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*Are assessment and emotions connected  
with a building conditioned by its external appearance?  
Attitudes towards formally differentiated architectural objects*

*Introduction*

During the process of designing physical environments, buildings or housing estates, the specialists, who are responsible for the shape of the surrounding space, often try to design objects which are potentially perceived in a positive way – preferred, friendly and satisfying needs. Architectural or industrial design and to some extent also spatial planning belong to particularly difficult domains because, among other things, authors should skilfully combine artistry with meeting human needs, ideas, expectations and images.

Designing is in fact a continuous process of creation and meeting the needs of people (investors, future users, ‘not engaged’ observers, etc.) or in brief – designing is a process of creation for people. When creating something we often ask ourselves questions such as ‘what emotions will my work arouse?’; ‘what will the users think about the environment designed by me?’; ‘how will the people for whom I design feel in this environment?’; ‘will my recipients in specific circumstances choose (like, prefer) this object and not another one?’ We can constantly ‘keep in touch’ with our recipients and their needs (real ones or assumed by us) thanks to this self-control. By asking questions of this type we are in the essence of the designing process, nevertheless, we still create certain hypotheses with regard to our recipients. But it is good. Such activities often give us time for auto-reflection, therefore, we make things better, we correct them or even change designs so that – as it seems to us – they could be ‘better’, i.e. perceived in a more positive way.

However, we do not usually carry out systematic examinations or measurements which would make it possible for our work to be seen with its potential recipients’

eyes in a relatively objective way, even though it is possible and quite easy nowadays. As a rule, our intuition must be sufficient, although we often base our opinions on various types of colloquial concepts of perception and human needs. Designers who are particularly skilful, ones who are penetrating observers of the reality, sensitive to various signals, endowed with the ability to see matters ‘from above’ and operate on high levels of abstraction, frequently build objects which are quite widely accepted and highly assessed.

As a matter of fact, if we aspire to satisfy human expectations connected with the designing process efficiently, we cannot exclusively rely on our personal insights and intuition. It must be noticed that the process of carrying out research, developing theories and putting forward interesting hypotheses with regard to human experiences connected with various physical environments has been taking place for many years. Such problems are dealt with by environmental psychology – among other sciences – a domain of psychology which was crystallised in the 1970s to tackle with complicated man’s relations with the surroundings (architectural as well). More information about the beginnings of environmental psychology can be found in works by Stokols [18], while the present status of this domain and its contemporary challenges are discussed in more detail by, for example, Gifford [10], [11]. Moreover, numerous researchers in psychology have been working on conditions of perception as well as the course of this process for many years. Reference to the results of this research may significantly facilitate and order thinking about designing as a process of meeting the needs of recipients. These research results shall be outlined in this article.

One of the interesting perception problems that we have to deal with on a daily basis (thinking about human experiences

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with various objects) is a relation of an external appearance of an object to its assessment, acceptance and preference. The appearance of an object is one of the basic features of each architectural object and it also seems to be one of the key factors conditioning its assessment. This results from our personal experience and everyday observation of human choices and opinions as well as from various scientific elaborations. For instance, according to the CBOS report 'Poles About Architecture' [8], 98% of Poles agree with the opinion that 'nice buildings and surroundings make people feel better'<sup>1</sup>. According to the report, almost everyone (94%) thinks that it is important what kind of buildings and what surroundings we live in. Additionally, also 94% of Poles think that the building's external appearance is important or very important in the situation of choosing a place of residence. Therefore, the appearance of an object is probably an extremely significant feature which conditions the way in which this object is perceived. Anyway, this is a frequently discussed hypothesis [5]; a particularly interesting and comprehensive discussion of this problem can be found in the works by Crilly, Moultrie and Clarkson [9].

