Changes in Functional and Spatial Layouts of Polish Single-Family Houses

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Changes in Functional and Spatial Layouts of Polish Single-Family Houses

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Abstract. The article presents the evolution of functional and spatial layouts of single-family houses in Poland, with particular emphasis on the functions of a contemporary house. Single-family housing constitutes a significant part of the construction market in Poland. The way of forming functions in single-family buildings in the historical cycle has characteristic features resulting from the culture of the society in a given period. The functional and spatial layout of each object is an important part of its architecture. Architecture is the art of organizing space in order to satisfy the material and spiritual needs of man. Building is an essential part of this organization. When we describe the architecture of a building, we mean its form – construction of the body, function, structure and detail, texture and colour. However, a casual observer primarily perceives the appearance of the building – its body and the way it is finished. The construction of the building is usually hidden, invisible to the observer. The investor and future user most often put in the first place the functional layout. The estates of single-family houses are an important part of the modern city landscape. Such estates may consist of free-standing, semi-detached, terraced and atrium buildings. They are developed on the basis of individual projects designed for a specific user, or based on repetitive projects, selected by the investor in cooperation with the architect, from project catalogues of various architectural studios. At the same time, the developer's estates are being designed, offering ready-made houses, which the future user chooses without the participation of the designer. The most interesting in terms of the functional arrangement and spatial solutions are the projects of unique houses located in atypical situations, both within cities and on their outskirts. In each of these cases, the future user – investor in a decisive way draws attention to the functional layout of the building. The customs prevailing in society, the structure of the family and the style of family life in a given historical period had decisive influence on shaping the functional and spatial systems of single-family buildings. At present, in the era of globalization present in all areas of life, there have been significant changes in the way of life of the family that affect the functional and spatial layout of single-family houses. Global standards in creating the function of buildings are thus being adopted.

1. Introduction

"The spatial layout of a building means, as commonly understood in professional jargon, the construction of its body. However, the phase 'spatial layout of a building' appears to be much broader and more adequate because, among others, it not only describes the bodies, but the spaces contained between the bodies as well.", [1]. Form - the body of a building containing the interior space, which is shaped by the functional layout. The construction of the form is affected by the structures used, whereas the shaping of the functional and spatial layout is not always expressed in the construction of the form. Form, function and construction affect each other. The functional and spatial layout was and still is an important element of the architecture of the single-family house. User requirements related to the construction of the interior space of single-family buildings have changed over different time periods. Construction and material capabilities changed as well. A single-family residential building is an

element of the general space from which it is isolated by partitions - walls and the roof; it provides a shelter for the family occupying it, both in the past as well as the present. Currently, when we talk about single-family housing, we mean free-standing, semi-detached, terraced and atrium buildings. Those buildings contain an interior space, which was constructed according to a layout conforming to the requirements of modern users. The functional layout that divides this space is an expression of the family's way of life, the relationships in the society as well as the prevailing customs. When choosing a project from among reproducible and catalogue solutions that are so popular nowadays, or when commissioning an individual project, the investor primarily takes notice of the functional and spatial layout. A Polish investor builds a house for a family that will, more often than not, live in that very house for their entire lives. The investor wants the building to be durable in terms of its structure and the materials used. To some extent, this is characteristic of European societies, and especially the Poles. This results from the low mobility of residents, taking loans for decades to come, as well as the difficulty of moving to a different home when one wants to live in a different location.

