Poznan greenery accompanying one-family houses.

Marzena Banach

Abstract— Greenery accompanying housing estates in Poznan, is a hardly used element of shaping the spatial order. The lack of greens, inappropriate composition, bad choice of the genres and the low standard of equipment in the green terrains surrounding the one-family buildings, lowers the quality of place of residence. A properly designed greenery may support: the humanization of neighbourly space, the increase of attractiveness of the space for its' inhabitants, compensation of differences in the quality of living (neighbourhoods with apartment houses and detached-houses), and so the quality of life in Poznan housing neighbourhoods.

Keywords— environmental balance, urban structure, green structure, life comfort, sustainable development

I. Introduction

GREENERY accompanying housing estates, by one-family houses, are one of the components of the whole urban greens system together with parks, greens along streets, at cemeteries or communal forests, reserves and gardens etc., In each case the majority of plant material is the anthropogenic vegetation, artificially organized and composed. This appeared, for the first time, in ancient Rome, in the form of by-street planting and in the form of "groves" ("parcus") set up next to Patricians' villas. However, a conscious decision to include greens in the process of cities' creation, took place in the Renaissance, when regular park-garden layouts appeared.

The first systems of greens in cities had been introduced within the enlarging city space, imposed by the increasing number of inhabitants. Covered up moats, filled with trees, started the ring-shaped pattern.[6]

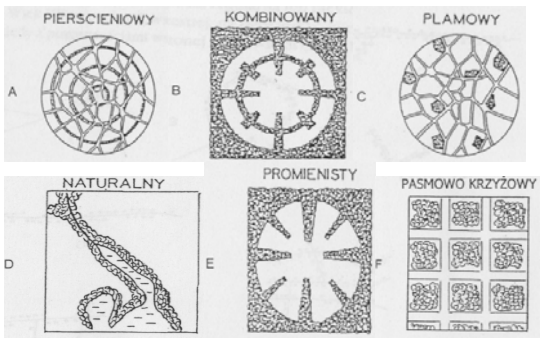

Fig.1 City greens' patterns [6]

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In Poland, the first city where this kind of system was introduced, was Poznan. This place is one of the oldest and biggest in the country (area 261,3 km^2, 0,08 % of the country area and 557,000 inhabitants).[1] Currently, Poznan is a big centre of industry, trade, culture and science. It is a large communication centre as well (it lies on the cross-road of national and international communications East-West, North-South).

The biggest growth of gardens in Poznan occurred during the end of the 15th century. There had been utilitarian and decorative gardens before, located in suburban areas. At the end of the 18th century, through its connections with Prussia (1793r.), Poznan became the object of a real trial creating *the garden-city idea*. Thanks to its picturesque inhabitant-garden zone, Poznan gained the title of the "green" city. In the Napoleonic period, urban greens had become the second most important, aspect, right after the main goal of creating Poznan as a fortress-city (1815). At the end of the 19th century, the authorities once again became interested in urban greens development, and in 1903, thanks to the German urban planner, *Stübben,* a first concept of ring-shaped greens system in the city came into being. In the interwar period Poznan was remarkable for highly kept greens (recieed the gold medal at the Garden Exhibition, which took place in Paris in the year 1927), with characteristic modernistic and geometric gardens.[5]

In 1934, there appeared a concept of urban greens development (established by a local urbanist - prof. Władysław Czarnecki), based on the existing inner greens ring and a new one, named the *ring-wedge pattern* (then the most pioneering greens system in Poland).[10]

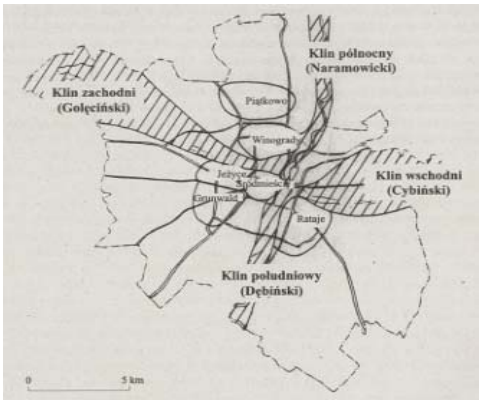

Fig.2 Greens' vedge of Poznan city- Czarnecki's idea [10]

