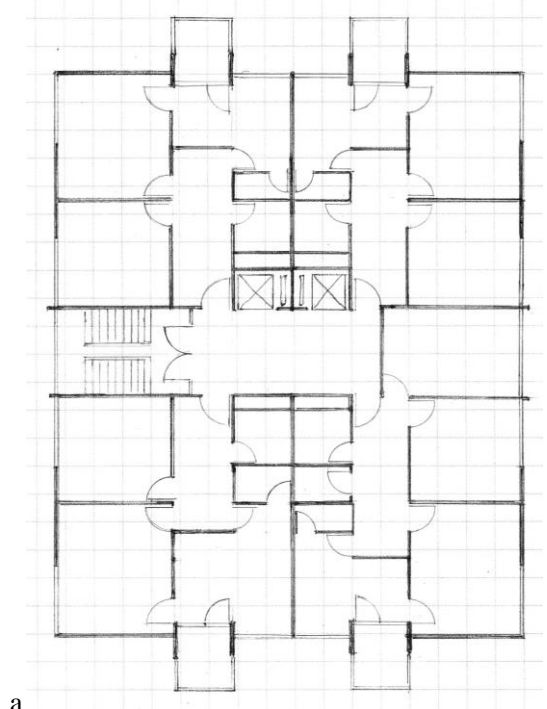
This proves the thesis that the emergence of new urban areas needs time to really become cities, as it was case with all historical cities that were created over the centuries and developed according to circumstances and needs. Newly emerging modernist cities or new parts of existing urban structures needed that time to be enriched with the usual contents and elements of urbanity. In the period of their emergence, it was important to plan and create the preconditions for such a sequence, the existence of which in most cases was confirmed through later development. From the beginning of the construction of new apartments, the imperative is "saving and rationality, which is trying to achieve by industrialization of construction, standardization and prefabrication [3]." Clear example of rationalization and prefabrication in Novi Zagreb is visible through application of prefabricated systems YU-60/61 with pressed aluminum profiles on the facades used in realization of Novi Zagreb buildings in Remetinec and Zaprudje. Even harmoniously designed by Bogdan Budimirov, the popularly named "cans" were reminiscent of rationalist-constructivist ideas from the beginning of the modernist movement, but in reality, never provided adequate comfort, both in spatial-functional and technical aspects of acoustics and thermal insulation. In the new residential architecture of Zagreb, architects recognized the possibilities and continue to search for innovative concepts, striving to achieve high aesthetic achievements of world modernism [4]. Residential skyscrapers in the settlements of Zaprudje and Sopot, designed by architect Slavko Jelinek with other high-rise apartment buildings in Novi Zagreb, represent the implementation of Le Corbusier's idea of sunny vertical housing drowned in a green environment. They are a formal expression in the establishment of harmonious relationships with the horizontally placed cubes of lower buildings. The influence of Le Corbusier in the creation of new settlements and the creation of modern architecture throughout Yugoslavia is visible from the thinking of prof. Dr. Oliver Minić that describes Corbusier's approach in the preface to the Yugoslav edition of Le Corbusier's book "Towards True Architecture": "In architecture, his work is based on transparent ground floors of houses, glass surfaces, flat roofs with terraces with beautiful flower gardens for relaxation and human enjoyment, sun shades and air conditioning installation, proportions in line with the metrics of "Modulor", and more.

In urbanism, his theory is based on the principles of the "Athens Charter" and the principle of the "seven roads", ie on the principles of the elements sun, space and greenery, as well as on the general regulation and segregation of traffic. He is supporter of high residential towers with lots of greenery, he wanted to provide everyone with enough sun, air and greenery [5]. The greats of Croatian architectural modernism are in a constant struggle with economic constraints during the process of the construction of Novi Zagreb. Over time, they manage to find a balance in the creation of functional and comfortable apartments, which will satisfy the imposed imperative of fast construction, with not always high quality, but satisfactory materialization. The aim is to increase living space size by concepts of clear separation of night and day part of the apartment, elimination of transitional rooms and rational organization of communications, use of built-in closets, sufficient sunlight and proper orientation with mandatory open space - balcony, loggia or terrace. At the beginning, aesthetic solutions of facades are often strictly limited by urban requirements and recommendations, but harmony, rhythm and use of colors are not lacking. Later, the facades are treated more freely because the fragmented ground plans allow to get out from the monolithic structure and to form more playful design and spatial solutions, such as Jelinek's