2. A house in the Polish countryside

Primitive people found shelter in closed spaces that were isolated from the environment, in huts with a primitive and unstable structure. Huts were built from material that could be sourced locally. These included perches, wicker, brushwood, branches, followed by wood processed in different ways in line with development. The entire family forgathered in a single space around a fire, which was used to cook food and provided warmth. Large families lived in a single space. They sheltered, ate and slept together; there was no such thing as intimacy. This was the so-called social space. Over time, buildings were improved upon and they became more durable. Primitive huts were built out of wood, most often using the wreath structure. The method of constructing walls and roofs resulted from perfecting the craft. The huts were covered with straw or cane. At the top of the roof, there was an opening, which allowed light in; below the opening, there was a fire, allowing smoke to escape the building. People ate, cooked and slept in one single room. Sometimes, this space was also used to store grain. This space protected the simplest material necessities. At the same time, a space around a fire in the form of a single room gave the sense of safety - it satisfied the simplest spiritual needs. This type of countryside hut was given the name kurna chata- the cossack hut. Up until the 15th century, in northern Poland, Samogitia and Lithuania, families made up of parents, children, relatives and retinues lived in such primitive huts. [2] In order to improve the functioning of the house, a spacious hall was attached to the single-room cossack hut; the hall was entered through an arcade, or directly from the front of the building or its side. The hall had an entrance to the "black" room, which contained a fire. On the other side of this room, a chamber was added - an alcove. The span between the lengthwise walls of buildings was approximately 5 meters, which was possible due to the materials used to build the walls and the roof. The roof was covered with a thatch made of straw or cane. Such houses were inhabited by the agricultural as well as the landless population. In line with the creation of farming complexes, such small and non-functional houses were only built for cottagers, villeins and craftsmen who worked within the complex. The agricultural population in possession of land had higher expectations regarding the functioning of a house. As time went by, the needs of residents influenced the transformation of the interior space of huts. However, improvements in the construction of roofs were of the utmost importance. Wooden trusses allowed to increase the distance between outer load-bearing walls, allowing to increase the floor area of countryside huts. The popularisation of a load-bearing wall located inside the building allowed to cover the interior over with a ceiling. The ceiling was made of wooden beams on which there were wooden planks with clay pugging. This protected the interior space of the hut against heat loss. This is how the one-and-a-half-bay and two-bay construction layouts were created. A larger floor area of the building, along with an internal load-bearing wall, allowed to increase the number of rooms, which was in line with the ever-increasing needs of residents. The side walls of buildings were raised in height, which was possible thanks to the introduction of the ceiling, which allowed to reinforce the structure of the roof and the walls. In the "cossack" room, on the clay pugging, stoves were being built in place of the fire. Initially, the stove was placed on a wooden floor, which was raised from the hard-earthen floor. Above the stove,

a hood was hung below the ceiling in order to collect smoke, which escaped outside using openings in the ceiling and the roof. The stove was made of clay, which was "reinforced" using a net made of wicker braid. The development of the kitchen and heating layout deserves more attention because initially the fire, and then the stove, were the "heart" of every home. The next development consisted of placing the stove directly on the hard-earthen floor. The stove could become larger and bulkier, which led to the introduction of the oven and the water heater. One was able to cook, bake bread and heat water all at the same time. Rooms that were right next to each other could be heated. The extraction of smoke was improved. A chimney was built, which was connected to a hood, allowing to extract smoke over the roof. Initially, the chimney was made of clay reinforced with wooden braid. In the one-and-a-half-bay and two-bay layouts, a house plan was created based on axial symmetry, and in order to allow for more rooms to be heated, stoves were introduced that were split into two parts on both sides of the hall. The two parts of the stove were connected with flues running over the hall and smoke was collected from the flues by one common chimney. Eventually, the multi-furnace kitchen and heating system was perfected, which allowed to heat all of the residential rooms. Perfecting the construction, as well as using a specialised kitchen and heating layout, affected the plan of the countryside building based on the axial assumption. The axis was taken up by a spacious hall which led to both sides of the building. On both sides of the hall, spacious rooms were built - kitchen and residential. The stoves located by both rooms were connected with flues, which led to one single chimney. Both rooms had entrances that led to smaller rooms - alcoves. Many different versions of this functional and spatial layout can be found (see Figure1 a, b). In the construction of villein houses, houses for the gentry, houses in villages and small towns, as well as houses on the outskirts of large cities, the axial symmetry plan type was a standard that was repeated until the end of the 19th century, and even up until the First World War.

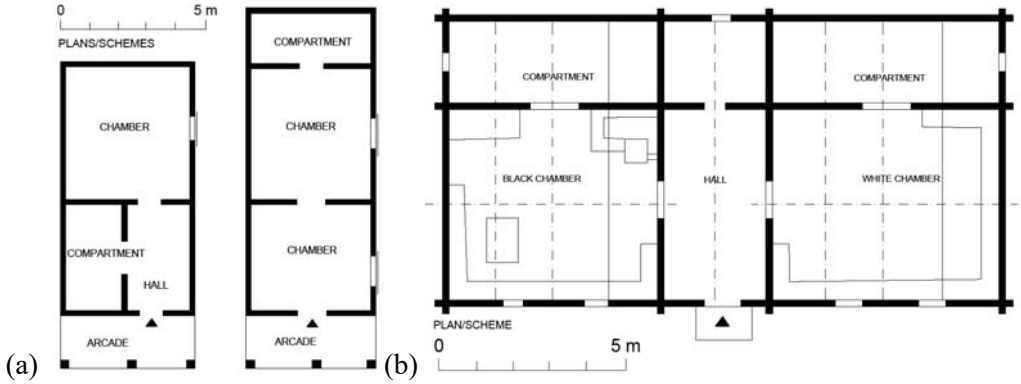


Figure 1 (a) Hut - the 1st half of the 18th century; (b) Hut - the late 19th century (by M. Sztafrowski)

