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HOUSING APPLIED. RATIONALISATION AND INDIVIDUALISATION OF THE LIVING SPACE

MIESZKANIE STOSOWANE. RACJONALIZACJA I INDYWIDUALIZACJA PRZESTRZENI MIESZKALNEJ

Abstract

The pursuit of architecture completely subordinated to function and the search for forms inspired by technology, in the most personal sphere regarding dwelling, brought solutions which shaped the contemporary idea of the home. Starting from spatial experiments and attempts to create a universal standard for living space, through concepts responding to the growing needs of industrial and information society, to solutions that reconcile two contradictions: typicalization and individualisation. In the article, we will follow the selected trends, ventures and concepts in housing, the aim of which was to create a modern and comfortable living space.

Keywords: housing, modernism, rational, individual, function

Streszczenie

Dążenie do architektury całkowicie podporządkowanej funkcji i poszukiwanie form inspirowanych przez technologię, w sferze najbardziej osobistej, bo dotyczącej mieszkania, przyniosło rozwiązania, które ukształtowały współczesne wyobrażenie o domu. Poczynając od eksperymentów przestrzennych i prób stworzenia uniwersalnego standardu mieszkania, poprzez koncepcje odpowiadające na rosnące potrzeby społeczeństwa przemysłowego i informacyjnego, do rozwiązań mających pogodzić dwie sprzeczności: typizację i indywidualizację. W artykule podążymy tropem wybranych nurtów, przedsięwzięć i koncepcji w budownictwie mieszkaniowym, których celem było stworzenie nowoczesnej i komfortowej przestrzeni do życia.

Słowa kluczowe: mieszkanie, modernizm, racjonalny, indywidualny, funkcja

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1. Introduction

At the beginning of the 20th century, particularly after the end of World War I, the discussion about the catastrophic lack and poor quality of housing gained a new dimension. War and inflation accelerated the housing crisis in many European countries.

The dramatic problem of overpopulation caused the need to look for a new type of housing, which could be implemented in a massive dimension. In the twenties, concepts appeared which responded to the need for quick satisfaction of growing housing needs.

In 1929, Siegfried Giedion, published: *Befreites Wohnen Licht, Luft, Öffnung*, (A Liberated Apartment. Light, Air, Opening), in which he considered the concept of the modern apartment. He postulated the release from¹:

- the house with eternal value
- the house with expensive rent
- the house with thick walls
- the house as a monument
- the house with high costs to enslave us
- the house that exploits women as cheap labour.

In return, he expected:

- the cheap house
- the open house
- the house that makes our life easier

Giedion also wrote about beauty, creating the characteristics of a modern house included in the statement of priorities:

- beautiful is the house that suits our lifestyle, which requires: lightness, air, movement, opening;
- beautiful is the house which adapts to the terrain conditions
- beautiful is the house which allows you to live in the mountains under the sky and between the crowns of trees
- beautiful is the house which gives light (walls of windows) instead of a shadow (walls with windows)
- beautiful is the house the rooms of which do not give a feeling of being in a closure
- beautiful is the house, the charm of which consists in combining well-designed functions.

The modernistic striving for architecture subordinated to function and the search for a new definition of beauty, in the sphere of dwelling coincided with the need to satisfy the growing needs of industrial society. Starting from spatial experiments and attempts to create a universal standard for living space, through concepts that improve the everyday functioning of the family, architecture aimed toward solutions that reconciled two contradictions: typicalization and individualisation.

¹ S. Giedion, *Befreites Wohnen Licht, Luft, Öffnung*, Füssli, Zürich/Leipzig 1929, p. 5.

2. How to live?

Seventeen architects from the Netherlands, Belgium, Germany, Austria and Switzerland were invited in 1927 to answer questions about the new form of housing by implementing the Weissenhof Housing Estate in Stuttgart.

Exhibition slogan: *Wie Wohnen?* (how to live?) was placed on the meaningful poster by Will Baumeister, who in a simple graphical form synthesised the Werkbund program. The picture of the traditional residential interior, full of old furniture and various decorations was crossed out in red and signed with the title of the exhibition. The whole took the form of a personal, handwritten note on an old photograph which was a manifesto of a new attitude not only to the living space, but to life in general².

