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# CONTEMPORARY FACADES OF MULTISTOREY RESIDENTIAL BUILDINGS IN KIEV: VIDEOECOLOGICAL ASPECT

***Nataliia Kozlova***[1], Kiev National University of Construction and Architecture, Kiev, Ukraine

**The article is devoted to one of the actual problems concerning the current state of the facades on apartment buildings in residential districts in Kiev - videoecology. The main purpose of the article is to determine the degree of visual aggressiveness of multistorey residential buildings in Kiev. It also investigates the problem of finding the optimal criteria for creating an ecologically healthy and friendly inhabited environment in the capital city of Ukraine. The modern visual environment in the capital is contaminated, not only because of the increasing numbers of promotional billboards, but also because of the contemporary architecture of high-rise buildings such as office buildings, apartment buildings. Their composition is usually based on a simple description of a rhythm. There are also repetitions of the end parts of buildings in "lowercase" buildings, which are high-rise buildings that alternate with nine or identical apartment groups. It creates a sense of oppressive monotony and leads to psychological and visual fatigue, especially when these repetitions are the only pattern the eye perceives. In the article a theoretical block of ecological-aesthetic criteria is defined, which must be met by the modern architecture facades of multistorey residential houses in Kiev.**

***Key words***: **multistorey residential building (MRB), facade, videoecology, ecological beauty, ecology-aesthetic criteria.**

## INTRODUCTION

The main problems in large modern Ukrainian cities, which create discomfort among people and encourage them to improve the ecological and aesthetic qualities of the architectural environment are: 1) ecological and related to urban development (destruction of the natural framework, the absence of territorial reserves for landscape construction, functional and transport overload in the historical center of the city); 2) artistic and aesthetic (lack of artistic and aesthetic expressiveness, visual chaos of the urban environment) (Figure 1); 3) social (the necessity for the functional adaptation of architectural sites, the lack of modern landscapes and recreational areas for daily short and long rest, minimal educational influence of the landscape architecture on children and youth); 4) economic (low economic efficiency) (Tsigichko, 2007).

A person grows among different forms (there are no identical leaves, trees, landscapes, etc.) and among curved spatial systems (there are no identical planes and angles). So, a person instinctively feels environmental beauty (such as richness of natural landscapes, color and its variety, suitable to the sensory environment) (Filin, 2009; Day, 2004: 9-31; Pallasmaa, 2012; Holl 2006). Meanwhile, some environmental parameters are unusual for the residents of modern buildings, as they have conventional ideas about beauty and harmony that do not correspond to the historically compiled images of a beautiful home or town (Zaero-Polo, 2011: 121). The architectural parameters of ecological housing and cities (Rodney, 2002; Tetior, 2006, 2008) are very important for big cities, megapolises and urban areas, Kiev being an example. An ecologically beneficial visual environment for urban housing is important for life (Ristić, 2013; Rodney, 2002; Yudelson, 2007; Đorđević and Vujić, 2010), especially for the residents of high-rise buildings (Binder, 2002; Havik, 2006; Bhatt, 2013). In these kinds of buildings people feel that they are further away from nature, not only physically but also spiritually and visually.

The composition of multistorey residential buildings is usually based on a simple description of a rhythm (Binder, 2002). There are also repetitions of the end parts of buildings in "lowercase" buildings, which are high-rise buildings that alternate with nine or identical apartment groups. This creates a sense of oppressive monotony and leads to psychological and visual fatigue (Wilkins, 1995: 109-115; Filin, 1997, 2007, 2009), especially, when these

[1] 31, Povitroflotsky Avenue, Kyiv-037, 03680 Ukraine
kozlova.nataliya@gmail.com

*Figure 1. Buildings in the residential district of Poznyaky on the Dnieper River. The number of floors is 20-30 (Source: author, 2008)*

repetitions are the only pattern which the eye perceives in urban developments (Ikonnikov, 1971: 30). Filin notes that the "eye does not like" straight lines and right angles. Unfortunately, the present architecture uses only these elements. As a result we have nothing more than a visual cacophony. Most present-day cities lack such comfort, as their visual environment does not correspond to the visual norms, with great planes, monotonous colors and static objects all of which have an influence on a person, on his visual organ, in particular. The special set of visual elements and specific color spectrum in cities creates a visual environment quite different from that in which humans were formed as a biological species. The problem becomes aggravated year by year as cities are expanding and tearing people away from nature. Besides, the materials used in constructions resemble natural ones less and less. Most of our cities have reached the limit of plainness. The problem of the visual environment has become extremely important. The scientific trend based on the role of the visual environment in human life is called "videoecology" (Filin, 1997, 2009).

