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CONSTRUCTION AND ARCHITECTURE OF THE SUBURBAN AREA OF BIG CITIES

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Abstract: In the area of large cities and their suburban area there are buildings from the late nineteenth century and the first half of the twentieth century. The aim of this paper is to analyze the building materials as well as to outline the ways of constructing houses and outbuildings located on the outskirts of the city of Poznan and in its suburban area, and built in times of scientific and technological advancement. It is important that in relation to the considerations of building development and land development, there are also the changes resulting from urbanization – an ongoing process in the Polish economic, financial, socio-demographic and spatial-administrative conditions which is expressed in development and architectural and urban planning transformations. The paper has been divided into two parts. The first part concerns an analysis of rural architecture, particularly the materials used and the details of construction, in twenty rural units located in the abovementioned areas. The second section deals with the contemporary trends in architecture, construction and urban planning in terms of shaping the urban and suburban landscape.

Keywords: construction, architecture, suburban area, Poznan

INTRODUCTION

In literature there are many articles about the architectural transformations of big cities and their suburban areas, especially in the context of the transformations of the twentieth century. Much attention is paid to new forms of development which alter the landscape and structure of research units. Note, however, that "new forms" do not create that subject matter but complement it, for in big cities as well as in their suburban areas there are buildings from the late nineteenth and the first half of the twentieth century. While in cities these are single buildings usually located outside the city center, in areas of former villages which have been incorporated into city boundaries as a result of the process of urbanization. In the suburban area they represent about 20% of all buildings in a given settlement unit. They are often unnoticed, neglected, left to deteriorate and disappear within the newly formed structure; frequently rebuilt, they lose their historical and cultural value. Built in "the age of steam and electricity" they are different from buildings erected today. Therefore, let us outline a few important principles of construction thanks to which these buildings have outlasted many generations.

The aim of this paper is to analyze the building materials as well as to outline the ways of constructing houses and outbuildings located on the outskirts of the city of Poznan and in its suburban area, and built in times of scientific and technological advancement. What is also significant, in relation to the considerations of building development and land development, are the changes resulting from urbanization – an ongoing process in the Polish economic, financial, socio-demographic and spatial-administrative conditions which is expressed in development and architectural and urban planning transformations. Thus, the paper has been divided into two parts. The first part deals with an analysis of rural architecture, particularly the materials used and the details of construction, in twenty rural units[1] located in the above mentioned areas. The second section deals with contemporary trends in architecture, construction and urban planning, in terms of shaping the urban and suburban landscape.

CONSTRUCTION AND ARCHITECTURE OF RURAL HISTORICAL BUILDINGS[2]

In the city of Poznan, in its border zone and even beyond it, it is possible to see buildings in which the proportion of the roof of the building, its coverage, the number and the size of windows and the building materials used differ from those which are familiar, applied and widely available. These buildings, erected half a century ago, which have not been renovated will soon disappear along with their historical value. Thus, it is worth illustrating that "value".

In the nineteenth century, due to agrarian reforms, serious changes in homestead construction were introduced. These changes led to greater freedom in terms of the shape of buildings, the use of more fire-proof materials (bricks, roof

[1]The study included such places as: Babki, Daszewice, Wiórek (Mosina municipality) Głuchowo, Gołuski (Komorniki municipality) Dopiewo (Dopiewo municipality) Baranowo, Tarnowo Podgorne Batorowo, Lusowo (Tarnowo Podgórne municipality) Rokietnica (Rokietnica municipality), Suchy Las, Złotniki (Suchy Las municipality), Czerwonak, Promnice, Potasze, Wierzonka (Czerwonak municipality), Łowęcin, Zalasewo (Swarzędz municipality), Borówiec (Kórnik municipality) and the housing estates located on the outskirts of the city of Poznan (ie. Radojewo, Morasko, Janikowo Szczepankowo Spławie, Plewiska). The article presents no examples. The description of the materials, forms and elements of the building construction as well as the architectural details are the result of a precise inventory of all houses located in various suburban villages (these objects are rare in Poznan), The results of these tests have been standardized and presented in structured paragraphs.