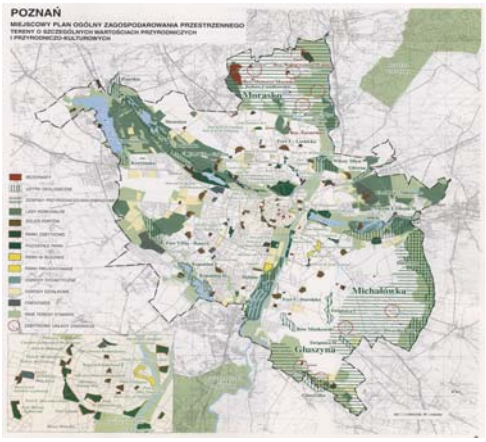

Fig.3 Contemporary greens' vedge of Poznan city [10]

Currently, the ground use structure in Poznan is rather profitable for the natural subsystem with approximately 7,5 m^2 parks and 1,5 m^2 lawns, for each inhabitant (greens of housing estates are 20,3 % of general area).[12] However, the most significant disadvantage of Poznan's green spaces is their non-uniform lay-out (mainly in the eastern and north-western parts of the city).

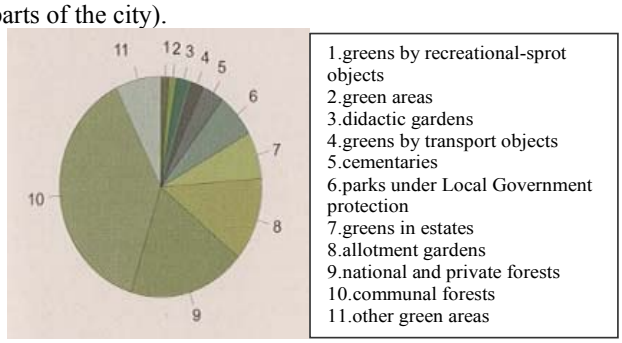

Diagram 1 Spaces of particular natural values of Poznan[11]

With strong industrialization and city expansion, along with a population increase, there came the unit's stronger need of achieving higher standards of living, and better surroundings. The result of this phenomenon is, for instance: better care for greens, especially around peoples' households. As far as the role of greenery in habitation is concerned, the verification of home-gardens management seems to be quite important. In the last few years, there were certain changes and improvements noted; unfortunately not all of them could be recognized as such.

Since, there have often been instances of cities' destruction of their biological structure and irrational use of green areas for investments, this issue seems to be particularly important in the field of research. Nowadays, the most important issue in creating urban spaces is defining the environmental balance conditions, according to the declaration "Agenda 21"(1992), containing the rule of "sustainable development".[1] Within the spatial management of any city, it is greens that compensate building development. In the case of residential buildings, it is home-gardens. Unfortunately, the quality of inhabitants' life-space, has recently reached a critical point. [13] This fact causes stronger belief in the direct influence of environment on its quality. The term environment is a complex of physical, chemical, biological and social phenomena and processes which have (directly and also indirectly) influence on health and comfort of people, individuals as well as the whole population.(18) That is why, regarding home-gardens as one of the factors influencing the health and general lives of people who live in cities or the surroundings areas, this seems to be a proper direction.

II. Greenery Accompanying One-family Houses

Contemporary European gardens (including Polish) came into being out of ancient tradition. Separation of its inside – the private part, from the public space – outside, was characteristic then. Today there is still a need to keep the strong isolation between private and open (front garden) zones. Until 1989, private home-gardens in Poznan and its surrounding areas had no needless ornaments or luxuries. In general, they have not been developing at all, trying just to survive. Following a dozen years of economic changes in Poland together with building development better care for households and greens by houses especially, has been observed.

Currently, creating private green areas leads towards better quality of direction, however not all actions give positive results.