**VIDEOECOLOGY**

The main basis of videoecology is the automation of saccades (Figure 2). "An eye is the most dynamic sense organ never resting at a fix point. It is easy to be sure if one looks into an interlocutor's eyes. There are two basic types of eye movements: slow and fast. In scientific literature fast movements are called saccades (originated from the French term which means "a sail flap"). Saccades of both the right and left eyes are absolutely synchronous and of the same amplitude. They are oriented in the same direction. There are many saccades – approximately two or more in a second which means that the direction of the look changes every half second. So the eye is constantly scanning the environment" (Filin, 2009).

According to Filin's theory the city divided into three types of visual environment. There are: "*homogeneous visual environment* - a visual environment where visual elements are absent or their number is sharply limited is called homogeneous. Such an environment can appear for different reasons. In persons with weak vision the number of visible objects in the environment is decreased because of a reduction in the descriptive ability of the eyes. In the present day humans often face a homogeneous visual environment in cities, at home, at their places of work and in transport; *aggressive visual environment* - a visual field can be considered aggressive if it consists of a great number of similar evenly disposed visual elements. Modern architecture in most cases creates such visible aggressive fields in cities"; and "*a comfortable visual environment* exists only in old towns (examples of classical architecture), which were created using the laws of proportions" (Filin, 1997: 121). The design of a visually enabling environment in Kiev should be directed to creating a comfortable, healthy, beautiful environment for its residents.

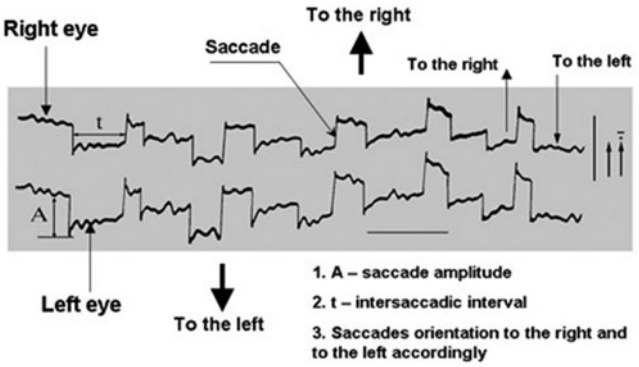



*Figure 2. The recording of eye components (12, 32)*

If we turn to the appearance and image of the facades of buildings and structures of most eras and styles, we should stress that the number of different elements and details that are related to the composition exceed the capabilities of human perception. However, in terms of videoecology details are the major aesthetic and functional basis for a facade.

Filin proposed the requirements for forming a comfortable visual environment, saying that people must use two indicators:

- the size of the clear vision of the eye retina;
- the saccades of the eye amplitude (elements with a maximum distance of 5 angular degrees).

It is also necessary to consider the optimal performance of visible fields:

- people clearly recognize an object that fits into 2 angular degrees;
- the optimal distance between objects is $2.5^0$;
- the number of identical objects is $5 \pm 2$ (Miller's Number);
- objects must have completely different configuration, either horizontally or vertically;
- the central area of vision is $1.5^0$ (the interval between two adjacent objects is $0.5^0$).

We should remember that the greatest harm is caused by aggressive dynamic fields. In addition, the exclusion of moving stimuli from the visible environment leads to the necrosis of brain cells responsible for movement.

## THE VISIBLE ENVIRONMENT HAS THE GREATEST INFLUENCE ON THE HUMAN CONDITION

In connection with the consolidation of housing estates in Kiev, there is a problem not only with the image of the whole city, but also the appearance of a new many-storied housing estate (Kozlova, 2008, 2009a, 2009b). Today's residents of Kiev and other major cities can generally see the fall flat surface facades, squares, streets and the right angles that intersect of these surfaces (Figures 1, 3-5). In nature, there are many different combinations of right angles. The main color of urban buildings and structures is monotonous grey. It is the color of concrete and asphalt. However in nature, there are a wide variety of colors enjoyed by the human eye, such as green and other colors, especially in regions with warm climates. In cities many details on the facades of buildings are repeated (Figures 1, 3). This is related to the manufacturing of standard industrial units (Zaero-Polo, 2011: 127): windows, panels, balconies etc. From the standpoint of architecture and construction ecology, city residential buildings should meet the main requirements of ecological balance, and the resemblance of natural and sensory ecological compatibility. It should be noted that greening is one of the parameters of buildings, and it may disrupt other equally important parameters of visual ecology (Tetior, 2008: 122).It is very important is to keep the city's flora and fauna in good condition. One of the most important factors is using natural technologies (Tetior, 2006: 125), which include diverse of environmental resource-saving solutions.

The architectural solution for the facades in Kiev since the early 1990s has been one of stylistic pluralism. Researchers have different interpretations of the stylistic direction of the outer shell of modern living:

1. interpretation of various architectural styles and the search for a modern architectural image;
2. the tendency of forming a Ukrainian national style, stylization, imitation, borrowing, innovation;
3. traditionalism, regionalism, westernization, modern avant-garde flows.