[2]The historical analysis of the architecture was performed based on the following literature: Świtkowski 1792; Serafin 1958; Żurowski 1973; Piascik, Wieczorkiewicz, Wisniewski 1976; Chowaniec 1981; Spool 1985; Mrozowicki, Pogodziński, Więckowicz 1988; Wieczorkiewicz 1988, Lenard 1993; Bogusz, 1996; Wisniewski 1999, Zaniewska, Pawłat-Zawrzykaj, Gloza-Musial 2000; Borcz 2003.

tiles) and making sure that they were carefully built. Residential buildings had a functional division comprising a hallway, a room and a bedchamber, their size, interior and the materials used depended on the financial situation of the owners.

In the second half of the nineteenth century, as a result of improved living conditions, residential buildings were more frequently expanded and they consisted of several chambers, which was a rather rare phenomenon in earlier times. These buildings were typically one-storey buildings whose walls had a rib, vertical-post log and frame construction. During this period bricks began to be widely used.

The expansion of homesteads and estates was also determined by the development of industry, which contributed to the spread of industrial materials, the gradual decline of carpentry and the inhibition of regional forms of construction. Physiographic, economic and social factors determined the layout of the homestead. A characteristic feature was that older settlement plots had the shape of an elongated rectangle, and the buildings situated on them were usually constructed with their gable facing the road. In newer homesteads houses were placed with their long wall along the rural road, and the settlement plot had a more square-like shape. A homestead usually consisted of a house, a livestock building and a barn. Gradually, individual wells and manure pits were set up in the middle of the barnyards of these homesteads, which were then transferred to secluded spots.

During the interwar period the observed phenomena were about the same as before World War I. Rural homesteads, in terms of size, the number of buildings, construction, and building materials, were very different. The functionally and architecturally modern buildings were a continuation of the traditional small-town construction. This continuation involved imitating formal and functional urban solutions. Despite progressing urbanization, floor plans of rural houses generally retained the two current, separate developmental directions. In northern and western parts of the country, rural cottages with dense floor plans were built, similar to that of a square. On the other hand, in southern and eastern parts of Poland rural cottages with elongated floor plans were built, as well as houses with a single row of rooms. The biggest changes occurred in the shapes of roofs. Hipped roofs were systematically driven out by gable roofs. Both types of roofs used rafter constructions almost exclusively. The vast majority of farm buildings were built spontaneously, without any documentation. The architecture of the buildings included certain forms of regional folk architecture (shape of roofs, arcades, porches, shutters).

After World War II the damaged structure of the countryside was reconstructed. Residential buildings often used solutions similar to those of former cottages. A commonly used layout was the floor plan of a two-roomed symmetrical cottage with a hallway in the middle or a floor plan of four rooms resulting from the intersection of two interior walls at right angles.

To date, among the remaining buildings of suburban areas are those from the late nineteenth and the first half of the twentieth century. Constructed according to old "regulations"[3] they are often rebuilt and thus, they lose their former rural character. The technical and sanitary properties which determined the choice of materials or construction of the above mentioned buildings were: strength and durability, ease of performance, fire resistance (non-combustible and fireproof materials), heat conduction, heat capacity and resistance to weathering. Special local conditions, such as accessibility of a given category of building materials in a certain area, and folk customs, which manifested themselves in the form of distinctive features in the way of building, also proved significant.

There were two types of building materials in construction, that is, natural (stone, lime, plaster, wood, sand, clay) and synthetic materials (brick, roof tile, concrete, hollow bricks, metals, glass and asphalt). Stone is the oldest and best known building material, most commonly used as a basis, underpinning or steps of a building, and easily hewn stone was used for external finishes, such as windows or doors. The hardest stones are: granite, basalt, syenite, gneisses and their variations; examples of moderate stones are amorphous limestone, sandstone and marble and the relatively weak and light stones are the following forms of limestone – chalk, and shell limestone etc. The lightest stones were used to erect walls, stones which deteriorate fast were used on the inside, and a stronger stone formation was used on the outside. Walls made of stone (mostly from limestone[4] and sandstone) were not applied widely. They were cold and got damp easily, and therefore they required much more heating (heating the interior of a building). To avoid this, a wall had to have a thickness of 1.0–1.5 m. It was at this thickness that the heat conduction coefficient was the same as in the case of a brick wall with a thickness of 0.55 m. For these reasons, walls made of sandstone, limestone, fieldstone and cleaved stone were mostly used for outbuildings.