3. Mansions and manors

The functional and spatial layout of homes based on the axial assumption was used in the construction of mansions and manors. Small noble mansions were not much different from the houses of rich peasants. They had a similar form and layout on the inside. There were simply larger and had richer decorations. The simplest solutions were a vestibule and a hall on the axis of the house, which spanned the entire width of the house. An entrance through the porch and an arcade with avant-corps in the roof. Porches were located on both sides of the halls. Four small columns were located on them. A more representational solution was to use a portico with four columns that were taller than the ridge of the roof. In the avant-corps, above the entrance, there were guest rooms. The hall was used for various meetings of large numbers of people. From the hall, there were steep stairs leading the attic. On both sides of the hall, there were rooms, which had entrances to various alcoves. One of the rooms was the kitchen. The kitchen and heating layout duplicated the stove layout that evolved in countryside huts, allowing to heat all of the rooms. As time went by, stoves were being decorated with tiles. In later layouts, we are able to find a division of this layout and the introduction of two chimneys. In line with the ever-increasing needs, the functional layouts of manors were improved and expanded. More rooms

were used (usually built in an enfilade) with larger areas (see Figure2a). In some manors, the plan was expanded by two or four corner wings that housed alcoves(see Figure2b). The alcoves had hipped roofs and were heated by additional stoves, which were connected to decorative chimneys, meaning that the manor could have as many as six chimneys. The corner alcoves in wealthier manors had roofs that resembled small towers. The roofs of manors were tall and steep, hipped, half-hipped or mansard, which allowed residents to use the entire attic. The rooms were additionally lit using decorative dormers. Such increased number of rooms provided comfort to as much as three generations inhabiting those manors along with their personnel. In the expanded layout of wealthier manors, three groups of rooms can be distinguished: living, utility and representational. The following appeared: dining room, clubroom (drawing room), office of the host, room of the relatives, alcoves for sleeping, butler's pantry next to the kitchen, one or two larders, chambers, etc. In the functional and spatial layout of manors, the kitchen is one of the most important rooms. In manor kitchens, the complex functions of cooking, roasting, baking, curing and heating were provided by a brick chamber, which was located in the middle of the building and which became narrower towards the top, ending on the roof in the form of a characteristic chimney. Similarly as in the case of countryside huts, this layout was split, allowing to heat several rooms. Tiled stoves were part of the kitchen and heating system as early as in the 16th century, and the representational rooms housed an open, brick fireplace. In manors, the room layout was subordinated to the heating system [3].

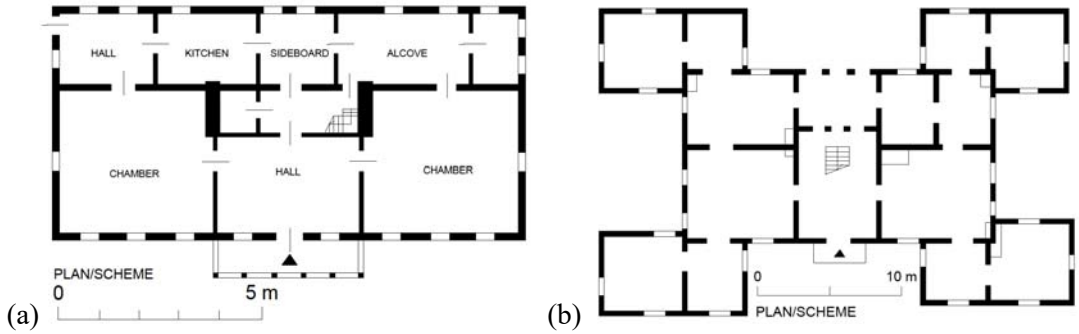


Figure 2 (a) Mansion - the 18/19th centuries; (b) Manor - the 18th century (by M. Sztafrowski)