In the examples of modern MRB in Kiev, two major stylistic trends are evident: the house-context (mainly located in the city center) and the house reminiscence of modern Western styles, which can be in the form of home-styling. It has become the tendency nowadays to borrow "European" architectural style.

a

b

*Figure 3. a) A typical facade of a multistorey residential building on the new alluvial sand areas. The residential district of Kharkovskiy in Kiev. The facade consists of monotonous windows and bay windows which are repetitive in form, it creates an aggressive visual environment in the city (Source: author, 2008); b) A fragment of the multi-storey residential complex of South Gates, in the residential district of Osokorky in Kiev. The usage of the monolithic skeleton frame for buildings made it possible to set new high-rise landmarks in the city. However, the monotonous facades have remained aesthetically poor (Source: author, 2013).*

*Figure 4. Buildings in the residential district of Teremky-1 in the 1980s. The facades reveal the essence of constructive precast housing. The monotonous grey colour and empty sides of the buildings are repeated, and as a result appear as more aggressive and homogeneous visual fields in the city (Source: author, 2014)*

An increase in the size of houses and a significant increase the number of storeys (while maintaining their former general form) are in conflict with the necessary conditions for normal human life, since they negatively affect people's psyche and visual apparatus. Yards which are surrounded by huge walls of 16-27-storey buildings are not perceived as recreational spaces. A combination of architecture and the peculiarities of human perception is a kind of source of aesthetic pleasure. This is a source of internal and spiritual health for the urban residents. That is why today there is an urgent need for the clarification of the optimal ecology-aesthetic criteria.

## METHODS

In order to determine the available videoecological and aesthetic criteria for forming contemporary facades of multistorey residential buildings (MRB) in Kiev city, the existing ecological criteria and parameters of ecological beauty were analyzed from the standpoint of: the science of videoecology (Filin, 1997, 2007, 2009; Wilkins, 1995), architectural ecology (Tetior, 2006, 2008; Fedosova, 2008), aesthetic architecture (Bhatt, 2013; Ikonnikov, 1971; Kozlova, 2009b; Stevanović, 2011, 2013), and the videoecology of the architectural environment (Chechelnickii and Fomenko, 2012).

Methods of full-scale analysis were used, as well as photo fixation of the existing multistorey residential environment from 2007-2016 in Kiev. A comparative analysis was made of the theoretical component of the videoecology science in confirming the hypothesis of the videoecology of multistorey residential buildings. The analysis shows (Kozlova, 2009a, 2009b) that all sciences essentially contemplate one of the same parameters and criteria. In our view, the parameters and criteria must be met by an ecologically beautiful architectural environment and thus by an ecologically justified facade of the building. The theoretical data collected include the following features of the ecological beauty of the buildings:

- meaningfulness (the property of buildings as architectural objects, inseparable unity meets the material and spiritual needs of mankind (Day, 2004; Pallasmaa, 2012);
- the presence of architectural style (strong association with the main properties of the architectural form of multistorey residential buildings);
- integrality (unity of the "internal" and "external" content of the building, indissolubility of the MRB shell and space that it creates);
- organic properties (the harmonious combination of the natural landscape and the "artificial", incorporating the building into the landscape, taking into an account the "spirit of the place" (Day, 2004));
- scale properties (a person is the measure of all things. Provides compliance with buildings and their elements by human size (Bhatt, 2013));
- ensemble properties (the greatest spatial organization of forms in which artistic unity, meaningfulness and integrality cover a group of buildings on individual streets, micro neighborhood and districts according to the city);
- proportionality (availability in composite structure patterns of MRB in construction, according to the rules of "golden section", and submission of identical elements according to the Fibonacci series (Bhatt, 2013));
- ecological friendliness (greening elements in the structure of the city and its buildings: planted design houses using permaculture, integration of buildings and environment) (Tetior, 2006, 2008; Rodney, 2002; Ristić *et al*., 2013; Elgizawy, 2016);
- visual ecological friendliness (design of the city which visually enables the environment details. Consideration: visual corridors to local points and interesting zones of the city (Ristić *et al*., 2013), perception of the planning area and other parts of the MRB) (Tetior, 2006, 2008; Đorđević *et al*., 2010; Filin, 2006, 2007);
- self-descriptiveness (presence of the vertical and

horizontal zoning of a building and identifying it on the facade area, roof shape and silhouette, shape and silhouette of entrances and staircases, lift nodes in the house, make the corners of the building. Using light artistic murals, art therapy, vertical and horizontal planting (Ikonnikov, 1971; Filin, 1995; Tetior, 2006, 2008; Fedosova, 2008; Ristić *et al*., 2013; Iosifidis, 2009; Chechelnickii and Fomenko 2012));

- adaptability (the system of multistorey residential building should be flexible, and open to further development; keeping the overall harmony of forms according to new needs; ability to change the shape and function of the building) (Rodney, 2002; Binder, 2002; Yudelson, 2007; Charleson, 2014).