The basic features of appearance of every object, including architectural objects are colour, shape and texture. Additional and equally important characteristics which differentiate architectural objects can be, for example, cubature, structure differentiation level, occurrence of symmetry and rhythms as well as ornamentation. It is relatively possible to objectively determine and communicate these formal features of an object. Such 'raw' characteristics of a given object that coexist with one another in a particular way make the object relatively unique, distinct from others and form a general quality of a higher level, which exactly constitutes the appearance. Knowing which elements (variables) contribute to this extremely important general perceptive feature of an object's, we can attempt to examine the relation of an architectural object's appearance to its perception in a structuralised and methodical way. This means that we are able to find out in what way the objects consisting of elements of particular features of appearance (e.g. shape, colour) are or will be perceived by particular people in certain circumstances.

In the process of mutual communication we often declare our individual way of perceiving an object. In our

<sup>1</sup> The question was constructed in the following way: 'Please state if you agree or not with the following statements (opinions)'; the subjects evaluated the particular statements on a four-rate scale from 'decisively yes' to 'decisively not'. The subjects had equal opportunities to express their opinions on the proposed statements.

conversations, we tend to say that this building is 'nice', 'ugly', 'uninteresting', 'original', etc. Such expressions can be treated as partial and fragmentary – although at the same time very general – declarations of the observer's attitude elements towards an object, i.e. opinions we really need to take into consideration. If we wish to have a true insight into multidimensional relations of an observer with an object, relatively precisely determine potential emotions that a designed object shall arouse and find out whether it will be perceived as attractive or it will be preferred in particular circumstances (for example, as a place of residence or a shopping arcade), it is not enough to take into account such general statements as the aforementioned 'the building is nice' or 'I don't like it'. What we need here is a deeper analysis of a potential recipient's (observer's) attitude taking into consideration emotional, cognitive or behavioural aspects (connected with a potential behaviour towards an object). These problems shall be discussed in more detail later on in this article.

If in our designing practice we assume the importance of meeting the recipients' expectations – as we outlined before – we would certainly like to take into account reliable information concerning the most interesting issue – expectations and opinions of recipients as regards the appearance of the object that we are designing. **What would be the reception and assessment of this object** (namely, what kind of attitudes would observers have towards this object)? Can such features as colour, shape and object differentiation have connections with positive or negative perception of an object? If so, which of these features are the most significant and what is the strength and nature of these connections? Is mere appearance of the utmost importance for the perception of the building? Are there any configurations of the object's formal features which the recipients would assess positively or negatively in a statistically significant way? Is it possible that a building which has particular features can be accepted/preferred and at the same time be unacceptable depending on a specific situation?

The aforementioned questions were posed in the original research project entitled 'Conditions of attitudes towards architectural objects', which was carried out in the years 2007–2010. In this article the following issues shall be tackled: (1) attitudes of perception, (2) the notion of attitudes towards objects, and (3) research results on attitudes towards some particular architectural objects.

As a conclusion of this article, we shall present an attempt at answering the following question: **do features of appearance (shape, colour and structural diversity) have a major significance in determining the attitude towards a building?**

### *How do we perceive architectural objects?*

There are numerous factors influencing our opinion on a particular object, i.e. whether we consider a given object as nice, ugly, we prefer it or not. The process of perceiving, also in the case of architecture, is very complex. In this article, we are not going into a detailed

analysis of various concepts of perception functioning in psychology; a reader interested in these aspects can refer to, for example, Maruszewski [14]. However, we ought to mention the most significant conditions of perception and explain the nature of this process in a nutshell.

Contemporary cognitive psychologists tend to agree that perception is not merely a sum (or a simple combination) of sensory impressions. Human observations do not exclusively result from physical external stimulation, i.e. observations such as Dom Handlowy 'Solpol' in Wrocław, 'Galeria Centrum' (shopping arcades), Basilica 'Licheń' are not only literal, technical reflections of physical properties of these objects. Perception involves individually built cognitive representations – mental equivalents of real objects. It is full of additional information which is not directly observed in the stimuli, for example, in a building. What sort of information exactly? We don't know; this is what we are trying to get to know from people and it is one of the most important challenges for psychology today. What we do know is that each object in each of our minds is *something more* than an image produced by our brain through light waves comparable, for instance, with a photograph.