Apart from stone, other components of walls were: wood, burnt brick, green brick, clay and mixed elements, resulting from an appropriate combination of the above mentioned materials. Walls were also built by mixing sandstone and limestone, limestone brick, cement brick and concrete blocks. Regardless of the choice of building material and type of walls all the buildings had to be constructed in accordance with the principle of using proper insulation between the wall and underpinning. Building insulation was based on horizontal arrangements of screen, ruberoid or other insulating materials.

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[3] *The reconstruction of the Polish countryside, Designs of cottages and peasant homesteads prepared by a group of Polish architects edited by Wladyslaw Ekielski,* Wydawnictwo Obywatelskiego Komitetu Odbudowy Wsi I Miast w Krakowie, 1915, Krakow, OKOWIM edition. Plates printed at W. Krzepowski's workshop in Krakow, text printed in the Jagiellonian University in Krakow under the management of Joseph Filipowski.

[4] Previous name.

However, the cheapest building material was wood (Tloczek 1980). Walls were rarely made using 3-inch beams[5] (because of the large joints which easily let the cold in from outside), the most commonly used were 4-inch beams. This thickness allowed for good sealing. On the inside, wooden walls were rendered in lime. The outside walls were entirely rendered or smeared with clay and lime but only at the building joints. Applying plaster on the inside, covering walls with plaster and using building insulation on the underpinning, protected from mould and rotting.

In addition to wood, another component of walls was burnt brick. Such a wall had a thickness between 0.55 to 0.70 m (i.e., of two or two and a half bricks) and had a large heat capacity. It was believed then, that the wall was best responsible for regulating the temperature of the rooms. Both inside and outside the walls were plastered with lime. Due to the fact that in those days bricks were often insufficiently burned and contained certain amounts of marl, both sides of a wall were plastered, so as to prevent excessive wall ventilation and secure the walls from getting damp and from rotting. The height of the floors of residential houses was usually 4.0–4.5 m from the floor of the bottom floor to the floor of the top floor, which in light was 3,65–4,15 m. Burnt brick was the most commonly used construction material.

In principle, walls containing clay were used in outbuildings or temporary buildings, mainly due to the inability to maintain adequate sanitation and because of the high amount of dampness. Much better, and more frequently used, were walls made of green brick, that is, a brick dried outdoors (Aigner 1791). From the outside, these walls were smeared with gas tar, sprinkled with sand and plastered with lime. With a wall thickness of 0.55 m (as in the case of burnt brick) the rooms were left dry and warm. The permanence of walls made of green brick was much smaller than that of walls made of burnt brick.

Walls which had a mixed construction were not often used in building, due to the fact that they were less durable and less sanitary. Such walls were, however, dry and warm. The following types of combinations of walls should be mentioned: a) clinker built walls (now called "of a timber-frame construction") covered with planks on both sides, the empty space was filled with dry confiner needles and peat; b) half-timbered walls covered with beams and filled with clay patches, could be boarded with planks, c) half-timbered walls, covered with planks on the outside, and filled with a half-a-brick wide partition wall on the inside, the empty space was filled with confiner needles and peat. A good quality of mixed construction buildings was that immediately after being built, they could be covered with roofing material and then cemented, which protected them against moisture (Iwanicki 1917).

In the mid-twentieth century buildings were built from cheaper, less

[5] 1 Polish inch = 24.8 mm, this is the so-called Old Polish inch.

weatherproof materials, considered to be weak, cold and damp. These were buildings with walls made of sand and lime. After several years, due to their flaws, these materials were no longer used in residential buildings. Instead, hand-made sand-lime bricks began to be used, which turned out to be much stronger, although, they did not have the advantages of burnt brick walls. These walls had a thickness of 0.7 m. In addition to the above-mentioned materials, lime-and-sand bricks were also used for building houses. They had a glassy structure, subjected to water vapor pressure in the production process. Since the heat conduction coefficient was low there was a need for thickening the walls, especially, in residential buildings.