Trend formation analysis of modern multistorey residential buildings and the features of ecological beauty inherent in modern apartment buildings in Kiev (Kozlova, 2008, 2009a, 2009b) and elsewhere makes it possible to distinguish the following parameters of ecologically beautiful MRBs:

- harmony with the landscape (harmonic dualism with the landscape, inscribed into the landscape, and into the urban landscape);
- landscaping of neighboring territories (environmentally friendly and diverse planting areas outside the landscape, to solve small forms of outdoor areas near MRB);
- "green corridors" (all kinds of "green corridors", including over and under roads);
- horizontal/vertical greening (greening roofs, terraces, buffer spaces, planting green walls with special panels (Nadia *et al*., 2013; Cameron *et al*., 2015; Elgizawy, 2016), green graffiti);
- permaculture (availability of areas and buffer zones which are designated for food cultivation);
- buffer spaces in the structure of multistorey residential buildings (orangeries, public areas for socializing, green gardens in the structure of buildings, social areas for residents encouraging of architectural tools);
- the visible material of structures (ecologically natural materials - ceramics, brick, wood, glass. a minimal amount of materials with polymers (Charleson, 2014; Nagy *et al*., 2016));
- quantity of house floors (compliance with human size and landscape components (not higher than trees), construction of green areas in the buffer zones of MRBs, the advantage of low-rise and medium-storey building with single inserts and high-rise reference points);
- variety of architectural forms and styles (harmonious diversity of architectural shapes and styles. Taking into account the national traditions and culture of the local people);
- architectural details (availability of mirrored blinds on the facade of MRBs, and mirrors to improve the illumination, light and shade pattern, architectural lighting (Cuttle, 2003) and wall supergraphics (Santen, 2006), presence of advertising and graphic guidelines);
- form of the windows and doorways, entrances into the buildings, roof shapes and silhouettes (availability of spatial structures of flat, variety horizontal and vertical forms of windows, roof height and its shape, derogations from "Red line", floor projection and hanging, open spaces in the MRB structure, division of the facade and its articulation, glazing pattern, stained glass windows, clearance of angles, solution of entrances into building, entrances into garages, resolving the 1st and 3rd vertical tiers of a home, the availability of composition accents);
- size of spatial elements in the house (ecologically justified dimensions of the height and area of the apartments in the MRB, presence of spacious rooms adequate for activities within the human spiritual and emotional sphere, proportionality of spatial elements and building rights);
- roofs and walls with visible devices (electricity, heating, ventilation). Natural ventilation to improve the air (Charleson, 2014; Nagy *et al*., 2016);
- color of the building (ecologically appropriate solution for colorful MRBs and their elements, considering the coloristic basin of the district and city, the presence of art-therapy (Santen 2006) on the facades of buildings, free space on the walls for street art and murals (Figure 9a));
- finishing of the house (environmentally appropriate finishing materials which do not have a negative physiological and visual load for person);

The Fedosova method was used to make a graphic-analytical analysis of the vertical visual fields in the city (Figure 5). The viewing angles were calculated for 31 multistorey residential buildings in Kiev, as well as the coefficients of aggressiveness for these objects: 1) for horizontal planes a = $\arccos((C_1^2 + C_2^2 - L_2/ 2*C_1*C_2)$, and vertical viewing angles 2) $\beta = \arcos(d^2+L^2-H*d/\wedge((d^2+L^2)*((H-d)^2+L^2)$ the number of grooves for the stakeout net that applies to the façade 3) $N_g = a/\varphi$, $N_v=\beta/\varphi$, the coefficient of aggressiveness of visual environment 4) $K_{agr}=H_n/\Sigma H$. The results for 5 multistorey residential objects can be seen in Table 1.

The method of sociological survey (Figures 7, 8) was used to determine the significance of the aesthetic and ecological components in a residential urban environment. Figure 7 shows the assessment of visible elements in the whole of Kiev by the group of people "over 30 years of age". Figure 8 shows the emotional assessment of the respondents at the age of 30 years old and above who live in residential buildings in the series of typical BPS projects (Figure 9b).

**RESULTS**

From the position of the videoecology science, we can classify the modern facades of MRB according to the following ecology-aesthetic criteria of formation:

- proportion (golden section method, Le Corbusier's Fibonacci series, "Modulor");
- self-descriptiveness (decorative elements and small architectural forms, the form of windows and balconies, the silhouette of the house, the color pattern of the city, the architectural bionics);
- environmental friendliness (greening of the city - availability of vertical/horizontal landscaping, "green corridors");