Certainly, the perceived reality has relatively objective properties but from the viewpoint of a psychologist, *what a particular man perceives* is more significant than anything else. The mental representation, i.e. an individually constructed and reflected fragment of the objective reality, is one of the key notions in cognitive psychology [16, p. 27]. Everybody 'carries' in their minds their own and unique representation of the world but every man still creates new representations of various situations in which he is and objects that he observes. We can see that the mind consists of 'numerous and mutually connected cognitive representations' [16, p. 27]. We manipulate these representations so that the perceived world makes sense and it can effectively function. The surrounding objects – sources of

stimuli, for example architectural ones, emanate the energy of optical waves. Each man *transforms this energy in an individual way*, the energy that carries some objective information for sensory receptors (wavelength, etc.). In this way, perception is created, namely: *an individual, unique representation of reality*, for example, architectural one. This is a relatively well documented hypothesis in psychology concerning the cognitive functioning of man [16].

Thus, perception is most probably a creative process which requires a certain kind of activity from man. It is conditioned by a kind of a stimuli and its objective properties, physical context in which the observer found the stimuli, subjective properties of the observer, culture and many other factors which shall be discussed later along with the discussion of attitudes. It is really difficult to describe this process itself – what it looks like and what its physical course is – it takes place in the mind though. However, we can observe the effects of the perception process, which can be the observer's declarations concerning an object, the observer's attitude to an object or actually observed behaviours connected with an object (e.g. approaching, walking away, purchase of a flat, architectural design acceptance, etc.).

Measurement of attitudes which are observable and enable us to make a direct comparison of perception effects is often used in such diagnoses which examine man's relations with the environment. In environmental psychology, research on attitudes, for instance, towards various sceneries or objects is often aimed at examining 'satisfaction with a particular place' which is always different or simply: evaluation of a particular environment [3], [4], [21].

### ***What is the essence of attitudes towards architectural objects?***

An attitude, i.e. the information we try to get from the subjects is always 'somebody's' [20, pp. 180–181] and can be defined as *a permanent assessment – positive or negative – of people, objects and ideas [...]. Attitudes constitute an assessment which means that they are positive or negative reactions to something [...]* [1, p. 313].

A certain kind of emanation of individual (differentiated) attitudes towards objects can be, for example, various persons' comments on a certain building. Krystian Biesiekierski, an architect, who is critical of Wrocław Dom Handlowy 'Solpol' (shopping mall) and actively opts for its demolition, says: [Solpol] *This is a glitter. The designer was certainly fascinated by the spirit of the époque but he forgot that architecture is supposed to serve generations for centuries* [6]; whereas Katarzyna Hawrylak-Berezowska, a city restorer, says: *I admit that I am not pleased with the idea of demolishing 'Solpol'. I think that the building is a symbol of its époque* [6]. Piotr Foczyński, Wrocław city architect and a 'Solpol' defender refers to the building as follows: *This is the first time that in Wrocław in the church neighbourhood and in the strong historical context a building has been erected which gets out of line* [12] and *This is one of the brav-*

*est and most interesting designs in after-war Wrocław. It shows that we are not afraid of new solutions* [19]. Zbigniew Maćków, an architect from Wrocław, who also opposes the demolition of Solpol, said for "Gazeta Wrocławska": *If it depended on me, I would rather try to renovate the building. Solpol is an interesting example of post-modernism* [19].

Małgorzata Omilanowska, an art historian, while discussing another object – Basilica in Licheń – says: *Hotels and exclusive residences lined with marble, glittering with gold and crystal chandeliers like from 'Dallas' or 'Denver' film series make Licheń a Catholic Las Vegas, although it can also be associated with the Romanian socialist realism architecture of late Ceaușescu* [13, p. 38] and she defines the whole thing as one of [...] *the most incredible works of mega kitsch in Europe* [13, p. 39].

Attitudes may refer not only to buildings, but also to objects of street furniture or widely understood organisation of space (e.g. public space). For instance, a discussion about the city dwarfs which in fact are already a tourist landmark of Wrocław has been recently initiated. In "Gazeta Wyborcza", professor Klaus Bachmann wrote

about the dwarfs: *An average dwarf is good, kitsch and financed by a big bank [...]* [2].

