

Evaluation of attractiveness of selected housing estates in Copenhagen due to their structure and arrangement

MAGDALENA BŁASZCZYK

Department of Landscape Architecture, Warsaw University of Life Sciences – SGGW

Abstract: *Evaluation of attractiveness of selected housing estates in Copenhagen due to their structure and arrangement.* The purpose of this work is evaluation of visual attractiveness of four Danish housing estates erected within a century and differing in size, structure, layout and method of development. For each of the estates, a comprehensive documentation was collected, and photographic and drawing inventories were conducted. The housing estates were analysed by the author using the method of impression curve (10 points scale) and evaluation of housing estate components grouped into three categories (structure, arrangement/furnishing and local green areas). Such a procedure enabled double way of evaluation of the housing estates: firstly, as a part of a greater whole, and secondly, as an independent object. Results of the *in situ* research showed that in this particular case attractiveness was inversely proportional to the age of the estates (the younger an estate was, the more attractive it appeared). The obtained results were verified in an *ex situ* survey, basing on BSE method, in which 68 Polish students (not acquainted with the objects and Danish history of housing estates development) were asked to rate several photographs of the objects in question. Students' rating turned out to be coincident with the author's rating (still, the author's scores were higher than students' scores on a 10 point scale). The given results are a proof for a dependence connected with time changing attitude to developing and arranging housing estates (as an example: an explicit tendency appears in arranging newly developed housing estates in a unique way, often with correspondence to surrounding landscape).

Key words: housing estate, evaluation of attractiveness, local green areas, arrangement, furnishing, structure.

INTRODUCTION

The history of city and housing estates development not only is a perfect reflection of gradually increasing importance of the esthetical and layout factors, but it is also a sign of changing awareness. People are becoming more and more aware of the necessity to satisfy the needs of inhabitants to shape the immediate surroundings in a natural way¹ enabling optimal functioning. Consequently, it is easier to maintain physical and mental balance and improve the mood. Therefore, it is extremely important that housing estates, which are basic units within the limits of a city or village, be designed and developed in a way that ensures the inhabitants' comfort and thus makes the estate highly attractive.

While analysing the development of housing estates, it is impossible to omit foreign experiences, especially from countries which history did not force them to erect apartment buildings rapidly and the suggested projects were realised in a thoughtful and coherent way.

¹ Corresponding with human nature.

The aim of this article is to present and evaluate four selected Danish residential housing estates which erection was widely commented in the circle of professionals (architects, planners), and which are an interesting study for socio-spatial analysis.

The housing estates were catalogued by the author during her 3 months study at the Royal Veterinary and Agricultural University in Copenhagen in spring 2005. Results of the study were described in the master's thesis discussing the concept of greenery arrangement in a low-rise housing estate².

Evaluation of the attractiveness of a housing estate was based on layout analysis (spatial and composition), arrangement/urnishing and green areas. Special significance of the third factor in terms of health, biology, society, economy and aesthetics³ is hard to overvalue. The role of green areas as a factor shaping the landscape and location is also considerable.

MATERIAL AND METHODS

The analysed housing estates were selected according to the following criteria:

- different times of erection of individual estates,
- clear differences in size (housing estate area),
- different types (layout solutions pattern),

² The thesis was supervised by professor Zuzanna Borcz and presented in Agricultural University in Wrocław in October 2005.

³ Categorisation by: Orzeszek-Gajewska B.: *Kształowanie terenów zieleni w miastach* (Shaping Green Areas in Municipalities), PWN, Warsaw 1984, p. 96.

- representativeness (each housing estate had to constitute a crucial part of a city district determining its overall character and perception, it also had to represent the styles and trends characteristic of the period in which it was erected),
- low-rise structures in the estate.

Out of the estates matching the criteria mentioned above, the following four were selected:

- Kartoffelraekkerne – traditionally cooperative working-class estate,
- Carlsro – garden-city,
- Egebjerggaard – multiple family housings with residential estate standards,
- Tuborg Nord – modern estate of pent-house buildings.