Considering the space size of home-gardens, these are rather different. Often, it happens that the quality of its organization has a direct connection with its size (too poor composition on big premises or the other way around or too many plants and other elements, on a very small area). As far as the size is concerned, home-gardens next to detached houses have been divided as follows:

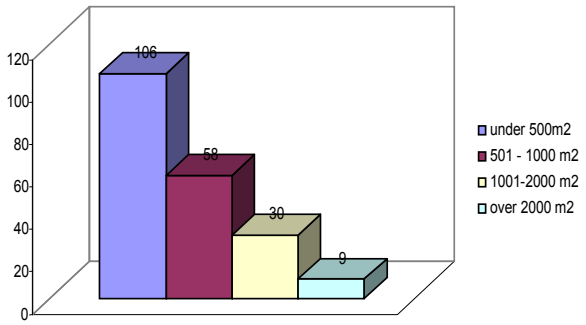

Diagram 2 Comparison of sizes of analysed gardens -m^2

Among 203 gardens adjacent to one-family buildings, over half of them (106 – the majority in city and small towns) have got an area smaller than 500m^2, almost 30% an area in the range 500-1000m^2 (58), about 15% an area in the range 1100-2000 m^2 (30), and only 4 % of gardens have a size exceeding 2000 m^2 (9 – majority - villages).

[1] Data for year 1998.

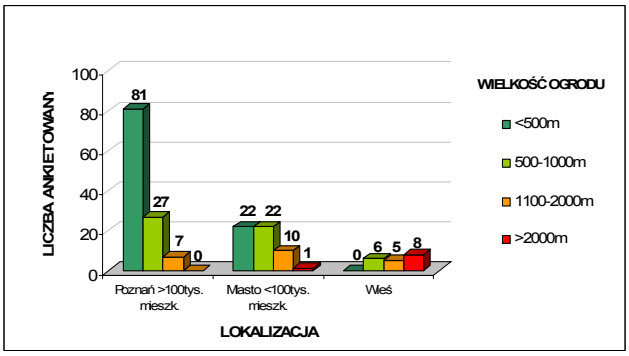

Diagram 3 Comparison of particular sizes of gardens, depending on type of agglomeration [inhabitants' amount, size: m^2]

Private greens are definitely easier for users to identify with. For this reason, it seems that they ought to be carefully designed and well kept. The reality, discovered throughout many observations and analyses, showed the opposite. The current condition of private home-gardens management is reflected by the outcomes of research evaluations[2], made on a representative group of gardens, for each type of one-family houses (203 units).

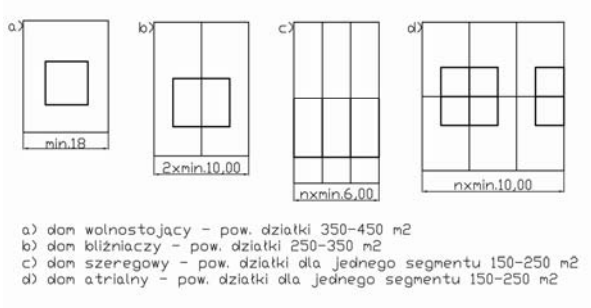

Fig.4. Types of one-family houses by W.Szeszuła [20]

The assumed research-field, is contained In Poznan metropolitan area, considering Poznan as the centre and its' impinge zone, so the ring of districts, surrounding the city. The selected territories reveal a possibility of being absorbed by the city in the future. To choose the most representative group, four criterions hale been set: territory (classification depending on its' location in the administrative city structure – the neighboirhoods, what part of the city etc or in relation to the structure of the city, so the towns or villages located outside of poznan, but still remaining in a close connection and dependance), type criterion (classification depending on a type of housing buildings that they accompany: detached houses, semi-detached houses, terrace houses, atrial/ courtyard houses); functional criterion (decorative, recreational and utilitarian) and size criterion (from 500m^2 to 10.000m^2).