The aforementioned persons in their statements reveal individual attitudes towards particular objects, thus in an indirect way they try to communicate to the readers their cognitive representations of the surrounding reality. The attitude towards a stimulus is a specific measurable result of perception and an observable opinion on this stimulus. We are not able to physically 'see' particular mental representations of Solpol, Licheń or dwarf or the process that lead to their formation; we cannot 'make a film' with a narration that comes directly from each observer's mind. We only know what each person tells us about his/her opinions on particular objects, his/her emotions towards them and finally what actions he/she would consequently take.

This three-component (three-factor) description of an attitude consisting hypothetically of the following three aspects: cognitive, emotional and behavioural is a concept in psychology that is popular and made believable in numerous research works [1, p. 314], [20, p. 181]. In spite of some controversies concerning this model as well as a concept of predicting human behaviours on the basis of declaration of attitudes, even nowadays tools which examine opinions, preferences and potential behaviours based on this three-factor model of attitudes are frequently created and methodologically accepted.

Nevertheless, it is worth mentioning some factors which *may influence* the process of building mental representations and attitudes towards objects, i.e. all the things that may cause a particular person to perceive an object in a given way and form opinions about this object in a specific way. Modern psychology has at its disposal some verified hypotheses in this regard.

Simplifying this broad issue to an absolute minimum, the formation of mental representations and attitudes can be influenced by the following factors: (1) sex, (2) age, (3) place of residence, (4) social and economic status, (5) belonging to a specific cultural circle (e.g. Euro-Atlantic, Asian, etc.), (6) individual conditions (e.g. personality), (7) knowledge, experience and beliefs, (8) current psychological situation, (9) current tasks and context (physical and situational), (10) psychological distance to an object and finally (11) evolutionary conditions<sup>2</sup>. This list must

<sup>2</sup> However, the evolutionary hypothesis is still most controversial.

be complemented by variable concentration processes or motivation. In the case of applied arts, design or architecture, a significant factor influencing the process of evaluating objects seems to be the impact of a current fashion<sup>3</sup> on the declared attitudes. By the way, one of the greatest contemporary challenges in psychology is the process of examining the influence of various kinds of contexts (external – stimuli and internal – mental ones) on cognitive processing, including building perceptions [16, p. 27].

For example, we look at a building and we build an attitude towards it from various points of view, depending who we are, where we are from, where our current situation and surroundings are (if we are sad, happy, irritated), what our knowledge about the world is, if we just 'want to see', what we are supposed to do or what our distance from the observed object is and in what situation (actual or hypothetical) the occurrence takes place. Such an attitude can be communicated to the world through, inter alia, expressing general opinions on an object or – in a more structuralized form – declarations in the form of answers to questions included in questionnaires on attitudes.

Questionnaires on attitudes are often designed on the basis of the aforementioned three-factor model and contain sets of questions concerning emotions connected with an object, opinions on it as well as declarations of potential behaviours towards an object. There are many ready tools of this type, e.g. questionnaires concerning attitudes towards other people, other cultures, touchy social issues or advertisements. After all, complexity of the world results in the fact that still new questionnaires on attitudes must be designed, which are based on similar theoretical assumptions and adapted especially to the specificity of an object or problem chosen in a given piece of research. It is not possible to use a questionnaire on attitudes in the case of believers of other religions or attitudes towards a shampoo or a drink for the purpose of examining attitudes towards architectural objects. Hence, the necessity for new tools appears quite often.

<sup>3</sup> If we talk about the influence of a current fashion on an attitude, we can say that this is a specific case of a factor influence (7), i.e. knowledge, experiences and beliefs. The perception and attitude modification by means of fashion proves that the subject knows 'what is currently considered to be nice' (knowledge) and that the subject accepts (or not) a certain way of seeing and evaluating the world (beliefs) – relatively stable in the determined time, characteristic of the particular cultural area, social and economic status and lifestyle.

## *Attitudes of Poles towards architecture – own research*

The author's research project (2007–2010), which was mentioned in the introduction of this article, was aimed at examining relations between people and architecture and particularly their attitudes towards architectural objects.