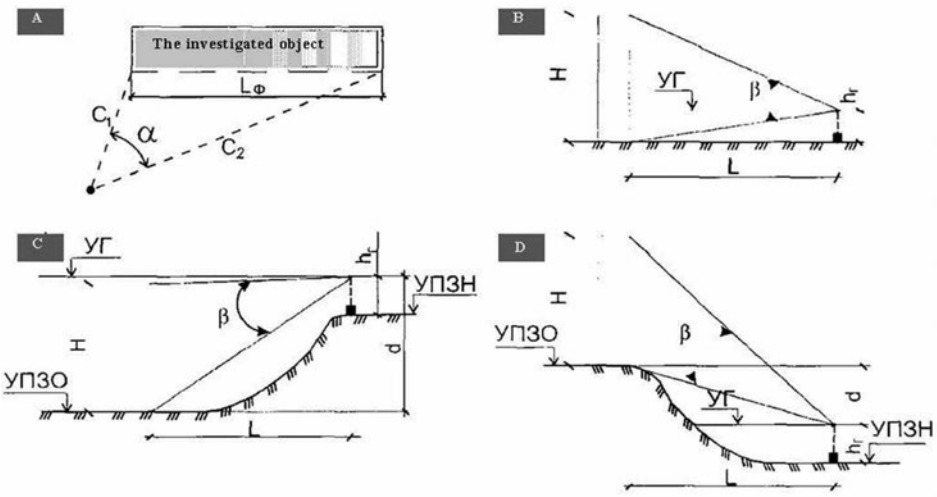



*Figure 5. Graph-analytical method of determination of a comfortable visual environment in the city.*
*Settlement schemes for determining horizontal (a) and vertical (b, c, d) viewing angles in assessing the aggressiveness of visible fields of vertical surfaces.*
*A - The investigated object; УГ- eye level of the observer; УПЗО and УПСЗН - ground levels in the area where the object and the observer are located; α, β – horizontal and vertical viewing angles; C1, C2 – distance from viewer to object*
*(Source: Fedosova, 2008)*

- optimal number of storeys (low-rise building).

Besides the videoecological criteria, the multistorey residential buildings in Kiev must comply with the canonical methods of constructing artistic images in architectural composition: subordination, balance (symmetry, dissymmetry, asymmetry), reiteration (rhythm, meter), proportion, scale, comparability (nuance, contrast, identity), tectonics, synthesis of the arts. The parameters of ecological beauty are very different. They constantly change while architects and builders think about ecologically friendly architecture, and also use more modern technologies.

During the graphic-analytical analysis of vertical visual fields (Figure 6), 31 multistorey residential buildings objects from different areas of Kiev were investigated. The coefficients of aggressiveness in the urban living environment range from 0.7 to 1, which indicates the poor condition of the architecture of the multistorey apartment houses in the capital of Ukraine. Initial data for an assessment and the values of the coefficients of aggressiveness of five vertical surfaces of objects are shown in Table 1. Furthermore, the most aggressive coefficients refer to the residential buildings built in the 2000s.

A sociological survey of Kiev residents (over 30 years old who were born and live in the city) showed that the majority of respondents give preference to the architecture of the buildings (88.9%) (Figure 7) and greening local area (70.8%) (Figure 8). In addition, the majority of the houses which were constructed in the 70s cause boredom (23.9%) or the absence of any emotions. According to the survey, the most beautiful street in the city is St. Andrew's descent. According to the survey, the most ugly streets in the city are located in residential districts such as Osokorky, Poznyaky and Kharkiv array.

## CONCLUSION

The organization of the environment in which we live, and especially the environment of permanent residence, is important for the consolidation and maintenance of people's health and spiritual harmony. What is being built now will be the material and technical base of the 21st century and we must not allow decisions which will be useless after a few decades.

*Table 1. Determining the coefficients of aggressiveness of vertical visual fields in Kiev MRBs*

| specific point № | Output data | | | | | | Calculated data | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $C_1$, м | $C_2$, м | $L_ф$, м | L, м | H, м | d, м | $\alpha^0$ | $N_г$ | $B^o$ | $N_в$ | $H_п$ | $\Sigma_н$ | $К_{агр.}$ |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Object №1. 13 Holosiyivska str. | | | | | | | | | | | | | |
| 1 | 100 | 65 | 50 | 79 | 70 | 1.57 | 25.5 | **13** | 12.5 | **7** | 91 | 91 | **1** |
| $1_2$ | 65 | 174 | 94 | 130 | 70 | 1.57 | 41.3 | **20** | 25.5 | **13** | 260 | 260 | **1** |
| Object №2. 1 Teremkivska str. | | | | | | | | | | | | | |
| | 27 | 31 | 6 | 29 | 52.2 | 1.57 | 8.86 | **5** | 45 | **23** | 85 | 115 | **0.73** |
| Object №3. 8, 10 Akademika Zabolotnogo str. | | | | | | | | | | | | | |
| 1 | 250 | 249 | 57 | 248 | 46 | -1.93 | 13 | **6** | 11 | **5** | 29 | 30 | **0.96** |
| Object №4. 27 Akademika Glushkova str. | | | | | | | | | | | | | |
| 1 | 100 | 59 | 61 | 76 | 40 | 1.57 | 34 | **17** | 28 | **14** | 238 | 238 | **1** |
| Object №5. 38 Berezniakivska str. (facade fragment) | | | | | | | | | | | | | |
| 1 | 56 | 33 | 33 | 43 | 26.5 | 1.57 | 35.5 | **17** | 35.7 | **17** | 271 | 289 | **0.93** |