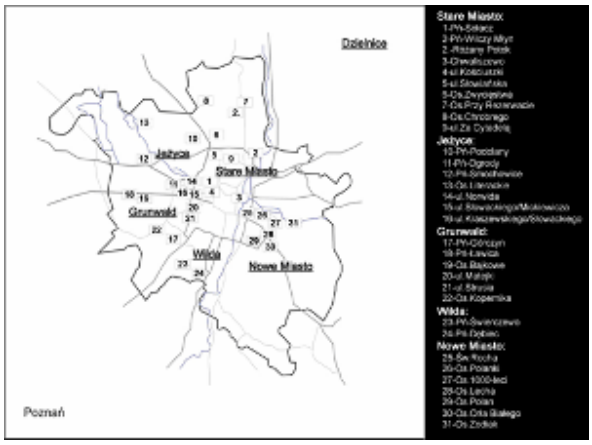

Fig.5 Selected research-fields in Poznan city

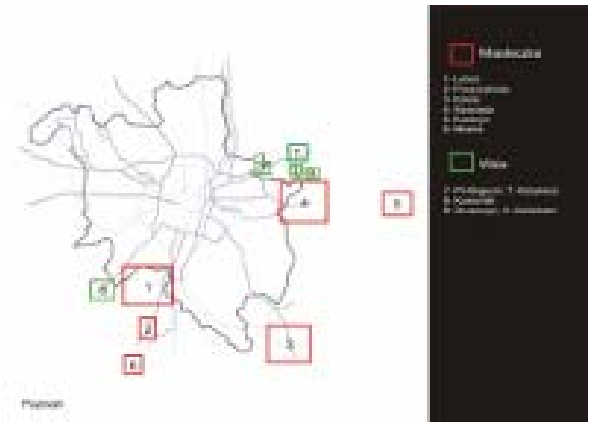

Fig.6 Selected research-fields outside of Poznan city

A. Composition in gardens by one-family houses

Home-gardens by one-family houses are different regarding their character, depending on localization: city area, suburbs and villages in a close neighbourhood. It is also connected with individual buildings' architecture and their schedule, but the size of the premises as well. Asymmetric pattern (equally often concentrated as dispersed) is one of the features of these spaces.

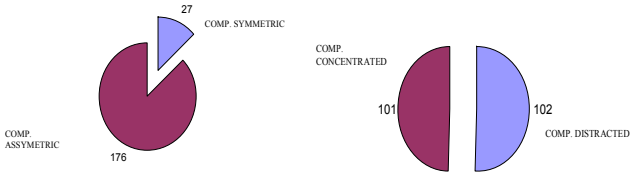

Diagram 4 Symmetry and concentration in evaluated gardens composition

But, the most significant feature of contemporary, evaluated home-gardens is lack of order, irregularity and dispersion, which dominates over their symmetry or asymmetry.

[2] based on analysis made on 203 gardens (stock-taking, survey etc.)

Taking into account their composition, the most frequent disadvantage of such gardens is a lack of compositional consequence.

Composition is closely connected with a garden's functional division. Among those evaluated, there have been functional parts noticed, as follows:

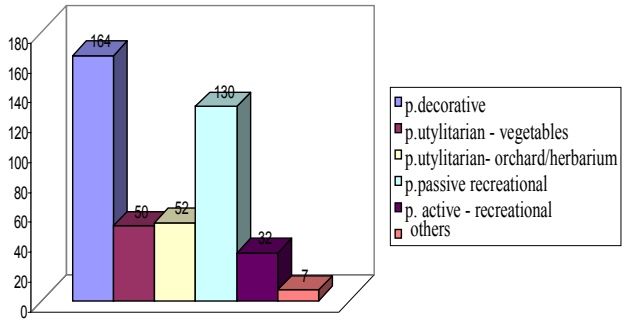

Diagram 5 Comparison of particular functional parts in evaluated gardens

Apparently, the imperative function is decorative and recreational. A utilitarian function has been noticed in ¼ of evaluated cases. What needs to be underlined is the fact that a recreational function has been noted in few gardens (32 cases).

B. Plant material in gardens by one-family houses

One of the most important elements of green spaces' organization is plant material.[7]Within its selection and composition a certain character and outlook of a garden is achieved. It is an element which determines the function of a garden; whether it is open, representative and decorative, ~~or~~ rather utilitarian, a type of private enclave or finally whether

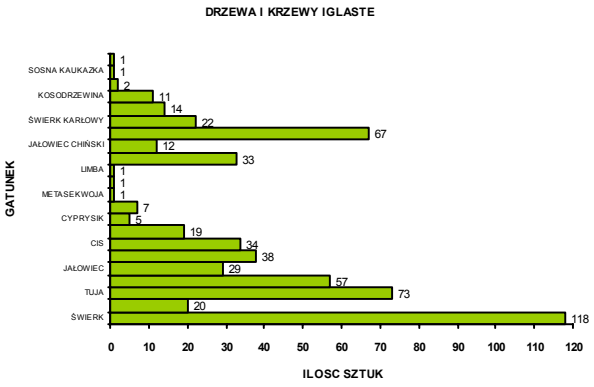

Diagram.6 Example of conifer trees' and shrubs' register (amount).