Three of the estates (Kartoffelraekkerne, Carlsro, Tuborg Nord) are located in Copenhagen and the fourth (Egebjerggaard) – is located in the municipality of Ballerup within the district of Copenhagen.

In each housing estate a catalogue of the actual layout was prepared (with special attention given to composition and layout of vegetation) including photographs and drawings.

Drawings (about four for each estate) were made on site (occasionally outside the estate based on sketches and photographs made on site) and allowed the exceptionally attractive interior fragments to be identified visually (Koziański, 1950). A detailed documentation of the housing estates was prepared with the use of sources and blueprints. Each object was visited twice: during the first visit an impression curve⁴ was made to represent changing tensions and esthetical impres-

⁴ A method of visual evaluation proposed by Kazimierz Wejchert in *Elementy kompozycji urbanistycznej* (*Elements of urban composition*), 1984.

sions while moving along the route running partially through the housing estate.

During the second visit, a value matrix⁵ was developed basing on the analysis and prepared catalogues. The matrix represented the evaluation of individual composition elements in each of the selected estates categorized into 3 groups: green areas, arrangement/furnishing and structure (composition, layout).

Subjective results of the analysis and the author's evaluation were initially verified by the survey including 68 students (students of the Department of Horticulture and Landscape Architecture in Warsaw: second year students majoring in horticulture and third year students majoring in landscape architecture). The survey was based on SBE⁶ method (*Scenic Beauty Estimation*) and individual landscapes/interiors were represented by colourful slides.

RESULTS AND DISCUSSION

For the purpose of presentation of the research results a collective table was drawn up to represent the basic information concerning every housing estate (Tab. 1)

The first evaluation method of each housing estate's attractiveness was determining the impression curve during a cycling/walking trip (bicycle is the most popular means of transport in Copenhagen). An ordering 10 point scale was used in the study, where 1 stands for a view with no esthetical value and 10 stands

for a view with extraordinary esthetical and composition values. This type of study allowed the author to evaluate the attractiveness of a housing estate as compared to neighbouring areas. Each time the trip route began in Frederiksberg (central district of Copenhagen) while the impression curve was prepared for part of the route only (granting points began about 1 km before the estate's limits). The use of such parameters was necessary in order to obtain information concerning the visual significance of the relevant estate in its urban environment. The following results were obtained for four analysed objects (Figs 1–4).

It is worth mentioning that the results may be considered as relatively good and similar despite the variety of the analysed objects. Therefore, it was necessary to perform a more detailed and more reliable study which would help to establish a hierarchy of the analysed objects.

Apart from the impression curve, during the first visit to an estate a catalogue of relevant drawings and photographs was prepared (Fig. 5). A several hours long stay within the neighbourhood allowed the author not only to prepare drawings but also created the possibility of spontaneous and unstructured interviews and conversations with the inhabitants.

During the second visit to the estate, a visual evaluation of its attractiveness was performed by means of analysis of estate parts grouped into 3 categories: (1) layout structure, (2) arrangement/furnishing, (3) green areas. In each category there are the following sub-categories: (1) view opening axis, landscape interiors (or visually attractive places within a housing estate which cannot be defined as interiors), presence of landscape dominants/landmarks, communication

⁵ The value matrix tool was inspired by the book „Value by design. Landscape, site planning and amenities”.

⁶ Daniel T., Boster R., 1976: Measuring landscape esthetics: the scenic beauty estimation method.

TABLE 1. A summary of basic information concerning the analysed housing estates (prepared by the author based on internet sources and non-published – private correspondence with Mrs Jette Abel)