skyscrapers in Zaprudje, or even more in his project for buildings in Veslačka Street in Zagreb. Most of Novi Zagreb was dominated by residential skyscrapers, they are the ones that marked an era, over time their construction was abandoned, and this type of tower remains reserved for the corporate architecture of office buildings. With all the shortcomings such as limited intimacy, large concentrations of inhabitants in a limited space, the architecture and skyscrapers of Novi Zagreb had a pronounced dose of modernist idealism. In the role of a brilliant commentator and critic of architecture, the writer Jergović says that life in the skyscrapers of architect Jelinek is actually life in his vision of socialism and that for comparison; it is enough to visit some of the countries of real socialism, even some parts of New Belgrade and New Sarajevo, to watch some of the newer Romanian films and notice the differences in construction and way of life in comparison to Novi Zagreb [6]. Each of the settlements in Novi Zagreb was built according to a concept that due to the "social" ownership structure respected the interests of society and the community and treated space as a resource that cannot be hostage of private interest of investors, which is often the case in today's privately funded housing. From today's perspective of the full utilization and maximum construction of each plot to its limits, the care for public spaces, the establishment of urban greenery, "and at the same time providing privacy to leafy canopies, even in such small proportions, gives the past a completely justified note of nostalgia [2]." The mentioned progress and higher standards of housing construction are especially noticeable in Zagreb's settlements that have been emerging in the last two decades of the former state's existence, when the last settlements of Novi Zagreb were completed: Središće, Dugave, Soboština, but also the settlements around Lake Jarun and in other parts of Zagreb. An illustrative example is the Siget housing estate created over several decades with visible progress in architectural design and living standards.

### 3. Case of Siget settlement

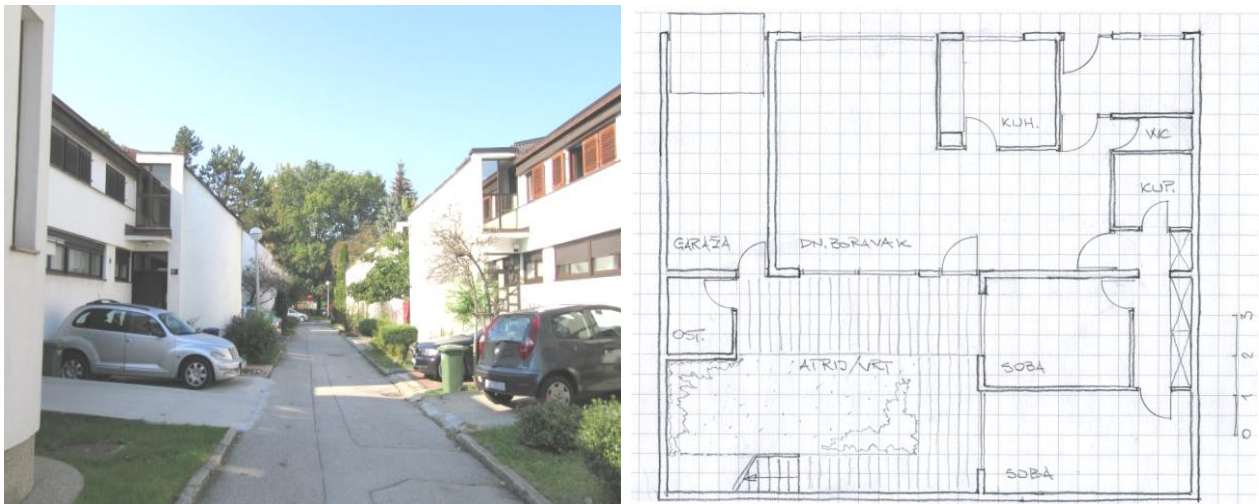
Separated from the previously built settlement Trnsko by newly created and 9 ha big Park mladenaca, on its eastern side, the settlement of Siget is a particularly interesting example of Novi Zagreb modernist neighborhoods. It was realized in several phases, which in a very indicative way show changes and growth of housing standards since the early 1960s when the western side of the settlement was built, until the mid-1970s and 1980s when the entire settlement was completed. The first phase was marked by the construction of five-storey, very basic quality buildings, so similar to built blocks in neighboring Trnsko. A bit later was built skyscrapers designed at a much higher level of spatial organization of apartments and with a more interesting visual treatment of the facade. Well-known, not because their architecture, the skyscrapers in Siget gained cult status thanks to the fact that one of them was home to one of the most charismatic representatives of the "New wave" movement in Yugoslav music and the founder of music band Azra - Branimir Johnny Štulić.