4. Urban and suburban villas

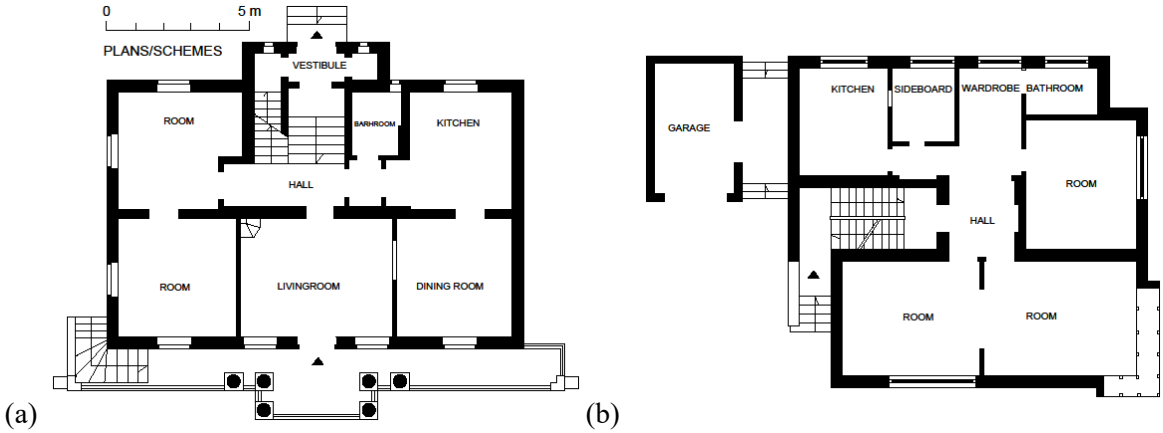
In villas, there was a clear division of the functions of specific rooms. "The idea of a functional layout is new. As late as the 18th century, there were no spaces intended for specific uses in the rooms of European houses. The terms used to describe specific functions of rooms, such as bedroom, dining room or living room, appeared as late as the 18th century." [4] Initially, a villa rustica was the residential home of a landowner. In the 16th century, in western and central Europe, representational and recreational summer residences were being built for the aristocracy, merchants and bankers, which were not related to their households. At the turn of the 18th and 19th centuries, residences of the industrial bourgeoisie were being built, which were surrounded by green space. These were the so-called villa urbana - urban villas. On Polish land, the homes of landowners were mansions and manors, which were based on native tradition. Polish villas from the turn of the 19th and 20th centuries are made up of buildings located within gardens with a residential and representational function. Ownership of a villa denoted the social and economic status of the owner and his family. "In the 19th century, the villa eventually became a type of urban building style, and one of the main reasons for this were social and economic changes, which led to the creation of a new social class - the industrial bourgeoisie." [5] Villas with a diversified floor area ranging from 120 to 250 m^2, single-storey with a usable attic or two-storey with different body structures and different external designs, contained a diversified functional and spatial layout, which was dependent on the requirements of the investors. "Political and custom changes led to the villa only having a residential function. It still remained a representational building, generally free-standing,

surrounded by a garden with its own unique formal and ideological individuality, which made it stand out among the evermore consistent and uniform buildings of the time." [6]

5. Single-family buildings in Gdynia

The example of Gdynia can be used to track the tendency of constructing single-family buildings in the interwar period. On the 10th of February 1926, the rural commune of Gdynia, located in the Wejherowo County in the Pomeranian Voivodeship, adopted the urban system on the basis of a resolution of the Council of Ministers. And that is how the city was created from a fishing and agricultural village. The general forecast of the city's development predicted a demographic growth as well as a functional framework programme. In 10 years, the number of residents was predicted to reach 60 thousand individuals, of which 3/4 were working-class families. Such a structure of residents was the result of the construction of a port. All boroughs of the city were being built on the basis of plans. Such plans were drawn up for specific boroughs. Apart from the downtown with dense, multi-storey buildings, the plans also delineated streets, lots for working-class, white-collar and officer's estates as well as grand boroughs of villas. This is how modern single-family houses began to be built next to the old, typical countryside buildings. The old single-family houses that remained of the old village had a single storey, they had a steep roof and a frame structure (the so-called Prussian wall, a frame structure). The frame was filled with clay or brick and the tops of the outer walls had small roofs. The walls were painted white and roofs were covered with straw. This type of buildings did not survive to this day. Houses constructed out of grouted or parged brick, which were covered with roof tiles, supposedly appeared at the turn of the 19th and 20th centuries. Such houses were built in Pomerania and belonged to wealthier owners. The way that those houses looked is represented by two such examples, which remain standing in Gdynia and which were built at the beginning of the 20th century. "The building had a single storey; however, it often had an attic located in its centre, which was also covered with a decorative ridge." [7] The layout of the houses was based on an axial symmetry layout with a spacious hall in the middle. It resembled the functional layout of wooden countryside houses. Only the proportions of the body of buildings changed. They were taller, had basements and larger windows as well as characteristic decorations made out of brick in the form of friezes and window headers. The development plans for Gdynia included estates of single-family houses with a varying character. According to the plans of specific boroughs, geodesic measurements were conducted, and lots were delineated for the construction of villas as well as the construction of working-class, white-collar and officer's houses. Two types of villas were built on large lots in the interwar period - manor-style villas as well as functionalist villas. One-storey and single-storey villas with manor-style attics, with steep hipped or mansard roofs, resembled Polish manor houses with their form as well as their functional and spatial layout. "The manor style was developing from the romantic search for a 'national style', which was present in Polish architecture incessantly from the half of the 19th century right until the end of the 1920's. Its spatial layout was relatively specific, and it had a direct relation to the form of countryside households of noblemen of the 16th, 17th and 18th centuries. The basic elements of a manor are: a simple body covered with a tall hipped roof, often half-hipped; a porch protruding from the axis of the building, supported on columns or pillars, with a triangle-shaped front..." [8] The functional layout of manor-style villas was built on the axial symmetry layout. There were entrances on both sides of the house; at the front, there was an entrance to the garden leading through a portico with four columns; above the entrance, a terrace or a balcony was designed; and along the front wall, there was a terrace, porch or arcade that was raised in relation the surrounding terrain. The front entrance led from a representational room with a large, decorative fireplace. On one side of the representational room, there were two rooms in the enfilade with an entrance from the hallway, and on the other side, there was a kitchen, which was connected to the dining room using doors. All of the rooms were heated using tiled stoves, which were distributed in such a way so that two symmetrically located chimneys could be built from the roof. The first bathrooms were designed in houses in the 1920's. Rooms that were appointed as bathrooms were equipped with a bath, a basin and a toilet. The houses were connected to a sewage system and had running water. The attic or first floor housed the bedrooms.