In the postwar period, concrete blocks began to be used for building houses. The technology, construction and primitive materials of those days, did not permit people to learn about the essential features of concrete blocks, which have now become an essential building material, yet with the difference that, ceramic blocks with interior cavities are used today. In the postwar period, concrete blocks began to be used for building houses. The technology, construction and basic materials of those days meant people didn't really understand the essential features of concrete blocks, which have since gone on to become an essential building material, albeit in updated form as ceramic cavity bricks.

In addition to the walls, another component which created the architectural interior of a building was the ceiling. Yet it was not just the ceiling, but the roof and the whole space between them, i.e. the attic, as well. As we know, the height of the roof and attic is related to the construction of the roof structure (Raczynski 1930; Caston 2007). The roof structure, in turn, is dependent on the type of roofing, its load and the roof pitch. All these elements were closely correlated with local climate properties as well as with the customs and needs of the residents.

The primary material used for roofing in the late nineteenth and early twentieth century was straw. It was widely available, cheap, and did not require much time to apply. Another favorite, and one of the finest materials used for roofing was shingle (aspen, darte), mostly used in manor houses and farm buildings. The straw roof was saturated with carbolineum or was smeared with Gudronit (a type of asphalt for roofs) which greatly increased its fire resistance. However, with time, other fireproof materials began to be used, such as iron sheets, galvanized iron and zinc-platted sheets, tar cardboard, ruberoid (and ruberoid-like materials), asbestos cement (and related materials), fired clay roof tiles, cement tiles and fire-proof straw (saturated with clay). Iron or iron and zinc sheets were useful in cities and small towns, where attics did not play such an important role. In view of their ease of heat conduction, though, moisture would condense on the sheets from the attic and this led to the decay of wood in the construction. What is more, the sheets did not provide natural, even ventilation of the roof truss, and therefore, the attics were cold in winter and too hot in the summer. They were too expensive and required frequent protection against corrosion. Apart from metal

sheets, tar cardboard was used, which was not a highly flammable material. The roof had to be flat and there was a constant need to improve certain spots and to apply tar. As in the case of metal roofs, due to the lack of ventilation, a process of condensation would take place, leading to the decay of wood. In the summer, the sun would heat up the attic immensely. The roof angle of roofs covered with metal sheeting or cardboard ranged between 22 and 18 degrees. Ruberoid was used less than metal sheeting or cardboard. Although ruberoid did not require a flat roof or smearing, it had the same disadvantages as tar paper – it had to be applied very thoroughly which increased the cost of obtaining it. Ruberoid was best suited for insulating temporary buildings. Asbestos-cement roofing material, asbestos-cement tiles which imitated roof tiles, slate or shingles were used to protect roofs. Monochromatic (dark gray or brown) tiles required a lot of precision when laying, and therefore this type material was very expensive.

One of the best and most practical roofing materials was the brick roof tile. Made of good quality clay and properly fired, it was weatherproof. There were several types: plain tiles, pantiles, Swiss and Marseille tiles. The most practical were plain tiles which were laid double or in a scale pattern. A single layer, although cheaper, was not practical, as shingles rotted and failed to protect against leakage. Pantiles, regarded as pretty and practical, were often used. Swiss and Marseille tiles were similar, but Marseille tiles, manufactured in a pressed-formed way, – were better. Cement roof tiles were a substitute for clay tiles, which were brittle and fragile, very sensitive to weather conditions, soaked up water easily and cracked in freezing weather.

The outline of the above-mentioned types of roofing indicates that the major advantage of all these materials (except shingles) was their fire-resistance and non-flammability. However, no type of roofing was used as widely as the traditional and the least expensive type, namely, straw. Straw became fire resistant once saturated with a solution of clay. The durability of a straw roof was 60 years, and since it was sufficiently porous, it prevented grain-destroying insects from spreading in attics. Moreover, straw thatch, which was cool in the summer and warm in the winter, best secured farming equipment. It was resistant to wind. The inclination angle of a roof covered with tiles, straw or slate ranged from 35–45 degrees.