A theoretical starting point was the original scheme which structuralized hypothetical determinants of attitudes towards architectural objects and whose simplified

version is presented in Figure 1. The research consisted in testing whether a proposed scheme is probable. The following issues, inter alia, were examined: (1) whether formal features (shape, colour and diversity level) of an object can exclusively condition an attitude towards an architectural object, (2) whether a situational context, in which an architectural object with specific formal features

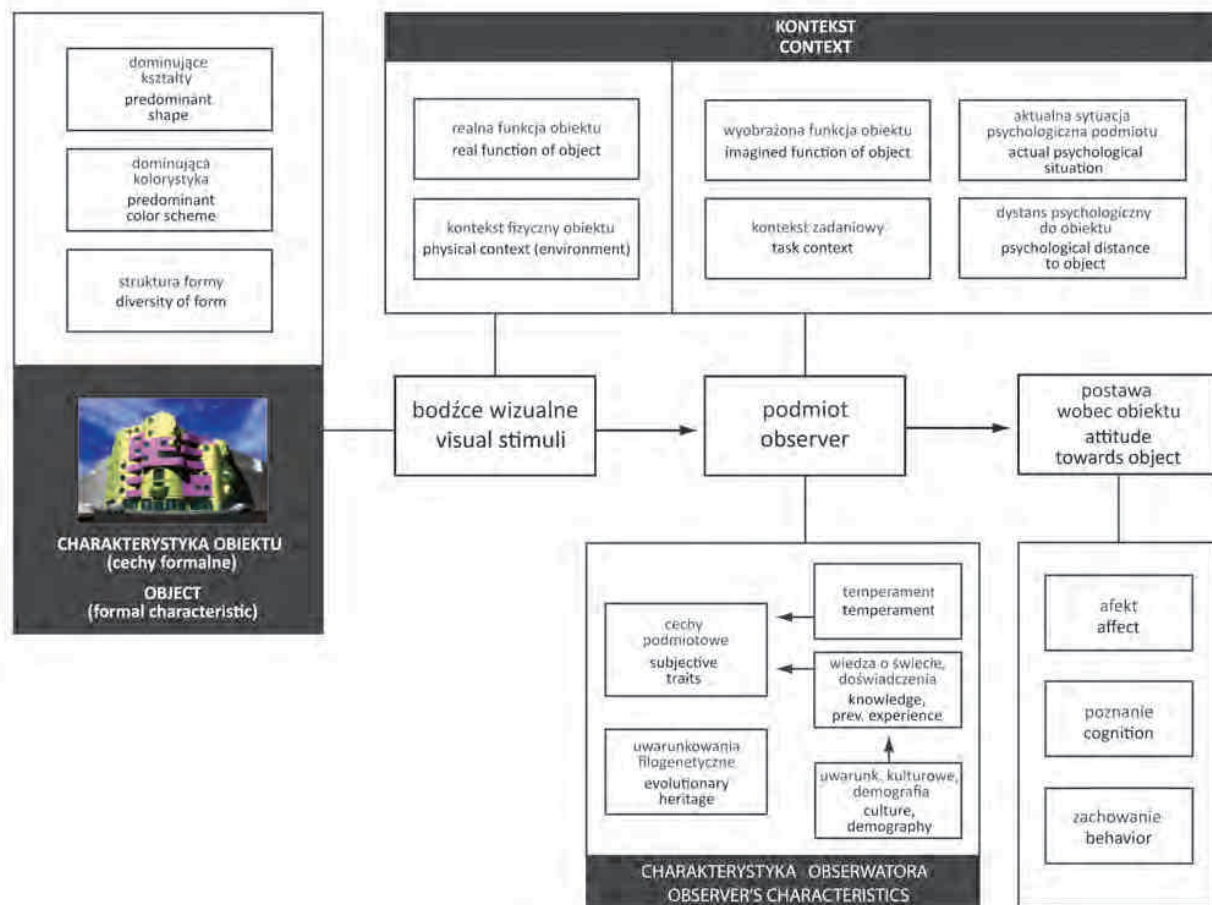


Fig. 1. The Author's Framework for Structuralizing Hypothetical Determinants of Attitudes Towards Architectural Objects

Il. 1. Autorski schemat strukturalizujący hipotetyczne determinanty postaw wobec obiektów architektonicznych

is, differentiates the attitude towards this object and finally (3) whether subjective and demographic features differentiate attitudes towards formally determined objects.