Next to the manor-style villas, other villas were being built, which represented a different current of historicism - the academic classicism (see Figure3 a).



(a) (b)

Figure 3 (a) Villa from the 1920s; (b) Modernist villa from the 1930s (by M. Sztafrowski)

The simplified classical forms of those villas were designed based on the axial symmetry layout, established on a square or a rectangle, with the same layout of rooms as in the case of a "mansion". The bodies of the building consisted of a straight cuboid on the plan of a square, with a flat roof and an attic, or a hipped roof with a small slope. In both types of villas, one can find different variants of such described functional layout. A different functionalist style is represented by plans and realisations of single-family houses and villas that were created in the 1930's. "Those simple, geometric compositions initiated the development of the functionalist villa layout in Gdynia, which constituted its first link to the cubical, box-like variant of functionalism." [9] The buildings had an axial layout. There was an entrance located on the axis of the building, which led to the hall through a stairway. The layout and type of rooms were similar to that of manor-style villas, with the only difference being that there was no grand garden entrance. The kitchen and sanitary part of the ground floor was separated from the hall with doors and a vestibule. The bathroom was fully equipped with a bath, a basin and a toilet. Heating was performed with the use of stoves. The body of the building consists of a compact cuboid with two overground storeys and a basement. The ground floor is raised considerably from the surrounding terrain. Sometimes, a recessed differentiation of the top storey was used. In addition, characteristic, symmetrically located balconies with rounded corners, or corner windows, were used. At the same time, buildings were being constructed, which represented the so-called expressionist functionalism. They were characterised by a body that was treated in a sculptural way thanks to the use of different forms, which were not repeated. Cuboids of varying sizes and proportions were used alongside the addition of semi-cylindrical elements in the form of balconies, verandas, etc. The layout was also changed, and it was created through the use of several simple geometric shapes. The use of bends, avant-corpses and segmentation was characteristic as well. Garages were introduced to the layout of functionalist and expressionist villas in the form of separate bodies that were connected with the residential building through an arcade (see Figure3 b). In accordance with the change of the layouts of given floors, the mutual relations between different rooms changed as well and the axial layout composition was no longer used. Single-family houses located in working-class estates had a completely different character. The Gdynia Estate Construction Association (Towarzystwo Budowy Osiedli - TBO) proposed the construction of cheap, terraced houses made of wood (see Figure4 a, b).

The second proposal for working-class houses were brick semi-detached houses with the simplest possible body that had a gable roof, with a single storey and a residential attic, or one-storey houses with a residential attic. The characteristic elements of the functional and spatial layout of those buildings include a winder staircase located in a corner, a bathroom located on the ground floor and a separate lavatory as well as a large living room. An interesting fact was that the kitchen was located upstairs next to the living room and there was a spacious bedroom with a kitchenette in the attic section. For wealthier

residents, the Estate Construction Association proposed free-standing, two-storey, single-family houses, which were made of brick and were equipped with basements and had flat roofs. Those houses had a very interestingly composed body, which formed a modest version of cubic functionalism. It was a cuboid with varying heights in its top section. The layout was based on a 6.60 x 7.30 m rectangle with a footprint of 48.20 m^2 and a floor space of 70 m^2. The layout of the ground floor included a corner winder staircase, a small hallway, a lavatory, a small kitchen and a living room. Upstairs, there was a bathroom, a lavatory and two interconnecting rooms. This functional and spatial layout by Tadeusz Jędrzejewski can be considered as the gold standard for the layout of post-war buildings, the so-called "kostka polska" - the Polish cube.