Estate name	Kartofelraekkerne	Carlsro	Egebjerggaard	Tuborg Nord
Date of erection	1873–1889	1952–1958	1980s	2000–2005
1	2	3	4	5
Location	Oesterbro district, eastern Copenhagen, neighbouring with the oldest and historic part of the city, close to a botanic garden, Royal Garden, two cemeteries; the estate is located at Sortedams Sø lake.	Roedovre district, south-west Copenhagen, close to busy streets: Taarnvej Roedovre Parkvej and Lucernevej (south and west) Green areas (park, sports facilities, gardens) housing estates from the north and east.	Ballerup administrative district, 15 km south west of Copenhagen borders, suburban landscape (detached houses), fields and forests.	Hellerup district, eastern Copenhagen (city outskirts); this estate is located at the seaside (next to the strait between Denmark and Sweden).
Estate type	Traditionally cooperative working-class estate.	Garden-city.	Multiple family housings with residential estate standards.	Modern estate of penthouse buildings.
Estate size	About 1000 ares	About 3200 ares	About 6000 ares	About 2000 ares
Estate layout structure	Based on 11 parallel and relatively narrow streets, 480 terraced houses, there are about 22 properties in each terrace with the average area of 73 m ² .	Based on contrast between the 8 storey block (200 meters long) similar to Le Corbusier's Marseille housing and 600 single-storey terraced houses in c. 26 parallel terraces located on properties of around 200 m ² each; frontgardens of 12–20 m ² each.	The estate is centred around a school, with predominantly terraced houses and low-rise high residential blocks, variety of forms, colours and finishing materials, a mixture of institutions, services and businesses, public, condominium and private buildings.	Multi storey blocks (minimalist forms and materials), situated parallel at the seaside and canal.
Spatial division	Small semi-private space, public space is limited to narrow street between terraces.	Public space is located in the middle of the estate near the main road and kindergarten. Properties (private space) of around 200 m ² each with a front garden (semi-private space) of 12–20 m ² each.	All 3 types of space ownership, numerous areas for children (playgrounds, sports facilities), the space is arranged to facilitate socialising, urban space is skilfully integrated with natural areas (e.g. the lake).	Public space dominates; private space is limited to tiny gardens next to ground floor apartments.
Arrangement and furnishing	Scarce, the only small architecture elements are lamp posts and dust bins (no free space to be arranged).	Moderate, asphalt roads and paths (developed passage routes), parking lots, little architecture elements are lamp posts, benches, dust bins, additionally there are places to have fun and relax.	Rich and diverse, social space (locations for recreation and socialising, numerous playgrounds, sports facilities, etc.), sculptures, two lakes.	Economical and elaborate, water, stone, sculptures (made of granite, brass and marble) by Jens Fleming Sørensen.

1	2	3	4	5
Green areas	Only in a small front garden arranged individually by the owners, mainly bushes (often formed), creepers, small trees, mainly coniferous plants (yew, juniper, thuya).	Green areas include private gardens (small front gardens) and lawns with individual trees or tree groups, tree lines along the estate's borderlines, characteristic 2 meters high hedge which substitutes traditional fences around groups of houses, wide selection of plant species, gardens were designed by two landscape architects.	Green areas include public, semi-private and private spaces, areas developed individually by the owners (mainly front gardens, backyard gardens shared by several residents) and areas developed by landscape architects, variety of forms and types.	Mainly public green areas, minimalist solutions corresponding with the architecture and style of the whole estate. Huge areas of lawns plus semi natural multiple areas of decorative grass, ivy, etc. Scarce loose tree groups of the same species.
Additional information	Currently it is one of the most wanted places of residence, especially among young academic families.	One of the designers was Arne Jacobson; numerous debates with professionals took place after construction was completed.	The estate was created using pro-environmental and pro-social approach with young families, the elderly and the disabled kept in mind.	Prestigious estate, whose typical elements are yachts moored in front of the buildings and location of companies such as PWC.