Figures 1 and 2. Skyscrapers in Siget, Zagreb 1966, arch. L. Schverer and T. Matić. Source: Adapted from [7] and [8]

The diversity of concepts of new housing units was enriched when, in 1970, rows of atrium houses were created in Freudova Street, by architect Ana-Marija Jelinčić-Semenčić. An interesting, modern spatial organization of single-storey units with L-shaped floor plan which living spaces facing the courtyard patios in the center of units, accompanied by garages, storage spaces and hobby activities represent significant step forward in the quality of housing.

In the 1970s, was constructed a part of the settlement around the existing complex of "Brodarski Institute" built in the 1950s. On the south side of the institute, six unusually wide skyscrapers are being built in the Aleja pomoraca. Architects Borivoj Feldman and Jakša Zlatar have created skyscrapers with an attractive exterior, oriented to the east and west, stretched in the north-south direction, surrounded by greenery, with numerous simple but quite decent bright apartments.



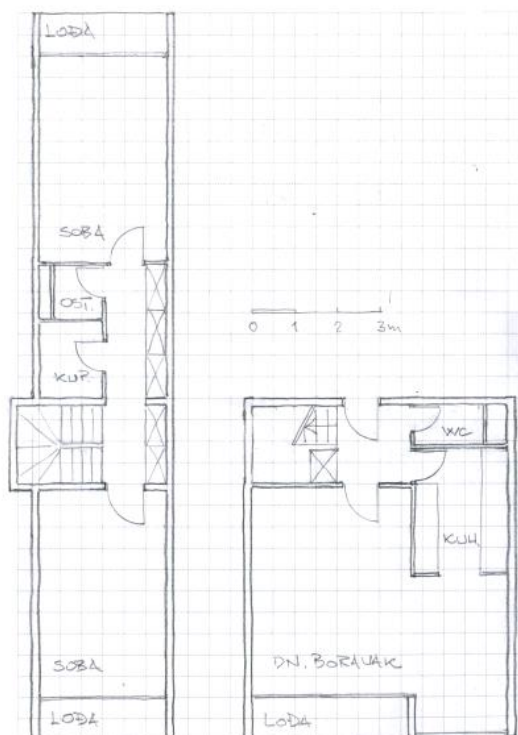
Figures 3 and 4. Atrium row houses in Siget, Zagreb 1970, arch. A. M. Jelinčić-Semenčić. Source: Adapted from [8]



Figures 4 and 5. Residential skyscrapers in Aleja pomoraca, Siget, Zagreb, arch: B. Feldman and J. Zlatar. Source: Adapted from [8]

At the same time, the "Super Andrija" building is being built in the same neighborhood. A 14-storey high-rise building with over 300 apartments designed by Miroslav Catinelli, modeled on Le Corbusier's Unite de Habitat

with very decent, mostly duplex apartments. Similar but even much bigger, 240 m long, with 19 inhabited floors and close to 1,200 solidly designed apartments is famous “Mamutica” building, built in 1974 in Travno neighborhood in Novi Zagreb, designed by architects Đuro Mirković and Nevenka Postružnik.



Figures 5 and 6. „Super Andrija“ in Siget, Zagreb, arch: M. Catinelli. Source: Adapted from [9] and [8]

In Siget, on the northern side of the “Brodarski Institute”, there are eight-storey and four-storey buildings that are in large part with apartments in two levels, and residential row houses in Sortina Street with gardens and very luxurious housing units mostly made for high-ranking officers of the Yugoslav Army. The concept of mentioned row housing is interesting because it combines two-storey residential units with direct access from the street and to the garden and three floors units with comfortable apartments with large terraces. Very attractive and dynamic aesthetic solutions are obtained in addition to extremely high-quality housing solutions, with significantly improved materialization. The application of bricks on the facades of a large number of buildings in Novi Zagreb, including Siget, enabled the materialization of building envelopes with much better thermal insulation characteristics. In the interior, it was very common to use lamellar or classic parquet as standard, so rare in the collective housing of Western Europe from the same period. Heating and unlimited hot water supply from the central city heating plants with the obligatory use of gas for cooking has significantly contributed to the comfort of living and clean air.