Cottages in the Polish countryside were small, however, they had a huge hipped or gabled roof (built over the longer walls of a cottage) which was visible from afar. Pitched roofs, where the pitches were equally or almost equally sloped, were practical in the winter, as they created favorable conditions for rain to flow down and did not retain large amounts of heavy snow. The walls of these cottages were often finished off with characteristic wide, roof eaves, projecting beyond the walls. The eaves protected the walls from damp patches, carried water away from the underpinning, gave people the opportunity to shelter from the rain, and provided shade in the summer.

However, the most important elements of a building were the windows and doors. Literature (Tajchman 1993) provides the following types of windows and window constructions: based on the degree to which a window may be opened (moveable, fixed, semi-fixed), based on the direction of swing (opening to the outside and inside), based on the way of positioning the wings (loom windows, casement windows which open outward and casement windows which open inward), based on the way a window is divided (vertical single sash windows – with no bars, vertical multi-sash windows and horizontal single row windows without a transom bar and multi-row windows) and based on the way the sashes are divided (one- and multi-lit windows). Windows were initially, tiny, covered with wooden cladding, embedded with the face of a wall. The bottom part of the window did not need to be secured with a metal sheet. The shutters were nailed directly to the window and not the wall. The air which was between the frames of a double window was perfect insulation, and it heated the air "flowing" into the house. Summer window sashes opened outward and winter window sashes opened inward. The upper part of the window was also open mainly due to the habit of placing pot plants in windows.

The size of windows depended on the intended use of the building. In living quarters, the surface area of windows in relation to floors was 1:7 or 1:8 (i.e., the surface area of windows should not be less than an eighth of the floor area). In pantries, storehouses, barns, stables and warehouses, the ratio of the surface area of windows to that floors was 1:15 or 1:20, and in basements 1:30. With time, windows were embedded deep within walls.

Not only windows, but also doors were made according to strictly defined rules. There were either single-leaf or double-leaf doors, measuring 0,90 x 2, 20 m and 1.30 x 2, 65 m respectively. Entrance doors were not smaller than 1.40 x 2, 70 m and doors used in baths, toilets, larders, i.e., secondary rooms were 0.75 x 2, 00 m big. Doors had to be solidly made. Single-leaf doors of a plank and batten construction consisted of two wide boards connected on the reverse side and a narrowing plank, slid in between them – the batten. The main door of a house or cottage was usually a two-layer door – toughened at the front and at the same time, decorated with wooden planks. The planks were arranged in a standard herringbone pattern, in a variety of directions: one- or two-way, convergent or divergent, with one or two centers. Apart from single-leaf doors, double-leaf doors were also used with rectangular or arched lites, separated by glazing bars. Double-leaf doors were made of two equally wide wings built with frame and panel construction, usually triple paneled, with panels in a shape similar to that of a square. Double-leaf doors were hung on three hinges, while single-leaf doors were hung on two (Tajchman 1991).

The material collected in the field constitutes a confirmation of the principle that plank and batten doors, as a basic element of a building, mostly date back to the period of construction, rather than the alteration of a building. It is also

noticeable that some solutions became so popular and universal that they were used consistently for many decades, even centuries, despite the fact that new solutions appeared (Cofta 2007).

Apart from residential buildings, stables, coach houses, barns, buildings for oxen, piggeries, sheepfolds, buildings for goats, poultry houses, manure storage facilities, storehouses for tools and ice houses were also built in rural areas. In caring for the appearance and safety of the area, trees were planted, ditches were dug and fences were put up, using trees, brush, stone, brick, clay, wire and mesh. Bridges and piers were erected in passageways and crossings over ditches and moats. Gates were built in places where fences crossed access roads, the amount depended on the size of the area and the location of the buildings themselves. Roadside shrines and windmills were erected in the area. Rural manor houses and manor farms were built, too (Idzikowski 1843; Olszowiec 1970; Ostrowska-Kłębowska 1982). These buildings in the suburban countryside are deteriorating due to lack of funds for renovation, and if someone actually does decide to renovate them – the repair work and alterations, are frequently not carried out in the right and proper manner. There is no proportion, color, or resident cooperation to preserve the uniformity of composition and form. These buildings lack appropriate precision and ingenuity, and if they are not renovated, they will not survive the next century. There is a lack of the necessary cooperation between the buildings' owners and local authorities to preserve the uniformity of composition and form. The renovated buildings lose their original detail and ingenious solutions, but if they are not renovated, they will not survive the next century.