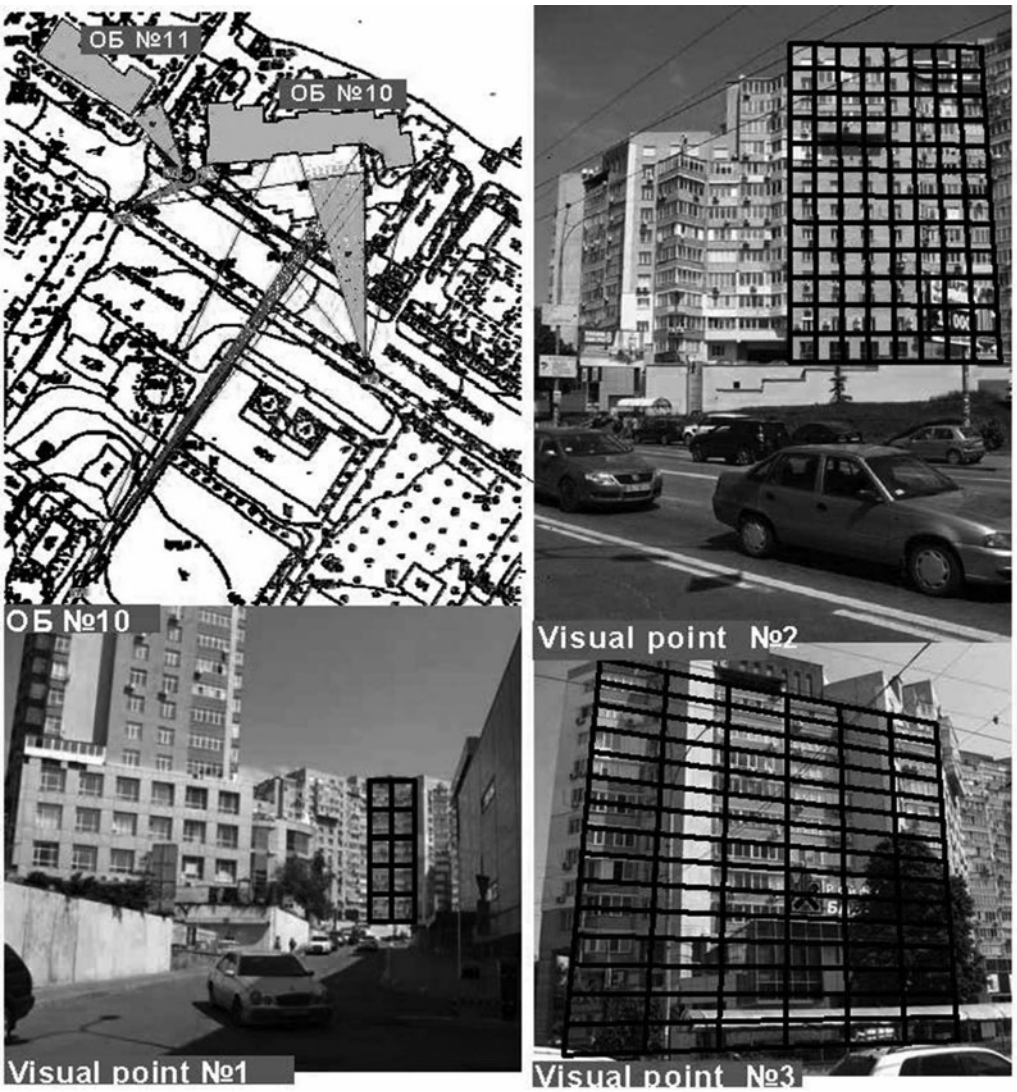



*Figure 6. Graphic-analytical analysis of a multistorey apartment house, Lobanovskogo avenue. Schemes to determine the coefficient of aggressiveness. The grid was overlaid on the photo image using the program CoralDRAW 4. The point of perception №1, 2, 3 (Source: author, 2016)*

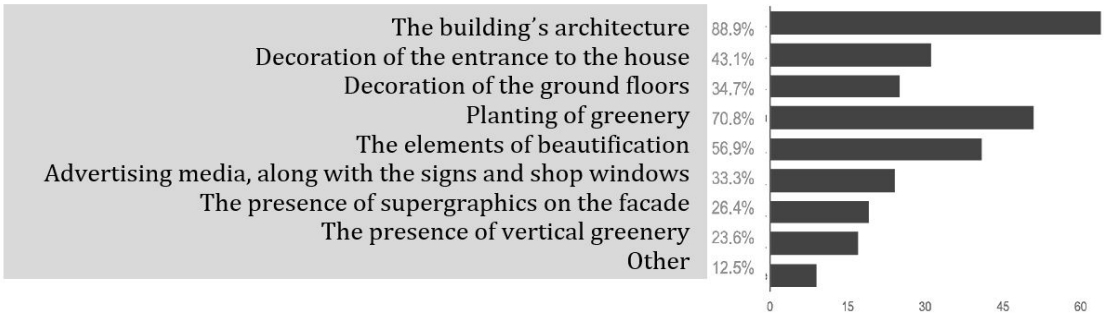



*Figure 7. Assessment of the visual environment in Kiev by its residents (Source: author, 2016).*