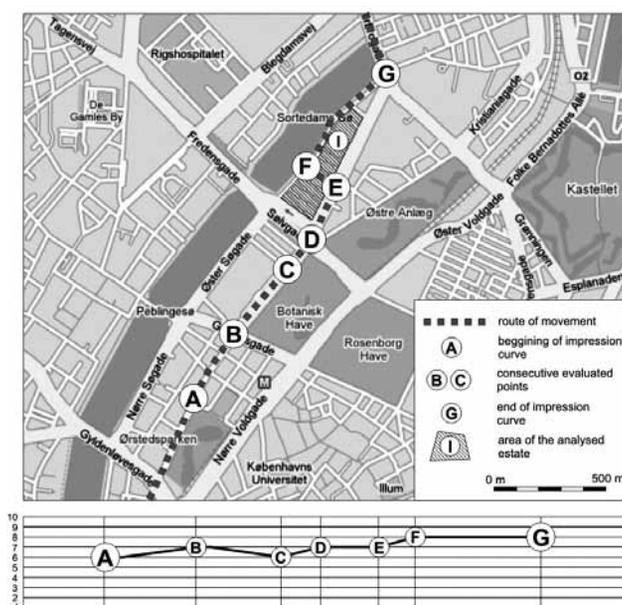


FIGURE 1. Impression curve for housing estate of Kartoffelraekkerne (by M. Błaszczyk)

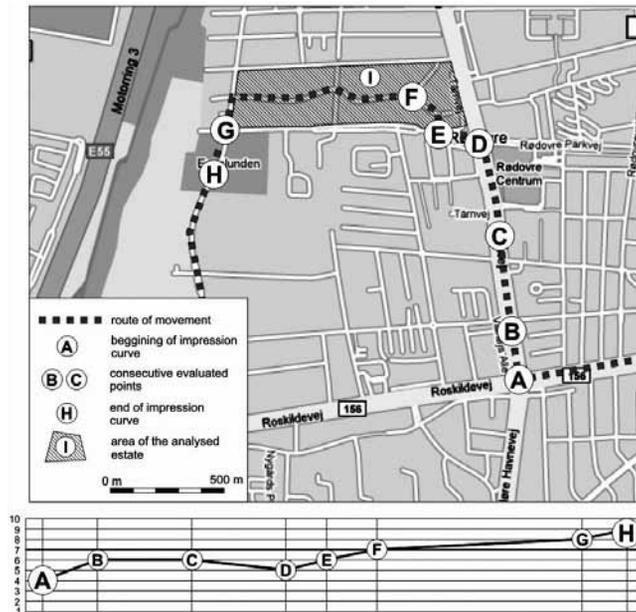


FIGURE 2. Impression curve for housing estate of Carlsro (by M. Błaszczyk)

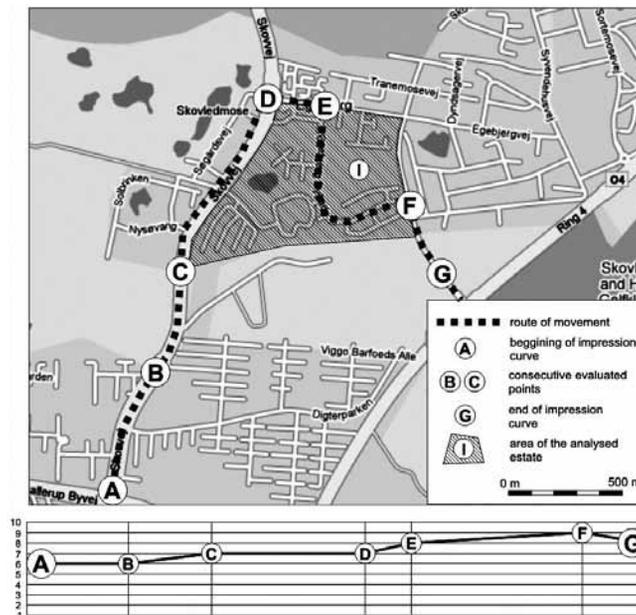


FIGURE 3. Impression curve for housing estate of Egebjerggaard (by M. Błaszczyk)

routes arrangement, (2) presence and condition of little architecture elements, illumination/lightening, condition and types of hard surfaces, number of car parking spots, (3) way of green areas development, selection of plant species, attractiveness of plant forms and settings, maintenance of plants/plant condition.

A four point scale (ordering scale) was used to evaluate the above factors and the results were systematised as a matrix presented in Table 2. This helps to compare individual elements of each housing estate.