Mies van der Rohe was the artistic director of the exhibition. The development project included the composition of 33 residential units located in an area of over 2 ha, an elongated, irregular polygon with a longer axis running north-east / south-west. The area descended to the south creating the possibility for a good exposure of buildings located on different levels: from Hans Scharoun's villa at the top of the hill to single-family houses designed by Le Corbusier and Pierre Jeanneret at Friedrich Ebert Street. An oblong block of flats by Mies van der Rohe closed the estate from the west. In this area, north to the complex of five houses by J. P. Jacobus Oud, a small yard was created to improve the circulation within the quarter.

In terms of building types, the complex was heterogeneous and consisted of one- two-family, multi-family and terraced houses. The buildings were also diversified in terms of architecture expressing the different aesthetic ideas of the architects.

Ludwig Mies van der Rohe created the spatial concept of the estate and was responsible for the selection of designers participating in the project. He left them the freedom to choose the type of house they planned, but the common feature was a flat roof – one of the basic conditions for Weissenhof to stand out as a complete, radically modern estate.

The exhibition was to present the position of Werkbund regarding a new approach to building, which included the need for standardisation and the search for rational model solutions. However, the buildings of Josef Frank, Richard Döcker, Hans Poelzig, Hans Scharoun and Peter Behrens terrace houses did not fit in with the tendency to seek typicalization. Adolf Gustav Schneck was also reluctant towards repetitive floor plans and the use of standardised solutions. Contrary to the original purpose of the exhibition, most single-family houses were not designed as model houses, suitable for cheap mass production. Especially the buildings of Le Corbusier, Scharoun or Rading were one-off experiments and did not fit into the discussion about the typified construction.

3. House or flat?

Already in 1902 in the Netherlands, the liberal middle-class government created a law to liquidate a serious shortage of housing, creating a mechanism for granting government loans to cities and building association to construct affordable dwellings. At that time, they were the most advanced regulations of this kind in Europe.

² V. Hammerbacher, D. Keuerleber, *Weissenhofsiedlung Stuttgart. Wohnprogramm der Moderne*, Stuttgart 2002, pp. 6–7.

The aim was to organise the development of cities with more than ten thousand inhabitants. The authorities had to develop expansion plans and control the cost of land suitable for construction through expropriation. In this way, the implementation of a large number of municipal flats was promoted and the involvement of cities, savings banks and architects was stimulated. For results, people had to wait to World War I, when the economic recession led to a slump in construction financed by the private sector. In this situation, public funds became more available.

In 1916, the Municipal Housing Office in Rotterdam was established, which carried out investments in the Spangen area by building blocks of flats in a quarter layout. The Justus van Effen estate, designed by Michiel Brinkman in the years 1919–1922, was the opposite to the residential building model implemented in Amsterdam³. The architect was looking for a balance between two concepts: a traditional, weakly lit, poorly ventilated apartment with niche rooms, common among the working class and a new trend referring to the garden-city with terraced buildings. He created a compromise between a dense single-family structure and a closed block with an inner courtyard, between the unit and the collective⁴. He connected two blocks and let through the middle a pedestrian and vehicle street, thus transforming the interior into a semi-public space. He provided the complex with private and shared gardens and a service building, located in the central part. Referring to the Dutch tradition of direct entry, he introduced various access solutions, varying depending on the location of the apartments. The apartments on the ground and first floor was accessible directly from the courtyard, the second floor level was surrounded by an open gallery serving as the inner street. The whole met the need for community, but at the same time it favoured individualism. It introduced intermediate spaces between public and private, and protected the individual's needs, but encouraged people to live together.