Figures 6. and 7. Row houses in Sortina street, Siget, street side and garden side. Source: Adapted from [8]

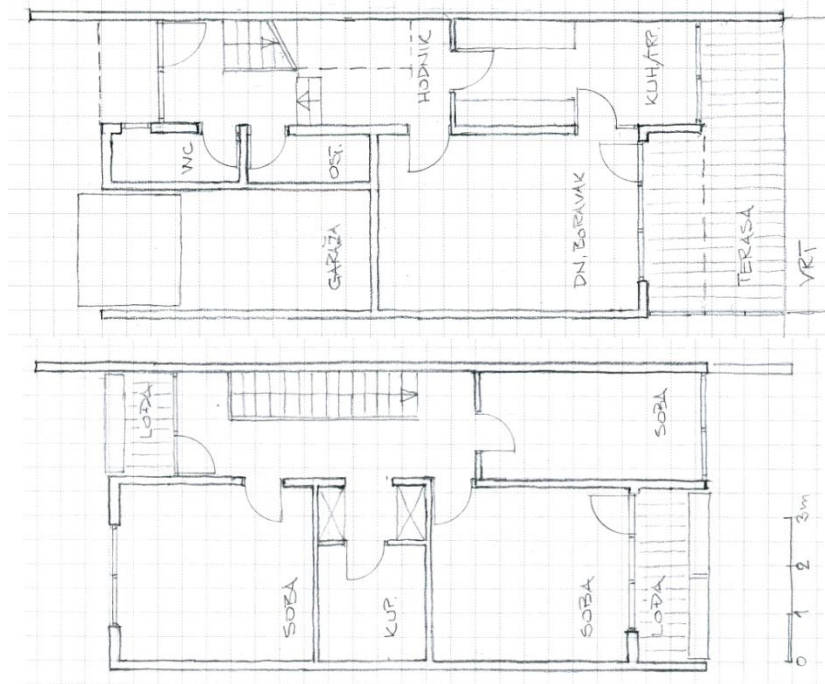


Figure 8. Row houses in Sortina Street, plans of flat in two levels. Source: Adapted from [8]

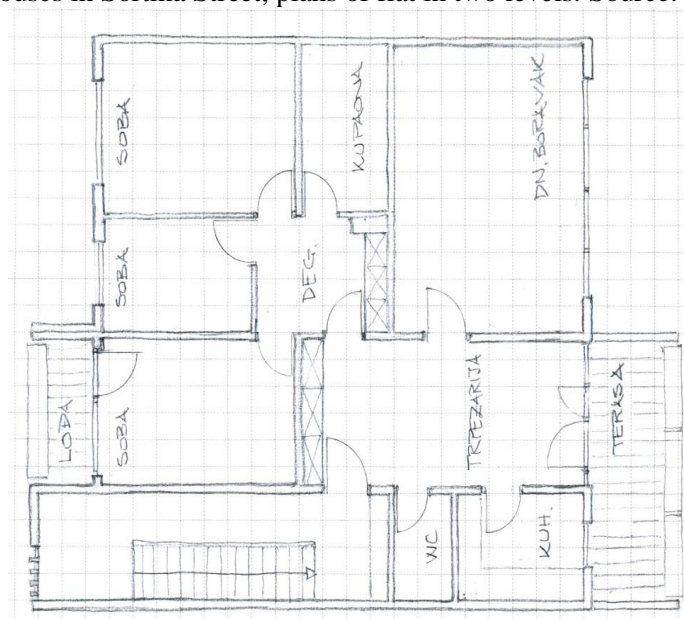


Figure 9. Row houses in Sortina Street plans of flat in one level. Source: Adapted from [8]



Figures 10 and 11. Residential building in Ivan Visina Street, Siget, Zagreb. Source: Adapted from [8]