Values of the estate elements presented in the matrix above quite clearly characterize the hierarchy of analysed housing estates. The main criterion is their visual attractiveness which is inversely proportional to the age of the object (the older the object, the lower its visual attractiveness). This is certainly due to the increasing demand on comfort and the need to break conventions (in Tuborg estate, the residents do not see parked cars through their windows but they see mooring boats). This situation also signifies that the requirements which developers and

TABLE 2. Matrix of values representing the attractiveness of selected elements of the analysed housing estates grouped into three categories (author's evaluation)

		Kartofel-rækkerne	Carlsro	Egebjerggaard	Tuborg Nord
Layout structure	Opening views/axis	■	■	■	■
	Landscape interiors	◇	□	■	■
	Landscape dominants/landmarks	◇	■	■	■
	Communication routes arrangements	□	■	■	■
Arrangement and furnising	Little architecture objects	□	□	■	■
	Illumination/lightening	□	■	■	■
	Hard surfaces	□	□	■	■
	Parking spots	□	■	■	■
Green areas	Green areas development	■	■	■	■
	Selection of plant species	■	■	■	■
	Plant forms and plant settings	■	■	■	■
	Maintenance	■	■	■	■

Symbols:

Evaluation of subcategories:

■ = High ■ = Medium □ = Low ◇ = No value

designers have to meet are growing (in Tuborg Nord estate there are sculptures by Jens Fleming Sørensen, one of the most famous Danish artists, Egebjerggaard is decorated with characteristic rabbit sculptures produced in the Rabbit Factory located in the neighbourhood). The analysis of the results from three categories shows clear difference between the evaluation of green areas and evaluation of layout structure, and arrangement, and furnishing.

Having based the evaluation of attractiveness on the analysis it is possible to show that the „new housing estates” Egebjerggaard and Tuborg Nord had scored higher while Carlsro and Kartoffelraekkerne had scored lower.

However, this is purely the author’s subjective evaluation and therefore a third type of study was carried out in order to confirm the results. 68 students from the Department Horticulture and Landscape Architecture of Warsaw University of Life Sciences participated in the study. The students were asked to grant from 0 to 9 points to randomly selected photographs of housing estates (14 photographs

of Carlsro, 15 of other estates). The photographs were presented in groups (group one – Carlsro, group two – Egebjerggaard, group three – Kartoffelraekkerne, group four – Tuborg). Each photograph was shown for about 4 seconds which allowed for relatively reliable evaluation based on impulse and, at the same time, helped to create an opinion about the presented view.

Generally, results of the study conducted with the group of students confirmed the results of the author’s study. The best evaluated housing estate was Tuborg Nord (15 photographs with the average grade of 5.73 and modal value of 7). The following estates came next: Egebjerggaard (15 photographs with the average grade of 5.03 and modal value of 5), Carlsro (14 photographs with the average grade of 4.39 and modal value of 4) and Kartoffelraekkerne (15 photographs with the average grade of 3.65 and modal value of 3). The highest and the lowest graded photographs were made in Carlsro (respective average of: 7.44 and 1,63). Considering the gender of students who took part in the survey,



FIGURE 6. The highest graded photograph from Kartoffelraekkerne, average of 6,33 points (photo M. Błaszczuk)



FIGURE 7. The highest graded photograph from Carlsro, average of 5,75 points (photo M. Błaszczyk)



FIGURE 8. The highest graded photograph from Egebjerggaard, average of 7,16 points (photo M. Błaszczyk)



FIGURE 9. The highest graded photograph from Tuborg Nord, average of 7,71 points (photo M. Błaszczyk)

women (62% of the respondents) tended to rate the photographs higher than men: 5.82 points given to Tuborg Nord, 5.28 to Egebjerggaard, 4.41 to Carlsro; and slightly lower average for Kartoffelraekkerne – 3.63.

Interestingly, despite the general result of evaluation (*ex situ* study) is in accordance with the results obtained by the author (*in situ* study), the average grades assigned by students were much lower than those assigned by the author (see: impression curves charts, matrix of values).

The highest graded photographs from each neighbourhood represent Figures 6–9.