or not it is an element reflecting the closest landscape. For this reason, the skill of using the appropriate plants is very important. Inappropriate plants selection and localization leads to the creation of uninteresting, incoherent and ugly gardens, which will almost certainly not meet owners' expectations. Moreover, such realizations may lower the landscape values of the entire street or neighbourhood. The most frequently used plants in home-gardens in Poznan and the surrounding areas are: many kinds of occidentalis, thuias and spruces etc. In this research area, dwarf varieties, rhododendrons and azaleas are more often to be found. It appears that local varieties (characteristic for this area) are deciduous or fruit trees and bushes (in suburbs and villages), which have became a minority.

Fig.7 Examples of composition in the garden (left-Sołacz,Poznań) and in the frontal garden (right –Monte Cassino Str.,Poznań)

Beside the variety of plants, it is also important to give them a space to expose. Such a field is certainly created by grass. It is used more and more often in larger areas. Not only in Poland there is such a tendency, it has also started to affect even some of the gardens in the far east.[15] The minority of cases (9) are the gardens with grass covering over 75% of the premises, 23 cases in the range up to 24% of the garden area. The majority (49 each) have been recorded both garden where the grass was spread over a terrain in range of 25-50% and 51-75% of the entire garden area. In towns outside of Poznan the grass takes: in 8 cases more than 75%, in 10 cases less than 24%, in 11 cases 25-50% of the garden area and most of all, in 20 cases an area of about 51-75% of the premises. In villages outsider of Poznan, there hale been 4 gardens noted, where the grass took an area in range of 1-24%, 3 gardens of abort 25-50% and 3 gardens of about 75% of the area and 14 cases, where the grass takes an area in the range between 51-75%.

C. Elements of small architecture and details in gardens by one-family houses

A complete garden composition may be created by introducing small elements, which play different roles: decorative or utilitarian. Their aesthetic value, such as: form, colour, proportion and material are determined by other, main elements of architecture and their function in designed landscape. A proper use of forms of small architecture, their harmony with open space, the buildings and plants around, provide a chance to keep compatible proportion between all the different elements creating space. The most popular small element, according to research, is bower (89 pieces in 203 cases).

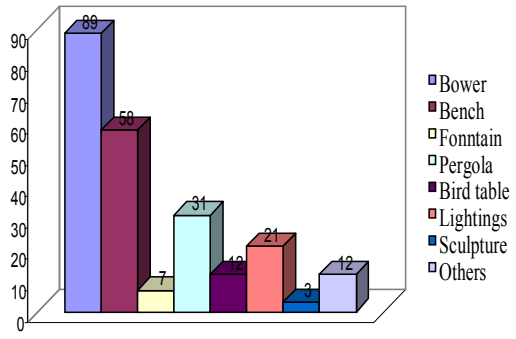

Diagram 7 List of elements of small architecture and detail (amount)

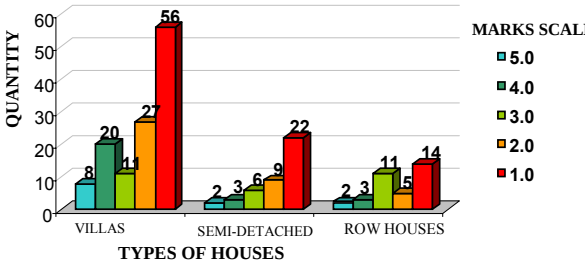

Diagram 8 Evaluation of composition (k1)

In ¼ of evaluated gardens, there have been benches noted. The least used element of small architecture in contemporary home-gardens, is carving (only 3 pieces noted).