The complex consisted of 273 flats constituting a four-storey, regular building quarter with dimensions of approx. 80 m x 150 m. The internal area was divided into smaller yards along the axis running towards the north-east / south-west. Inside led four entrances from two perpendicular streets. The majority (over 60%) of the apartments were oriented to the east and west, the remaining to the south. The building was accessible through 7 staircases leading to the gallery, from which two-level flats on the second and third floor were approachable. Buildings with a depth of about 7 m were divided into sections of about 4.2 m wide. Apartments on the ground floor occupied a double span and had entrances directly from the courtyard level. The internal layout included a small hall, kitchen, toilet, storage room and living room with an area of approx. 18 m², from which you entered the private area with three small bedrooms, about 6 m² each. The apartments on the first floor had a similar layout, the entrance from the courtyard led upstairs from the ground floor, straight to the lobby. There was also a small balcony there. Two-level apartments were accessible from the external gallery / street. Designed on a span of approx. 4.2 m, the layout was typical of a terraced house: the first floor embraced a kitchen and toilet, accessible from a small hall and a living room. The stairs up led from the hall to the sleeping area, which consisted of three rooms, one of

³ The so-called. Amsterdam School had a romantic character and created urban districts with a strong identity, most often in a multi-colored brick, using organic forms, wooden, terracotta and cast iron decorations, transforming modest flats into “workers’ palaces”.

⁴ Dijk Hans van Architectuur in Nederland in de twintigste eeuw, 010 (wydawca), Rotterdam 1999, p. 46.

which overlooked a small loggia. The flats had space for several storage compartments, no separate bathrooms were provided. In the central part of the complex there was a common building with baths and laundries.

The gallery on the inside of the block, functioning like an elevated residential street, was used in the Netherlands for the first time. The solution had a big impact on further realisations. It was an inspiration for the first gallery building in the Netherlands – the Bergpolderflat designed by Willem van Tijen in cooperation with Brinkman and Leendert Van der Vlugt, realized in 1932–34.

4. Practical modernism

In Frankfurt am Main, the authorities responded to a housing problem by implementing an ambitious program known as the New Frankfurt, realized in 1925–1930. It included comprehensive planning solutions for the city, mainly related to housing, aiming to eliminate the severe lack of dwellings. The initiative included both plans for affordable municipal housing as well as the introduction of facilities throughout the city related to social change. Launching the housing concept generated a search for new solutions, including aesthetic ones.

Mayor Ludwig Landmann in 1925 entrusted Ernst May, the city architect, with the management of the program. In the years 1925–30, approximately 12,000 buildings were implemented, in the public-private partnership system. Over five years more than ten percent of Frankfurt's residents lived in newly built housing estates. The apartments were supposed to satisfy the basic needs of life, but the scale of the undertaking, comprehensive approach and the quality of detailed solutions resulted in setting new standards in design. This concerned, for example, a modern kitchen, implemented as an integral element of the new residential unit, which became one of the symbols of change.

The idea of rationalising the organisation of the household was realised by a young designer from Austria, Margarete Schütte-Lihotzky. In Vienna's K.K. Kunstgewerbeschule (today: the University of Applied Arts), one of the most recognized schools in Europe, she studied with Oskar Strnad – a pioneer in the field of social housing, who was linked to the program of inexpensive and comfortable municipal housing for low-income families, which was still being implemented in Vienna⁵. Schütte-Lihotzky took from him the view that architecture should be shaped to ensure comfort with reasonable expenditure and that a spectacular form is not a priority. One of her first projects after finishing school were housing estates for veterans of the First World War, developed with Adolf Loos⁶.

According to the designer, in a modern apartment where four basic functions were fulfilled: living, cooking, eating and sleeping, the main activities affecting the layout remained eating and cooking. In the first proposal, she designed a separate living room and a kitchen combined with dining room. This solution was rejected due to too high costs. Further work was based on the idea of introducing a fully equipped compact kitchen, separated from the living room (with dining room) by wide sliding doors. The kitchen was treated as a “domesticated”

⁵ M. Schütte-Lihotzky, *Erinnerungen aus dem Widerstand: das kämpferische Leben einer Architektin von 1938–1945*, Promedia, 1994, pp. 18–20.

⁶ R. Allmayer-Beck, P. Noever, Schütte-Lihotzky Margarete, *Margarete Schütte-Lihotzky: soziale Architektur: Zeitzeugin eines Jahrhunderts* Böhlau, 1996, p. 20.

laboratory. The time needed to perform various functions was measured using a stopwatch, as in the Taylor system⁷, in order to achieve optimal, ergonomic space organisation. The resulting compactness of the interior did not allow the use of standard kitchen furniture available at that time, which required more space. In preparing the project, Schütte-Lihotzky carried out detailed research and interviews with housewives and groups of women.