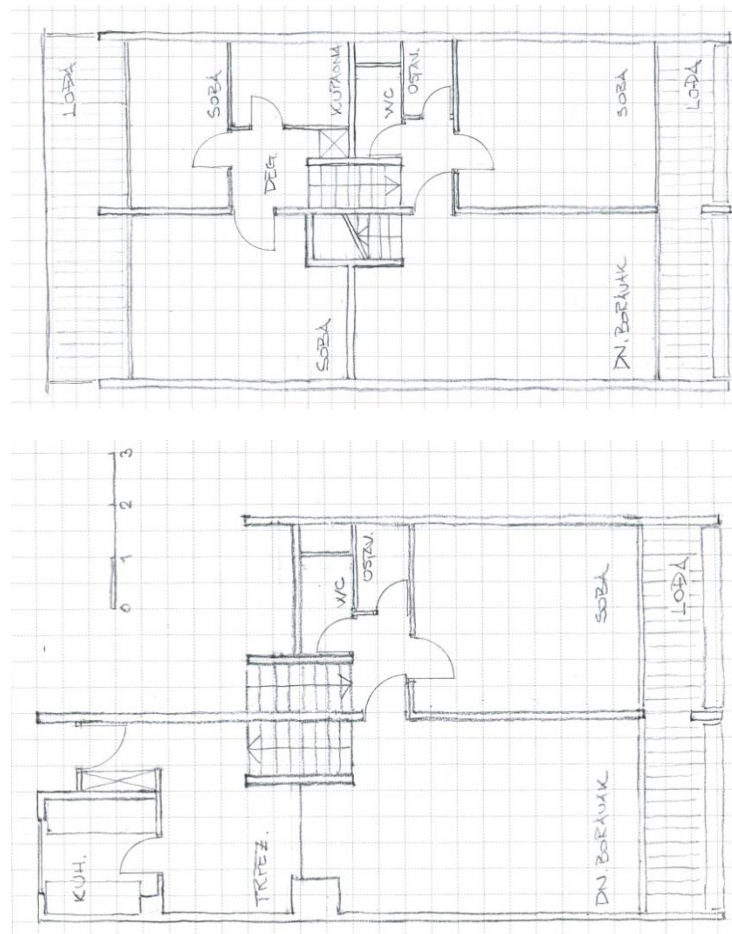


Figure 12. Plans of two levels flat in residential building in Ivan Visina Street, Siget, Zagreb. Source: Adapted from [8]

The evolutionary difference in the applied materialization, visual expression, spatial organization and quality of housing solutions that arose during the decades of settlement development is very noticeable in the example of Siget. Many different types, mostly high-quality residential units contribute to social diversity that prevents the later emergence of ghettoization, so common in many settlements of Western European cities created in the modern period [10]. Innovative urban design for that time was related to unusually great attention oriented to solving stationary traffic; through individual parking in garages within housing rows and in a numerous collective garages, surrounded by greenery. Parking is organized underground and aboveground, but almost always in covered parking plots above which are arranged pedestrian zones, open public spaces, children's playgrounds, and many "pools" with greenery. A similar urban concept of the plateau was applied later by the architect Josip Uhlík in the nearby settlement of Središće. As in any other settlement of Novi Zagreb, in Siget was built an elementary school, there are two kindergartens, ambulance-health center, many parks and facilities

of service and commercial character. In Siget was built the church of St. Cross as one of the most interesting examples of modernist sacral architecture from the period of Yugoslav socialism. Everything was completed with the construction of a multiplex cinema and shopping center during the 2000s on a location that was left for content of a similar nature through the urban planning of the Siget settlement from the previous period and according to the ideas of Boris Brnčić and Josip Uhlík.



Figure 13 and 14. Pedestrian plateaus above parking plots and residential building in Vladislava Brajkovića Street in Siget, Zagreb, arch: V. Uhlík. Source: Adapted from [8]

During the later existence of urbanism and architecture that emerged in Novi Zagreb during the socialist period, certain problems came to the fore, but also many prejudices and disputes. In addition to the initial socio-functional problems of the new settlements, one of the most visible problems till these days is the maintenance of the housing units and common spaces, inside and around residential buildings. The dominant orientation towards new construction in socialist times completely underestimated the need for adequate maintenance, renovation, and modernization of these newly built housing units. The lack of identification and sense of belonging to the new settlements together with the lack of tenants' initiative to maintain common parts of buildings often resulted in neglect and dilapidated appearance of urban areas and multi-apartment buildings from that period [3].

In support of the remarks that modern cities are rarely integrated with existing urban cores, Spiro Kostof's claim that modernism in urbanism was successful only when it arose in empty areas that in Europe was possible on the examples of destroyed cities, while in contact with historical urban ensembles, modernism was insufficiently gentle and intimate [11]. However, it is an indisputable fact that the new parts of Yugoslav cities have created spaces worthy of attention, from the aspect of advanced architectural and urban solutions to a special quality of life that is simply not achievable in older parts, and it seems especially successful in the case of Novi Zagreb. "Besides, it is not a hidden or secret city. Some of us watch it every day, but for some reason we are unable to see it. Unbelievably beautiful, elegant, architecturally defined city. The urban jewel of Balkan Brazilia [12]." "That Zagreb from Zubčević's and Tanović's series<sup>1</sup>, which extends from Budimirov's and Jelinek's buildings, through Zapruđe, Utrina, Travno and Siget, and further around the world, represents an urban and urbanistic ensemble, which should be protected as a cultural asset, and as that material heritage by which Croatia should recommend itself to the world. Unlike the city on the northern banks of the Sava River, this one on the southern banks is inimitable, incomparable, and unique. And it's not a matter of one's penchant for concrete, cans and skyscrapers, nor for the architecture of a particular period. It's just like that [12]."