III. Evaluation of Greenery by One-Family Houses

Despite the fact that gardens are different in terms of their localization, function, composition, size and equipment, there are three major elements that have the biggest influence on the quality of their management. These are: composition (with functional division), *plants material selection* and *small architecture and detail selection.* So, the synthetic evaluation of each research field's management includes three partial assessments: I– evaluation of composition (k1), II – evaluation of plant material selection (k2), III– evaluation of elements of small architecture and detail with other elements (k3).[3]

A. Greenery by one-family houses - evaluation of composition.

This partial evaluation was based on such aspects as: functionality, style (arrangements of a variety of elements etc.) and quality of the view etc. communication, facility of usage and maintains), style (appropriation of style selection considering the house architecture, sculptures, premises' pattern and also the location character etc.), view's quality (line of the plants' set, surfaces, small architecture elements and details and other ornaments etc.).

Regarding composition and functional organization, not many (12 cases) can be recognized as very good. Unfortunately, the biggest proportion of them (over 90 cases) evaluated as very bad. The precise marks for each type of buildings have been shown on the diagram above.

[3] assuming 5-degree scale of marks: very good (5,0), good (4,0), acceptable (3,0), bad (2,0), very bad (1,0).

B. Greenery by one-family houses- plant material evaluation.

This partial evaluation was based on such aspects as: shape, size, composition of variety of plants, changes during the seasons. (arrangements of interesting compositions) and quality of the view, amount of plants (too many/too few) etc. The highest quality of the plant material have been noted mainly in greens accompanying villas (for example: Puszczykowo), but the lowest marks got plants set gardens of detached and semi-detached houses (Sołacz) – low score – 2,0.

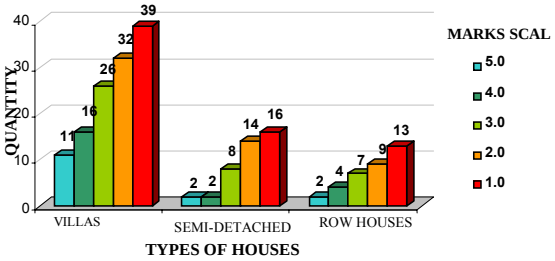

Diagram 9 Evaluation of plant material (k2)

C. Greenery by one-family houses – evaluation of elements of small architecture and detail.

The evaluation of a small architecture in one-family houses' garden has been based on variety of elements such as: surfaces, garden furniture, water elements, sport elements, illumination elements, playgrounds, planters, fences and borders, bowers, pergolas and ornaments in many different forms and other elements of home-gardens' equipment.

Within their evaluation, certain criterions have been taken under consideration.

These are functionality (placement, amount, the way and security of the exploitation, maintenance)), style (according to the building's architecture and the rest of the elements, considering the buildings' character and location), aesthetics

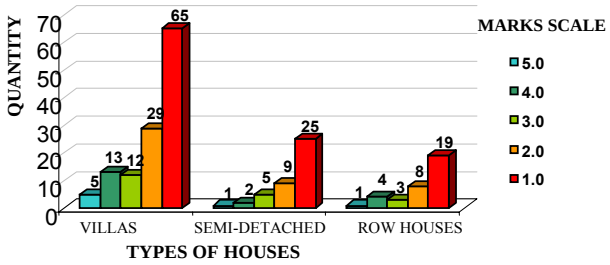

Diagram 10 Evaluation of elements of small architecture and detail selection (k3) /5 columns for each type (from the left) 1,0 up to 5,0

(harmony and the final effect of the chosen form, type of the material, colour, etc.).

Regarding the analysis of elements of small architecture and detail used in home-gardens, the comparison of results is as follows: 5,0 = 7 cases, 4,0 = 19 cases, 3,0 = 20 cases, 2,0 = 46 cases, 1,0 =109 cases.

The best selection of elements of a small architecture has been noted mainly in gardens accompanying villas in Puszczykowo (marks: very good and good). Then the worst results has received the equipment in gardens by villas and semi-detached houses in Sołacz (Poznan), very bad scores.

D.Greenery accompanying one-family houses - synthetic evaluation of their management

The following, synthetic evaluation has been made as the result of analyses, numerous stock-taking of the greenery accompanying the four types of housing estate (plans, views, photos, questionnaire research, interviews among owners/users of the examined areas).