SHAPING THE URBAN AND SUBURBAN LANDSCAPE – AN ANALYSIS OF TRENDS IN ARCHITECTURE, CONSTRUCTION AND URBAN PLANNING

As a result of urbanization, socio-economic processes and new technical, technological, administrative and legal possibilities, transformations in the architectural image of buildings have taken place and continue to take place in the suburban countryside. Historical buildings built in the late nineteenth and twentieth century have been forgotten and are thus deteriorating in the emerging structure.

At the end of the twentieth century we entered a phase of urban influence. Rural centers adopted a more urban lifestyle, began to move away from regionalism in building practices, and living conditions changed. The factor responsible for these changes, in most cases, was the vicinity of major urban centers. A significant number of city dwellers began to move to rural areas. Due to this "invasion" of new residents, the organization of rural areas, rural land development

and rural architecture began to change (Liszewski 1985). Transformations took place in the size of plots, the density of road networks and streets, building density, the amount of green areas and recreation facilities and the areas of intense agricultural cultivation. What is more, the direction of land cultivation also changed. Hitherto rural areas were often turned into estates of detached houses. The facilities typical of urban features were built, including hospitals, banks, swimming pools, storage and forwarding facilities. Factors such as the building materials used, the advancement of technology, as well as exchanging experiences and architectural designs, all had an effect on the evolution of rural architecture (Borcz 2003). The urban and suburban landscape continued to change.

Suburban villages are not homogeneous in terms of architecture. There are modern, small, single-family houses, which stand out from the landscape. The height of newly formed single-family houses does not exceed 8.0 m and the roof angle oscillates from 18–45 degrees. These are mostly one-storey buildings with attics and often no basements. The most frequently used building materials are bricks and tiles, autoclaved aerated concrete blocks (AAC blocks) and sandstone and limestone, while roofs are covered with metal sheeting, tiles, or a layer of bitumen. The color scheme of the elevations of newly-constructed houses is diverse. The average lot size is from 2000–5000m^2. For comparison, the usable floor space of historical, existing houses is 100–150m^2, and of newly-constructed houses is 120–250m^2.

Within the past ten years, visual and functional changes have taken place on the outskirts of cities and in suburban villages. On the one hand, they are the result of the long exploitation of buildings and the lack of funds for their renovation and modernization – the old historical buildings are disappearing. On the other hand, new, modern, residential and industrial buildings are being built, and there is an increase in the amount of services available. As a result of the proximity of urban centers, there is an increasing number of relations of a social and economic nature. This has had a huge impact on the image and functioning of the settlements of the suburban zone.

Over the years, new building technologies, construction methods, and building and finishing materials have changed. Although villages are less susceptible to architectural trends and styles, the social and economic changes have brought about many changes in rural buildings. The newly-constructed, single-family buildings (initiated in the 80s and 90s) have not always led to a favorable density of building development. It should be borne in mind that making lots in rural areas as small as those in cities is detrimental to the landscape.

Renovations and adaptations of rural houses are vital to the architectural transformations of Polish suburban villages. Residential houses are modernized by furnishing bathrooms, adding entrance verandas (porches), enlarging windows, and furnishing usable attics. Changes are mostly made to superstructures, elevations, entrances and windows. Therefore, the shape of the building, the

architectural details, the woodwork, and elements of ornamentation undergo changes.

The shape and development of suburban settlements found on the edges of a big city are not currently dependent on soil conditions or the lie of the land, they do not refer to existing forms of investment, there is no logic in their creation, they lack the principles of urban composition and uniformity of architecture. The only organizational element is the historical spatial layout of buildings, based on which a village was shaped (Chmielewski 1990). This has currently been transformed. Urban doctrines have begun to influence the structure of villages, leading to spatial separation of functions and dividing the area into structural units. This affects the directions of development and the transformations of rural areas, sometimes more than the objective demographic and economic factors, as well as those inherent in the existing substance.