#### 4. Conclusion

Compared to Novi Beograd (New Belgrade), Novi Zagreb is somewhat smaller, but to this day a far better-preserved agglomeration of modernist urbanism and architecture. Under the strong influence of Le Corbusier and following the principles of the Athens Charter, it was emerged significant part of Zagreb with clear qualities of urban planning, sophisticated aesthetics, based on rational and functionalist, but humane aspects of housing.

<sup>1</sup> Erol Zubčević director of photography and Danis Tanović director of HBO series which storyline is permeated by city views of Novi Zagreb.



More than half a century from occurrence we became aware of high quality of residential units that are carefully oriented to the sun, integrated into greenery and substantially enriched by tendencies of intelligent living space organization. On the example of Siget, one of the settlements of Novi Zagreb, we can follow the evolution of architectural thinking and the growth of housing standards as well as the visionary importance of thoughtful urban planning. Urban design solutions and different layouts of flats settled in different kinds of residential buildings in Siget create real picture about range of modernist architecture realized in Novi Zagreb and give us opportunity to reconsider human oriented, socially responsible, and sustainable residential architecture instead current, investor and profit directed approach. The quality of transport solutions contributes to the good connections of Novi Zagreb with the central part of the city, and these are the results of quality urbanism, innovative and socially responsible planning created during the construction of Novi Zagreb.

### Declaration of competing interest

The authors declare that they have no known financial or non-financial competing interests in any material discussed in this paper.

### References

- [1] S. Križić Roban, "Obilježja modernosti na području arhitekture, urbanizma i unutrašnjeg uređenja nakon Drugoga svjetskog rata" in *Socijalizam i modernost*, Institut za povijest umjetnosti, Zagreb, Croatia, pp. 57-127, 2012.
- [2] R. Margetić Urlić, Slavko Jelinek monografija, Udruženje hrvatskih arhitekata, Zagreb, Croatia, 2009.
- [3] N. Vezilic Strmo, A. Delic, B. Kincl, "Uzroci problema postojećeg stambenog fonda u Hrvatskoj," *Prostor*, no. 21 vol. 2, no. 46 pp. 343, 2013.
- [4] Ž. Domljan, „Poslijeratna arhitektura u Hrvatskoj,“ *Život umjetnosti*, vol. 10, pp. 3-45, 1969.
- [5] O. Minić, „Le Corbusier, arhitekt, istraživač, slikar i mislilac“ in *Le Korbizije, Ka pravoj arhitekturi*, Građevinska knjiga, Beograd, Serbia, pp. XX, 1977.
- [6] M. Jergović. „Slavko Jelinek-Neboderač.“ [jergovic.com. https://www.jergovic.com/subotnja-matineja/slavko-jelinek-neboderac/](https://www.jergovic.com/subotnja-matineja/slavko-jelinek-neboderac/) (accessed 17/01/2019).
- [7] "Siget Zagreb." [hr.wikipedia.org. https://hr.wikipedia.org/wiki/Siget\\_\(Zagreb\)/](https://hr.wikipedia.org/wiki/Siget_(Zagreb)) (accessed 02/03/2019).
- [8] Author's private collection of photos and self-prepared drawings.
- [9] "Zgrada Super Andrija u Novom Zagrebu." [licegrada.media. http://licegrada.media/zgrada-super-andrija-u-novom-zagrebu/](http://licegrada.media/zgrada-super-andrija-u-novom-zagrebu/) (accessed 02/03/2019).
- [10] A. Zoranić, *Arhitektura prethodne civilizacije, Kulura građenja i duh modernizma u Jugoslaviji u periodu 1945-1990*, International University of Sarajevo, Sarajevo, BiH, pp. 216, 2020.
- [11] S. Kostof, *The City Assembled*, Thames&Hudson Ltd, London, UK, pp. 264, 1999.
- [12] M. Jergović. "Zubčevićev Zagreb je nečuveno lijep, elegantan, urbanistički definiran grad." [buka.com. http://www.6yka.com/novosti/miljeko-jergovic-zubcevicev-zagreb-je-necuveno-lijep-elegantan-urbanisticki-definiran-grad](http://www.6yka.com/novosti/miljeko-jergovic-zubcevicev-zagreb-je-necuveno-lijep-elegantan-urbanisticki-definiran-grad) (accessed 17/01/2019).