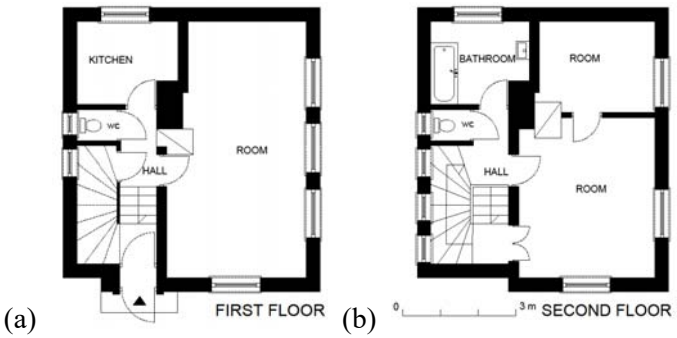


Figure 4 (a) (b) TBO Gdynia house from 1934 (by M. Sztafrowski)

6. The single-family house after World War II in Poland

In the interwar period - "Traditional residential buildings in the countryside, which stemmed from the countryside hut, underwent a very slow evolution. Initially, the houses had one or two rooms; less frequently, they had multiple rooms; they were based on a single-, one-and-a-half- or a two-bay layout with a floor space of approximately 30-60 m^2. [10] A new element in the layout of single-family countryside houses was a place for washing - the washroom (1938). The first bathrooms were introduced in post-war projects after 1945 (see Figure5a). An interesting solution, which was based on the axial symmetry layout, was modelled on the layout of the traditional countryside hut and could be seen in different regions of Poland. On the axis, there was a hall with a staircase, entrances on both sides of the house, and the kitchen was located in symmetry to a large room. The hall had access to small rooms, such as a vestibule, larder and bathroom. Bedrooms were located in the attic. The shape of the building resembled that of the traditional hut with its proportions. In the 1950's, among countryside buildings, houses appeared called "cubes", which dominated the countryside, towns and single-family housing estates throughout the entire country (see Figure 5b).

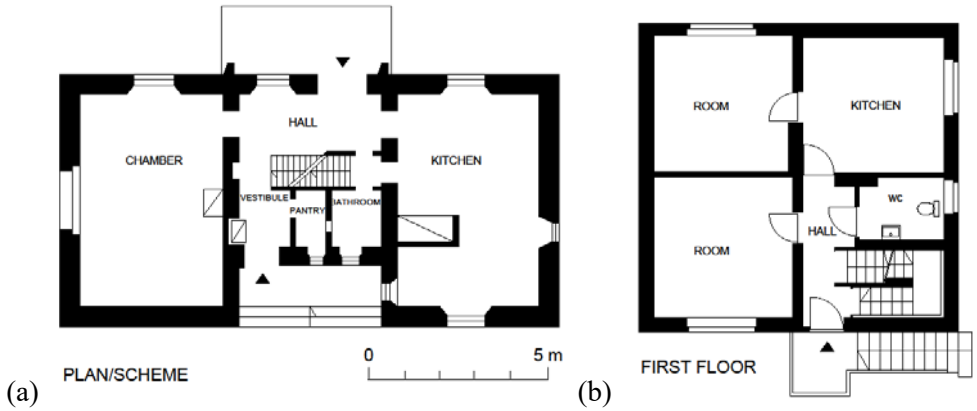


Figure 5 (a) Country house from 1945; (b) Polish cube house from the 70's and 80's (by M. Sztafrowski)

In their functional and spatial layout, the buildings, which we define as socmodernist, resemble the proposal for the Gdynia houses for white-collar residents and servicemen. Despite the fact that the simplicity of the shape of the building came from modernism, it was indigent modernism. The simple, cuboid buildings constructed on the basis of repeatable projects or privately commissioned projects did not differ much from each other when it came to their functional layout as well as shape. A significant constraint when constructing the function and shape of buildings were the restrictive regulations that were in place from the end of the 1950's right until the 1980's - regulations on floor space. One could not exceed 100 m^2 of floor space. The "cube" buildings had basements and a ground floor, which was raised significantly over the terrain. The basement contained a garage, a boiler room and a utility room. A winder staircase located in the corner of the building was not very convenient. On the ground floor, there was a vestibule, a lavatory and a kitchen as well as a living room, which took up most of the space. Upstairs, there was a vestibule, a bathroom as well as three bedrooms. The regulations that limited the floor space to 100 m^2 made it impossible to create interesting, diversified functional and spatial solutions as well as shapes of single-family buildings that corresponded with those solutions.