Urbanization and the associated development of transport, new building materials, as well as technical and technological progress have led to an increase in foreign influences which villages have had to adapt to. This influence has resulted in the irrational management of the countryside and has contributed to the creation of new negative systems in physiographic relations. Protected areas, such as historic sites and buildings, places of biological and geological value, rare and distinctive trees or groups of trees, nature reserves, or the panorama of a given place are of no significance when it comes to shaping the landscape. Technical and technological progress has led to the fact that when building housing estates no attention is paid to the connection between the lie of the land and the physiographic relations. The architecture of buildings and, thus, landscape architecture do not affect (as they did before) the size of rivers and their tributaries, the nature of the course, the river gradient, the route or the extent of a river. Today, we turn our backs on rivers, build concrete banks, dig too deep drainage ditches, build on ugly and wrongly inclined hillsides, and build around lakes. All this has a negative effect on the aesthetic qualities of the landscape, and thus, on the residential estates.

Transport is an element which crystallizes and determines the shape of rural housing estates. Several factors are taken into account when choosing the location of a property, namely, the width of the road, its surface (tarmacked or not), the location of bus stops and/or railway stations and so on. Depending on the land development and management conditions (which are influenced by the type of road and what purpose it will serve) a frontage alignment is established which determines the shape of buildings and thus the proportion of streets. That proportion, as well as adapting to the lie of the land, proper drainage, tarmacking of roads and road maintenance contribute to the harmonization of the landscape and combine the environment with the emerging housing estate (Staszewska, Kacprzak 2009).

The factors which determine the shape of housing estates are the building

code as well as land development regulations. As a result of the lack of local land development plans, land development decisions are given pursuant to the applicable building code. Land development based solely on these decisions makes it impossible to create multifunctional spatial systems of a diverse program and architecture. Of course, the decisions are verified pursuant to the existing regulations, but they do not have to be in accordance with the study of land use conditions and directions, which, under law, is not a local law. This fact is often used when attempting to locate often undesirable investments. Inconsistent and ambiguous legislations, as well as ill-considered prohibitions and orders contained in local land development plans lead to the fact that housing estates are chaotic and illogical, they lack adequate services, they do not have a well-thought-out composition, there are no dominant features, no open landscaping, or any connection between the estates and the surroundings. In rural housing estates there is no gradual concentration of buildings: from the open countryside outside the estates to well-laid-out housing developments or the densely built-up housing estates, there are no distinctive buildings, there is no entry or exit to and from the estates, there are no squares, no hierarchically important areas, and no green or public areas. There is a lack of connecting areas, in the form of landscape screening, squares and architectural details. In present times, the connection between buildings and water (rivers) does not exist.

Other factors of development which determine the shape of villages on the Warta include the stratification of society (the influx of wealthier residents, with higher aspirations can influence the development of new types of services), space management, privatization and other forms of granting property rights, the vicinity of a big city as a center of services, education, culture, health, entertainment and work. Residential areas are formed on the basis of trends in urban planning and architecture as well as the development of technology and transport. Other significant factors are relations and interdependencies (Staszewska, Kacprzak, Szczęsna 2004).

CONCLUSION

The building and land development of suburban areas located in the vicinity of large cities is extremely varied. This is due to many social, economic, financial, construction, architectural and spatial factors. This diversity stems from available building materials and the way of building, as well as from the financial means of the owners. This, in turn, is a result of regional influences, local population needs, the functionality and significance of individual rooms and buildings, social bonds, and attention to the unity of form, color, and detail. The processes of building and land development in one rural settlement leads to changes in larger areas, where relations, benefits and conflicts occur.

Thus, land development becomes the background of human life, its basis for functioning and growing. Humans, in turn, who are susceptible to trends, the influence of other social environments, and technology – initiate processes of change. These changes, seemingly minor, usually result in major decisions, constraints, and certain processes of organizing and assigning space. From this, it follows that the analysis of the construction and architecture carried out at the beginning is extremely important in understanding the conditions of space management.

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