The three partial evaluations (composition evaluation, plant material evaluation and an evaluation of the elements of small architecture and detail) join into a total valuation of gardens' management, which has been considered as the determinant of their quality leads to the final results as follows: almost 1/3 (out of 203) received the lowest scores. About 70 % of gardens received bad or very bad marks for the entire organization, which demonstrates a very low quality of home-gardens. The precise marks of particular types of gardens have been shown on the diagram below, that reflects the synthetic evaluation management of greens by one-family houses.

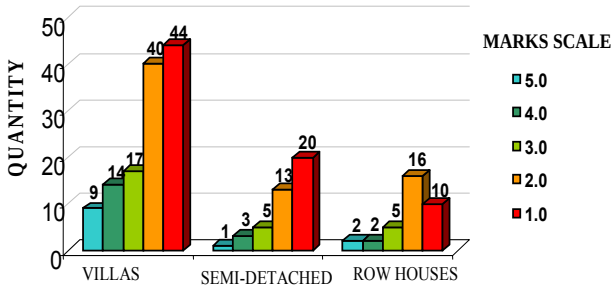

Diagram 11 Synthetic evaluation of gardens management (Σk_{1+2+3} /3)

Greenery accompanying the housing estates in Poznan is a poorly used element of a spatial order. Greenery by housing buildings plays an important role in shaping their inhabitants' life. No matter the type of a building, one- or multi-family buildings, it ought to provide an appropriate recreation spot, creating the healthy climate to live in. It is very important in the low-standard estates in particular. In such buildings greenery should compensate and enrich the entire place, party rewarding the inhabitants' other poverty.

The important goal in coming decades should be to make urban areas more self-reliant, sustainable and enjoyable places to live. As environmental conditions have changed in the last decades, many species have become extinct. Urban areas generally have few trees, shrubs, or other natural vegetation

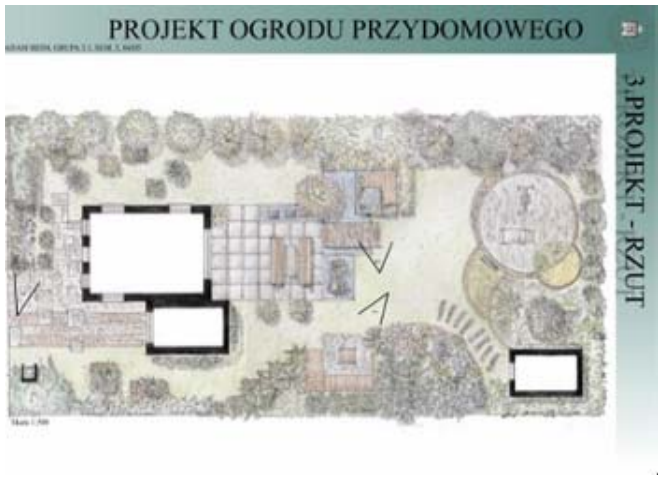

Fig. 8 Example of a garden design (by stud. G.Bartkowiak, supervised by arch. M.Banach).[13]

that absorb air pollutants, give off oxygen, help cool the air and give aesthetic pleasure. [17]

IV. Guidelines for Home-Garden Designing

Good landscape design can significantly improve the building's appearance by adding warmth, liveability and personality.[17] Designing home-gardens ought to be a process which takes into consideration the space around the house as a whole, respecting the existence of a close relation with nature and lack of a distance between the building and the garden. [16]

The process itself should contain the following steps: phase 1) technical (measuring the premises, establishment of a profile and the functions of certain rooms in the house, which should have an effective view, inventory of existing plants etc.); phase 2) *aesthetic–plan preparation* (selection of

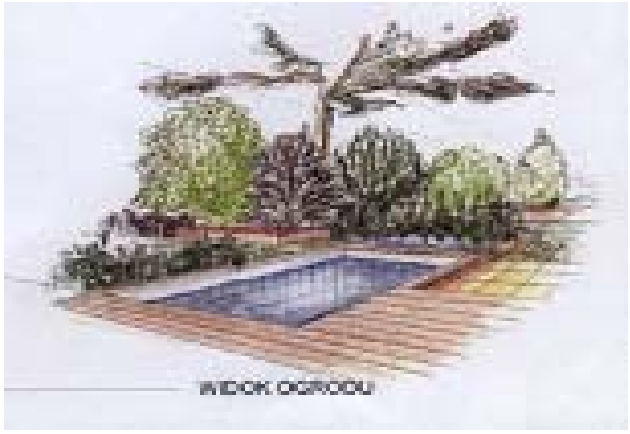

Fig.9 Exampe of a swiming-pool design (by stud. B.Bajon, supervised by arch. M.Banach).[13]

pavement material, settlement of view points, paths etc.).[4] Despite the variety of types of houses (villa, semi-detached villa, terrace house) and their localization, there are some basic guidelines. First of all, the design should be simple,