Therefore, the main requirements for environmentally beautiful buildings are: the architectural-spatial structure, their forms, and the finishing material, which must be beautiful and naturally similar. Buildings must harmoniously fit into the landscape without breaching its main components (this requirement is not met for almost all of the densely built center of Kiev). All city objects and districts should be in ecological balance with the natural environment. The natural area around the city must be almost completely environmentally sound, and only such an area or region can meet the environmental concept of beauty.

According to the requirements of videoecology, the architectural environment should be informative and interesting to the eye level of the human silhouette, from the overall dimensional arrangement to the level of details and decoration of balconies, loggias, bay windows and window openings. Thus, taking into account the features of an ecologically beautiful house and the factors which affect the

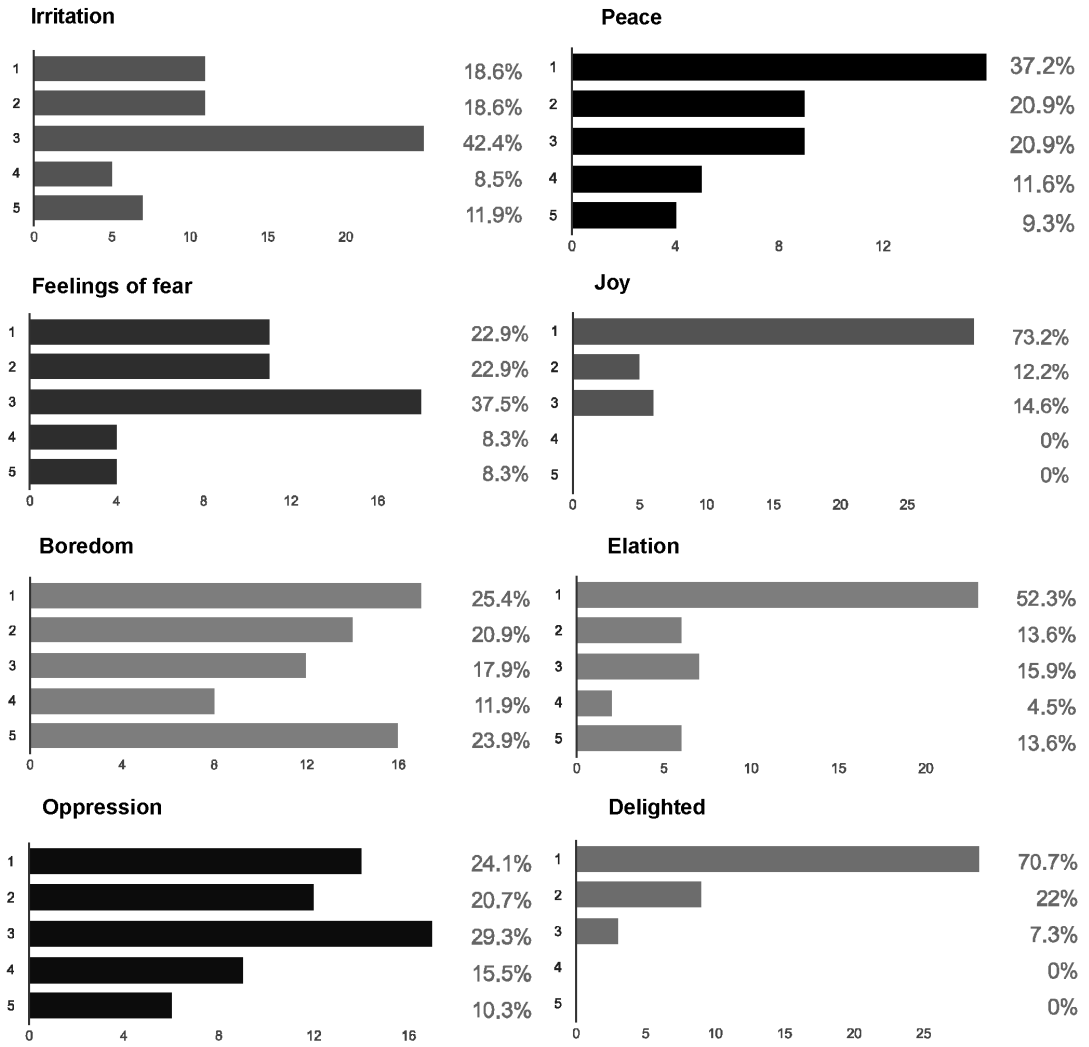


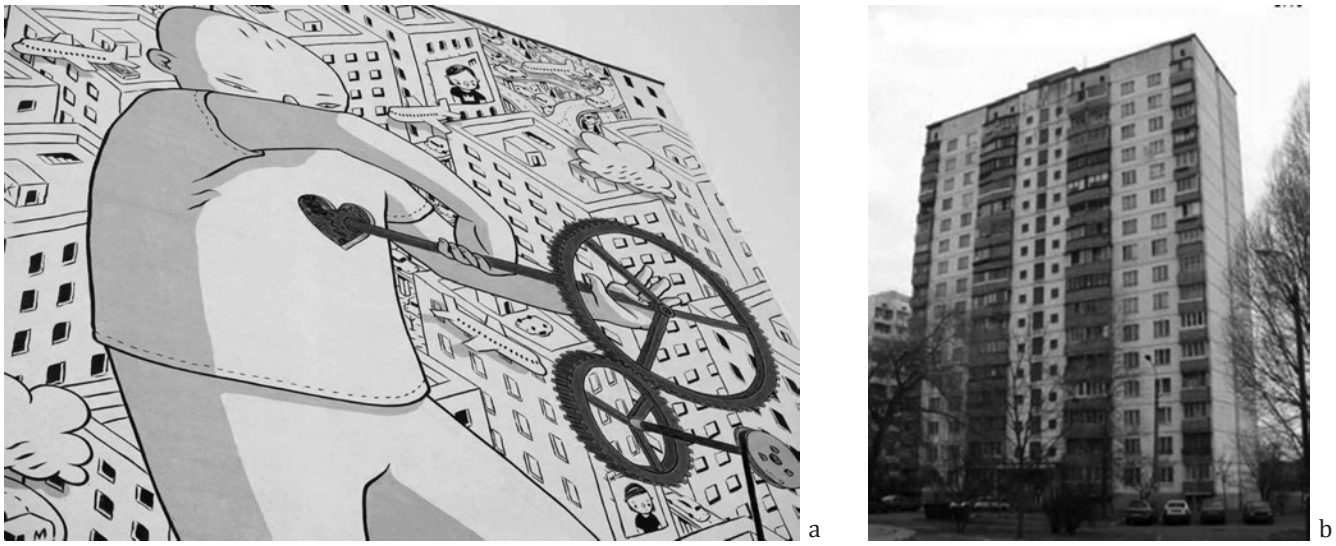

*Figure 8. Assessment of the visual environment in Kiev by its residents (Source: author, 2016)*

level of visual comfort of MRBs, we can define the following ecology-aesthetic criteria for the modern facades of Kiev's MRBs:

- ensemble properties (morphology of multistoried urban houses should include features: meaningfulness, integrality, organic properties, proportionality, scale properties);
- polyfunctionality (a residential structure should go to its metabolic development, be adaptable through the use of mixed architectural-planning schemes and mixed structural systems);
- descriptiveness (the facades of residential buildings should encourage visual interaction between human and spatial elements, it includes large, medium and low plastic elements, vertical/horizontal zoning, and layering in the third zone of the house facade);
- environmental friendliness (the field of the facade of the residential building must have the architectural qualities of videoecology).