CONCLUSIONS

The analysed housing estates differ in terms of attractiveness. Each one of them enriches the neighbourhood and surrounding landscape by different means and elements. Kartoffelraekkerne's clear structure and central location together with "cosy" atmosphere, human-scaled architecture and eye-catching plant settings put the estate among one of the most desirable places to live in Copenhagen. While considering Carlsro as a place to live, one may have doubts related to a certain discomfort of "rough" kind of living in a small one storey house. No doubts appear when it is about the estate's open spaces. They are definitely the most attractive part of the object. Visually attractive plant settings representing a wide variety of species and varieties were carefully designed by landscape architects. The greatest values of Egebjerggaard and Tuborg Nord are similar factors: location, connection with

the surrounding landscape, layout structure, consequence and precision in creating every single element of the estate.

However, when it came to evaluation, newer estates such as Tuborg Nord and Egebjerggaard were considered more attractive, while the older estates of Carlsro and Kartoffelraekkerne were considered less attractive. This is undoubtedly due to the evolving approach to neighbourhood designing in which the size of space around buildings is as important as the size of the very apartment or house. However, the size of the area „free” to be developed alone does not make the estate more attractive. Apparently, as in the case of Carlsro, it creates a chance to „green up” the location and make it more natural but this attribute does not seem satisfactory. Apart from the quality of residential buildings (building's appearance, apartment's layout) also location of the housing estate has the greatest influence on the potential residents' decision: to live there or not. Potential residents are tempted by attractive development of the estate including facilities such as: presence of aquatic elements (not only fountains but also man made ponds and canals), location with special esthetical properties (such as seaside area) and the landscape becomes an inspiration in the process of creating the new urbanistic interior. This tendency has been there for some time in Western Europe and it seems to appear increasingly often also in Poland.

Analysing the results of the study, it must be emphasised that the author's evaluation is in accordance with the results of the student survey (the same hierarchy of attractiveness of the 4 housing estates). Since the grades granted

by students were significantly lower than the author's grades, it can be concluded that the *in situ* study, despite the use of ordering scale, is subject to influence of environmental factors such as subconsciously heard sounds, smells or positive impression from a prior conversation with a happy resident.

The tendency resulting from the study concerning increasing visual attractiveness of housing estates which is inversely proportional to the age of the estate could signify a relation between them. However, this needs to be confirmed by a wider scope of research including a greater number of objects. An analysis of the visual attractiveness of individual estates should be accompanied by additional interviews with the residents in order to determine how happy they are about living in a given location.