She used, among others Erna Meyer's popular guide: *Der neue Haushalt* (New household) from 1926⁸. The body movements and housewife circulation patterns were analysed while working at home to develop new interior design principles. These were included in the detailed analysis of the location of each kitchen element in order to minimise the number of steps and provide solutions to save energy and ensure physical comfort.

The savings resulting from the smaller area of the kitchen remained significant and the Frankfurt kitchen ensured lower construction costs and solutions guaranteeing greater work efficiency at the same time. About 10,000 communal apartments built in 1926–1930 were equipped with such a kitchen. The price of the unit together with the installation was added to the construction costs and included in the rent.

The Frankfurt kitchen was a project reflecting changes in the society of the inter-war period. It was planned for an apartment designed for one or two people, although it could serve a family of four. The main goal was to facilitate the work in the kitchen, particularly for an employed woman. Inspired by the operation of the industrial assembly line and the railway kitchen model, the Frankfurt kitchen improved the efficiency of space use, streamlining the organisation of the meal preparation process. The equipment included surfaces that were easy to use and maintain, a place-saving sink with a cutting place, gas kitchen, ironing board, built-in storage, a removable waste drawer and an organisation system with conveniently placed cabinets and drawers or clearly labelled containers. Special attention was paid to the selection of materials fulfilling specific functions, e.g. flour containers were made of oak wood to deter mealworms, work surfaces made of beech wood were resistant to stains and knife marks. Three different types of kitchen were created for apartments of various sizes.

In the twenties, these were innovative solutions designed for working women, aimed at providing them with a fully equipped, functional and cheaper living space.

5. Universal v individual

In Portugal, as in most European countries, the house is traditionally the preferred form of residence. Regardless of the layout (free-standing, semi-detached, terraced), it gives a certain independence of use and allows to use your own, even small, green area.

Since 1974, the population of Evora, the capital of the province of Alentejo, has grown quite rapidly thanks to the influx of inhabitants of rural areas and former Portuguese colonies. In 1975, the city implemented a spatial growth project and 27 hectares of land were

⁷ Frederick Winslow Taylor (1856–1915) was a mechanical engineer who developed a popular system to increase the efficiency of industrial production. Known as a scientific management or Taylorism, this system standardised the tasks performed by workers and the principles for supervision of the work management team.

⁸ E. Meyer, *Der neue Haushalt: ein Wegweiser zu wirtschaftlicher Hausführung*, Franckh, Stuttgart 1929.

expropriated on the outskirts located less than a kilometre from the city walls. The development plans drawn up in Lisbon assumed the extension of Évora to the west and enabled the construction of high and medium intensity housing estates, other than typical of suburbia. Finally, the concept of Alvaro Siza was selected for implementation. He proposed dense single-family housing with a precisely planned typology, anticipating the possibility of individualisation and diversity of individuals, eliminating the effect of monotony.

The main idea of the Malagueira project was to create a residential development that could be expanded according to the individual needs of users. Siza designed two basic types of buildings: A and B. In the first one, one entered the living room through the courtyard (in a few cases through a small vestibule). A one-way staircase leading to the first floor separated the common area from the bedroom and bathroom. Through the living room one entered the kitchen part, behind which there was one more room, with a window facing the street, connected with the courtyard. An additional area could be allocated to a separate kitchen, dining room or laundry. In the basic version – the smallest – there was a large terrace on the roof. The possibility of extension included adding two or four bedrooms and a bathroom upstairs. Type B was characterised by the reversal of the house-courtyard layout with the street from the side of the building and the backyard in the depths of the plot. It was much less popular (only 9 residential units were realized), because the solution with the front yard was more in line with the cooperative's guidelines. Simple, mostly double rows of houses based on the same module formed an urban layout inscribed in the existing suburbia development and hilly terrain. The orientation of houses was varied, the majority were located along streets running to the northeast / southwest and northwest / southeast. Possible combinations of modifications to the internal system created a huge number of variants and allowed for a far-reaching adjustment to the individual needs of residents.