7. The modern single-family house in Poland after 1989

A house is an element of the general space from which it is isolated by partitions - walls and the roof. In the past and the present, the house was and still is the shelter for a family. Families with different structures and in different time periods. Different models of the modern family include: the so-called nuclear family made up of parents and their children; the incomplete family; the two-generation family; family societies that are not necessarily related with blood, but with different social, age-related and sexual links; as well as the so-called patchwork family. "A home should combine two types of needs: the needs of the entire family as well as the needs of its individual members." [11] A division of the interior of a single-family into a common section as well as an individual section was developed. In the case of single-storey buildings, a division of the layout of the house occurs on both sides of the entrance and consists of a vestibule - an anteroom and a hallway. The common section is larger, and it contains the living room, dining room and kitchen, which are either interconnected with each other in different ways in one space, or a separated. The second section contains the bedrooms and sanitary equipment. It is easier to separate those two sections in a two-storey house. The ground floor constitutes the common section. There is a staircase leading from the hallway or the living room, which is exposed to a smaller or larger extent. The residential attic or a full first floor is made up of a bedroom, including the parent's bedroom with a separate wardrobe and bathroom, as well as bathrooms or a washroom for the remaining bedrooms. In single-family houses from the 1990's and the beginning of the 20th century, one can distinguish common features in the shaping of the functional and spatial layout, which partially arise from the tradition of the Polish home as well as from external tendencies in European and global architecture. This can be observed in houses of different shapes and different bodies. The architecture of single-family houses in Poland is diversified. It mainly includes two trends that are popular nowadays - "mansion" architecture arising from tradition as well as neomodernist architecture. This concerns the forms of buildings, whereas the functional layouts in those forms are characterised by similar tendencies. In projects and buildings that have already been completed, the "mansion" architecture is still dominant. In project or individual as well catalogue and reproducible proposals, neomodernism, which is interpreted by designers in different ways, is becoming more dominant. One can distinguish features in the shaping of the functional and spatial layout in houses that have already been completed as well as in individual and reproducible projects; common features that are independent of the shape of the building as well as the shape of the floor area (compact or segmented). These include: 1. The maximum possible separation of the common section from the individual and private section of each household member. This can be found in single-storey and multi-storey buildings as well as buildings with a residential attic; 2. The living room, dining room and kitchen as well as the hallway are interconnect in one single space that can be shaped in different ways; 3. Thanks to the use of roof windows that vary in shape as well as locating a rich layout of the individual section in the attic; 4. Opening of the common section to outdoor space along with a terrace, a veranda, a winter garden or a porch as well as other landscaping elements.

In the architect's mind, the entire surroundings of the building are arranged in close relation to the building, its form and the outdoor space; 5. Creating a viewing axis in the layout of the house so that the person entering the vestibule (anteroom) through a glazed partition with a door is able to see the common space of the hallway, living room and the outdoor garden section; 6. Planning two or three parking spaces under a roof, an embedded garage or a 2-3-space garage that is separate from the body of the house.

The global tendencies in the architecture of single-family houses are partially accepted by Polish architects and investors, and they are adapted to the needs, expectations and customs of the Polish user. This especially concerns adaptation to the Polish requirements of the so-called "open plan". Only a partial opening of the layout of a building occurs - opening of the common section on the ground floor. We can observe the opening of the entire layout to the surroundings in rare projects in Europe and around the world. This is not desirable in our climate. Architects and users prefer, at least partially, the rules that were introduced to architecture by Le Corbusier, such as: windows spanning entire walls as well as rows of windows covering the entire elevation, allowing to connect the interior with the exterior; flat roofs used as a general rule when designing the body of a building; the rule - the sun, air and greenery - used when connecting the exterior with the interior in the common section of the building, which can be seen in the functional layout; emphasising the beauty of a raw, straight line when designing the elevation; details arising when shaping the form of the building. These rules not only have an impact on the form of the building, but also on the shaping of the interior space when it comes to its different aspects. To sum up, one can point to substantial changes in the functional and spatial layout of modern single-family houses in Poland. Changes in relation to the proposals from the interwar period as well as those between the end of the Second World War and the social and economic transformation of 1989. Those changes concern the common section, the role of the kitchen in the functioning of a family as well as the role of hygienic and sanitary equipment. All of those changes arise from the needs and way of functioning of residents, which are all different and varying. By responding to the needs and sense of style of future users, architects propose different variants of locating the kitchen in the common space. The relations between the living room, dining room and kitchen are all different. The easiest solution is to locate the kitchen in one of the spaces that are common with the living room and the dining room without any permanent elements partitioning this space. A common and willingly chosen solution is a diversification in the layout of the common section in the form of a kitchenette. Such a kitchenette can constitute a large kitchen that is connected with the space of the common section and has no permanent partitions, or one that has movable and fully glazed partitions, ensuring full visual comfort. We can come across various versions of the solution involving the kitchenette. The kitchenette can contain a large "island" kitchen, and the dining room intended for everyday use as well as the guest dining room can be connected with the living room (see Figure6a). Another version constitutes a large kitchen and a dining room intended for everyday use in one space inside the kitchenette, whereas the living room and the large dining room create another separate space (see Figure6b).