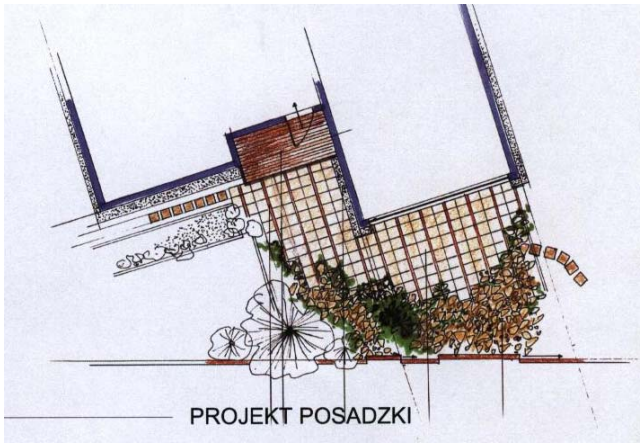

Fig.10 Exampe of a tile floor design (by stud. B.Bajon, supervised by arch. M.Banach).[13

transparent, consequent upon the arrangement of plants and small elements, considering the premises' shapes.

There are specific guidelines for "special gardens" (for a person using a wheel-chair or a blind person etc.). Despite the individuality of users, these private green spaces may become

Fig. 11 Example of a garden design for a person on a wheel-chair[19]

not only an important element of the entire greens' system, but a showcase of the city.

V. Conclusions

As the analysis has showed, a large number of gardens, in spite of their owners' will and efforts, is the result of inappropriate organization. The main problems, concerning management, are: dissonance in organizing frontal gardens in relation to neighbouring premises; inappropriate functional division; composition inconsistency; lack of complete concept of management; inappropriate amount and quality of plant material or small architecture etc. The results of the analysis are as follows: 70 % (147/203 gardens) are badly or very badly kept (marks: 1,0 and 2,0), which confirmed assumed opinion, that contemporary private home-gardens are inappropriately organized.

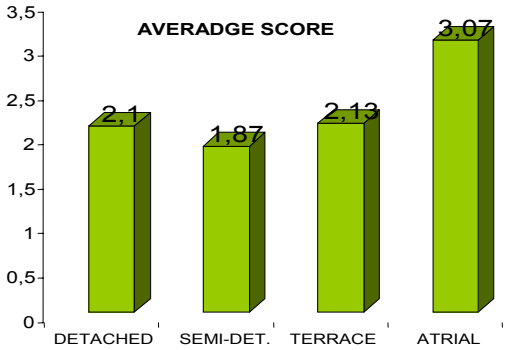

Diagram 12 Gardens' managment evaluation for each type of one-family building

Therefore, their potential in creating the character and quality of cities' and their surroundings' inhabitants' life-space, is still hardly used. Moreover, increasing amounts of local garden contests and the element of competitiveness, mobilize some of the citizens to improve their private green area. In addition, most home-gardens in the selected research area were designed without any professional help (169/203 cases).

Today, there is a clear need to create and look for the overall housing environment, of features close to traditional solutions, regarding both function and shape, as much as the spatial lay-out itself. To meet these expectations and needs, the process of conscious and reasonable usage of greens in a range of gardens, streets, estates and throughout the city, should begin, with consideration of home-gardens in particular, since they are humans' closest space. It ought to be remembered, that not only gardens are affected by city situation but the city and its complex are affected by garden or a collection of gardens.[15] Moreover, this enclave of vegetation is a filter of the air breathed by inhabitants and it preserves the walls of buildings from heat, but above all it has an enormous influence on humans' psyche– so too on their quality of life.

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