Future research will make possible to identify the main front-spatial, architectural and planning methods of architectural formation of the MRB facades in Kiev. The graphic-analytical analysis of multistorey residential buildings in Kiev reveals that the majority of the city is occupied by aggressive and homogeneous field vertical facades. This indicates the impoverishment and loss of the face of Kiev as a historic town. The research showed that the residents of Kiev are not indifferent to its architecture, including the architecture of their houses. They are dissatisfied with the existence of monotonous and faceless architecture, and despite the difficult political and social situation and military operations in the East of the country, they are ready to do everything possible to improve their living environment, illustrated by the existence of a Mural Social Club 2016 (Figure 9a). Also, it is worth noting that the concept of ecologically beautiful residential buildings should be considered only in close connection with "the person (the consumer) – a house – the environment of the city". Only with such systematic approach to the investigation of aesthetic and ecological characteristics of the environment and object is it possible to get the most reliable results for actual design. The complex results of the graph-analytic analysis and sociological survey will help in future research to develop a Kiev city videoecological zoning map.

Consequently, modern multistorey residential buildings and their facades (facade fields) must have the ecological



a b

*Figure 9. a) The new mural at the end of the panel residential house 8, Verbitskogo str., in Kiev. The author is Italian artist Millo. The mural was created as part of a festival by Mural Social Club 2016 (Source: author, 2016); b) Typical residential building from the BPS project series (Source: author, 2015).*

and aesthetic criteria of ensemble properties, such as polyfunctionality, informativity and environmental friendliness, and they must possess of own-, twice- or more parameters of ecological beauty. Moreover, optimally it should reveal tectonics of multi-story residential building and, at the same time, preserve visual connections between the urban and natural environment.

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