In terms of investment area, number of units and intensity of development, Malagueira approached the efficiency achieved by large housing estates. In terms of the nature of the building typology, it differed significantly from them. It did not offer typical, universal solutions for common use, instead of what it strongly referred to the specificity of the historical, political, urban and social context as well as the existing topography. It was a complex project, defined by many different elements: aqueducts, narrow streets, evolutionary typology of buildings, technical innovations and very flexible, at the same time. Siza was looking for a solution to the conflict between common and individual needs, using a typology that favoured a change (evolution). The result was an innovative concept combining convention with modernity, doctrinal purity with the needs of the local community.

Siza achieved a balance between a rational spatial arrangement and a distinctive aesthetic character and, more importantly, a district with a strong identity and respect for the home. Despite the high density and proximity, Malagueira houses had at least two characteristics that distinguished them from multi-family buildings: each had an individual entrance and was adjacent only horizontally. Spatial individualisation was also manifested in the various role of the patio, determined by the height: a closed, intimate courtyard facing the house or an open courtyard, opening the house towards the street.

Houses equipped with a closed courtyard separated by a high wall resembled typologically a town house widely accepted by representatives of the upper social classes.

Siza noted about Malagueira (1996):

My goal was to create very precise limits to spontaneous intervention, knowing right from the start that this strictness does not have to translate into practice, because there is an

*anxiety to be different, which conquers all, but if it does not have a solid framework, it leads to the chaos that we experience in so many parts of the country*⁹.

6. Summary

The discussion about the proper organisation and form of the living space entered a new stage at the beginning of the 20th century. The rapidly growing needs of industrial society and the shortage of flats caused by the two World Wars were intertwined with the ideas of modernism, bringing solutions that shaped the modern image of the home.

The experiments concerned both the optimisation of the functional layout of the living space as well as the solutions of the structure of the building and the housing estate or improvements in service infrastructure and comfort of life.

The Werkbund exhibition in Stuttgart was a review of the rational and comfortable living space layout concepts. In terms of architecture, it was a manifesto of modernity, with a diverse face, represented by the most outstanding designers. Conventional architecture built of closed, separate rooms was replaced by sequences of semi-open views and apertures. Siegfried Giedion recognised the penetration of space as one of the most important criteria for the evaluation of modern architecture, the intention of which was, among others, blurring physical boundaries and going beyond the tangible limitations of building. Light, air and opening became the attributes of a modern composition.

A practical contribution to the dwelling function development was the Frankfurt kitchen, which became a model for later solutions, raising the principles of optimising space to a higher level. Margarete Schütte-Lihotzky noticed that Ernst May gathered a team of people completely devoted to new ideas, who did everything to obtain solutions that were functionally and formally the best. May's estates were compact, independent, well-equipped with social elements, like playgrounds, schools or theatres. For financial reasons, due to the need for quick implementation, he used simple forms and prefabricated technologies. The estates were a manifesto of functionality and egalitarian ideals, such as equal access to sunlight, air and neatly arranged common areas.

The conflict between the rationalisation and individualisation of the living space was born on the basis of the need for massive housing production. Michiel Brinkman and Alvaro Siza, in various conditions, places and time, sought to solve this problem. The development complex in Spangen became the starting point for reflections on the desired and accepted shape of the city block. The unique typology of the Malagueira estate was the subject of research and analysis as well as inspiration for searching new methods and solutions in architectural design. On this basis, Jose Pinto Duarte, a Portuguese architect and urban planner, researched the issue of mass production of houses based on the processes of adjusting the living space based on computerised design and fabrication systems. The aim of the work was to look for methods enabling high quality flats to be produced at an affordable price. The quality was defined by satisfying the user's needs. The production did not consist in repeating the same solutions many times, and cost control was digitally supported.

⁹ D. Maudlin, M. Vellinga, *Consuming Architecture: On the occupation, appropriation and interpretation of buildings*, Routledge, 2014, p. 89.

In this way, rational solutions serving the anonymous and mass dweller become a matter of individualisation, necessary for the comfort living.

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