REFERENCES

- BOGDANOWSKI J., 1976: Kompozycja i planowanie w architekturze krajobrazu, Kraków: Wyd. PAN.
- BORCZ Z., 2002: Elementy projektowania zieleni, Wrocław: Wyd. AR.
- DANIEL T.C., BOSTER R.S., 1976: Measuring landscape esthetics: the scenic beauty estimation method. Res. Pap. RM-167. Fort Collins, Colo.: U.S. Dept. of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 66 p. [online]. http://www.fs.fed.us/rm/pubs_rm/rm_rp167.pdf
- GRÖNLUND B., 1996: Egebjerggaard from a social point of view.: <http://hjem.get2net.dk/gronlund/BoibyUK.html>
- KOZIŃSKI J., 1950: Rysunek odręczny jak stadium kompozycji urbanistycznej. *Architektura* 3–4, s. 104–107.
- LIND O., LUND A., 2001: Copenhagen Architecture Guide. The Danish Architectural Press, Copenhagen.
- ABEL J., 2005: pracownik naukowy KVL, Dania. Korespondencja osobista. Materiały niepublikowane.
- CARSTENSEN T.A., 2005: pracownik naukowy KVL, Dania. Korespondencja osobista. Materiały niepublikowane.
- Miasto – Ogród, sto lat rozwoju idei, 1998: Dolnośląskie Wydawnictwo Naukowe, Materiały konferencyjne.
- ORZESZEK-GAJEWSKA B., 1984: Kształtowanie terenów zieleni w miastach, PWN, Warszawa.
- WEJCHERT K., 1984: Elementy kompozycji urbanistycznej. Wyd. 2., Arkady, Warszawa.
- BOOKOUT L., BEGARD M., FADER S., 1994: *Value by design. Landscape, site planning and amenities*, Washington.
- Streszczenie:** *Ocena atrakcyjności wybranych duńskich osiedli mieszkaniowych na tle ich struktury i zagospodarowania.* Celem pracy jest ocena atrakcyjności czterech duńskich osiedli mieszkaniowych (trzech: Kartofelraekkerne, Carlsro i Tuborg Nord, zlokalizowanych w Kopenhadze oraz jednego – Egebjerggaard – w okręgu administracyjnym Kopenhagi), powstałych na przestrzeni ok. 120 lat i realizujących cztery różne schematy rozwiązań: osiedle robotnicze, miasto-ogród, osiedle domów wielorodzinnych o standardzie osiedla willowego i nowoczesne osiedle „apartamentowców”.
- Dla każdego z analizowanych osiedli zebrano obszerną dokumentację oraz wykonano inwentaryzację fotograficzną i rysunkową, która pomogła w wizualnym zdefiniowaniu wnętrza i obszarów o wyjątkowych walorach estetycznych. Ocenę atrakcyjności przeprowadzono dwutorowo: w odniesieniu do większego fragmentu dzielnicy, w której osiedle jest zlokalizowane, oraz z wykorzystaniem analizy zasadniczych czynników kompozycyjnych samego osiedla, za które uznano układ kompozycyjny, wyposażenie i zieleni. Pierwszy sposób oceny z wykorzystaniem metody krzywej wrażeń Wejcherta pozwolił uzyskać każdemu z osiedli wysoką, oscylującą w granicach 9, punktację w skali 1–10. Drugie badanie, oparte na analizie 3 czynników zestawionych tabelarycznie w tzw. macrycy wartości, w której 12 podkategoriom (takim, jak układ kompozycyjny, obiekty małej architektury, dobór gatunkowy roślin itd.) przyznano wartość niską, średnią i wysoką, umożliwiło uszeregowanie obiektów pod względem atrakcyjności. Atrakcyjność okazała się odwrotnie proporcjonalna do czasu powstania (im młodszy obiekt, tym większa atrakcyjność).

Wyniki oceny Autorki zostały następnie zwerfikowane z badaniem z udziałem 68 studentów kierunków: ogrodnictwo i architektura krajobrazu. Badanie oparto na metodzie SBE, a studentom wyświetlono kilkanaście zdjęć każdego z osiedli i poproszono ich o punktową ocenę (w skali 0–9) wyświetlonych obrazów. Ogólne oceny studentów pokryły się z ocenami Autorki (ten sam układ pod względem atrakcyjności), jednakże były one wyraźnie niższe (najlepiej ocenione osiedle uzyskało średnią 5,73, podczas gdy w badaniu krzywej wrażeń osiedle otrzymało 10 punktów, a w analizie układu kompozycyjnego, wyposażenia i zieleni zawartej w matrycy wartości – 11 wysokich wartości na 12 możliwych).

Otrzymane wyniki wskazują na istnienie pewnej zależności, związanej ze zmieniającymi się w czasie trendami w projektowaniu i zagospodarowaniu osiedli mieszkaniowych. Niedawno powstałe osiedla posiadają odmienne niż starsze proporcje pomiędzy strefami zabudowaną, wolną i do zagospodarowania (zieleni, wyposażenie, woda), w której coraz większy jest udział

obiektów nadających osiedlu unikalny charakter (np. rzeźby znanego duńskiego artysty w osiedlu Tuborg Nord). Dodatkowo, zaobserwować można wyraźną tendencję do uczynienia z charakteru otaczającego krajobrazu dominanty projektowej dla całego terenu osiedla.

Biorąc pod uwagę różnicę w ocenach Autorki artykułu i ocenach studentów wystawianych badanym osiedlom, nie sposób pominąć możliwości wpływu ogólnej atmosfery miejsca, nieświadomie rejestrowanych dźwięków, zapachów itp. na sposób wartościowania i ocenę analizowanych obiektów i ich elementów składowych.

MS. received March 2008

Author's address:
Katedra Architektury Krajobrazu SGGW
02-776 Warszawa, ul. Nowoursynowska 159
Poland
magdalena_blaszczyk@sggw.pl