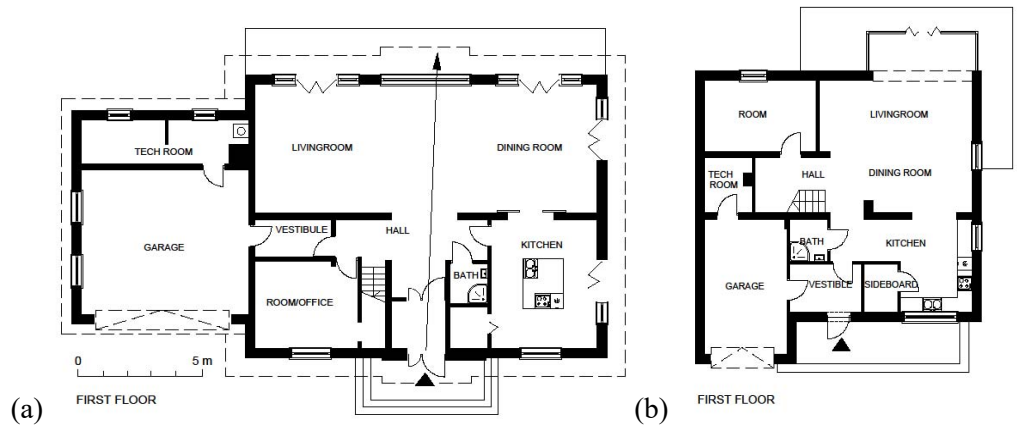


Figure 6 (a) (b) Modern single-family houses (by M. Sztafrowski)

The most interesting solution is to divide the common section into a leisure and entertainment section as well as a kitchen and dining section, which can be partitioned with the use of a wall containing a fireplace so as to maintain visual contact and a sense of common space. This allows to keep the sensation that the space "flows" freely through the specific parts of the layout of the common section of the house. People's approach to hygiene in everyday life changed as well. Spaces that are meagre in terms of floor space and sanitary equipment, which were intended for such use in single-family houses in the past, do not meet the needs of modern people. In functional and spatial layouts of single-family houses, there are usually three bathrooms for every 3-5 tenants. One bathroom is located downstairs separately by the common section. Aside from a toilet and a basin, this bathroom is also equipped with a shower, which is mainly intended for guests and when using the common section by the tenants. In the individual section of the house, on the ground floor or the first floor of a two-storey building, there are usually two large bathrooms. One is attached to the parent's bedroom, whereas the other large bathroom is intended for common use. Next to the bedrooms, there are large wardrobes, which are usually connected with the bathrooms. Spacious wardrobes are also accessible from vestibules located on the ground floor. When choosing a catalogue project or when formulating a layout for an individual project, investors pay special attention to the hygienic and sanitary equipment. In order to meet user expectations, the bathrooms are large, functional and have additional equipment. These often include two basins, a large bathtub, a shower (which often includes hydro-massage), a toilet that is partially separated from the general space, a bidet, drawers for swimming gear, etc. A house is not only meant to provide shelter and be a functional machine for living, but it also must provide user comfort.

8. Conclusion

When analysing changes in the functional and spatial layouts of single-family houses in Poland, we have to constantly consider the interdependence between the form, function and structure. In primitive countryside huts, the structure and available building materials influenced the decision on the structure of the form and interior space of a building. Changes in the way of life of the family and the associated needs resulted in structural improvements and changes in the used building materials, resulting in changes in building forms. More complex functional and spatial layouts were created. A larger interior space allowed the division into rooms with different uses, which can be observed in the construction of countryside huts, mansions and manors. Up until the beginning of the 20th century, countryside and suburban houses had a functional layout and form similar to that of traditional buildings. The axial symmetry layout was the most common, even in villas of the interwar period. People started searching for new forms, and in some single-family houses that represent modernism, we can find a functional and spatial layout based on an irregular plan. Since 1989, there have been no restrictions on the structure of the form and function. Single-family houses are being built representing diverse trends in architecture.

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