As it was outlined in the introduction, this article particularly focuses on the first aspect of the discussed research, namely trying to answer the following questions: **do features of appearance (shape, colour and diversity of an object) have major significance in determining an attitude towards a building?**

**Tools**

In the years 2007–2009 a reliable Questionnaire on Attitudes Towards Architectural Objects was designed and several models of such objects were prepared. Some pilot and initial examinations were carried out (434 persons were examined during pilot examinations).

As a result of the aforementioned preparations, twelve specially designed three-dimensional models of architectural objects were classified for the project (Fig. 2); each of them constituted a unique configuration of formal characteristics determined as significant on the basis of the pilot research. Consequently, each object has a particular dominant colour scheme (non-contrastive, contrastive or

aposematic<sup>4</sup>), is characterized by dominance of certain shapes (sharp or smooth) and it is diverse or non-diverse. The subjects looked at these objects as photographs thanks to which the same perspective was maintained (camera location control), time of day (lighting control), the same background, identical surroundings and, of course, the scale. It was really significant – thanks to this action it was possible to considerably reduce the impact of variables that disturb the results (confounders). The objects differed only as regards their colour scheme, dominant shapes and structure diversity.

In order to evaluate the significance of shape, colour and structure diversity in determining an attitude towards an object, we cannot show the subjects a Renaissance town hall or a Gothic church on the one side and a modern shopping

<sup>4</sup> Aposematic colouration – in nature it mostly refers to a danger; a type of protective colouration, bright or contrastive, which facilitates recognition (as opposed to camouflage) and performs a warning function by limiting the frequency of accidental attacks. It is employed by organisms that have efficient means of defence against predators (in the case of animals) or herbivores (in plants), e.g. toxins, thorns or inedibility. Aposematic colouration can be exemplified with yellow and black colours of bees, wasps and hornets.



Fig. 2. Twelve evaluated 3D models of architectural objects (controlled formal characteristics)  
 II. 2. Dwanaście badanych modeli obiektów architektonicznych (kontrolowane cechy formalne)

arcade on the other. We wouldn't be able to find out whether the real source of attitude variability (i.e., in other words: the basis of evaluation) are colours, shapes and other features of a building appearance or, for example, meanings strongly connected with the building, its scale or the existing elements of surroundings. If we wish to find out how important the object's appearance is, we need to control and possibly eliminate all the other, apart from features of appearance, potential confounders at the same time maintaining the situational reality, cf., e.g. [15, pp. 395–396], [21]. Therefore, in the photographs of the examined objects there are people and cars. And again, in order to reduce disturbances, the people and the cars were identical in all of the photographs with the same positions, colours, etc.

As it was mentioned before, for the needs of the project a Questionnaire on Attitudes Towards Architectural Objects was designed. It consisted of instructions, seven items concerning the building evaluation (see: Tab. 1, 2) and a send survey. The Questionnaire also included four additional questions the aim of which was to check whether the subjects were willing to accept a particular building if it had a specific func-

tion or if it was supposed to be situated in a particular place (Tab. 3). These were questions about alternative preferences as to an object (placing it in a determined context).

According to the concept of factors influencing attitudes outlined before, during the research proper some subjective factors were also controlled. One of the most significant was the subjects' temperament measured by means of FCZKT method. The influence of a given temperament, on attitudes towards objects was examined, however, the results of these trials go beyond the framework of this article.

Out of seven questions concerning the building evaluation, we selected two reliable subscales: F1 – emotional attitude<sup>5</sup> towards an object (Tab. 1) and F2 – cognitive-behavioural assessment<sup>6</sup> of an object (Tab. 2). In line with the three-factor concept of attitudes discussed before,

<sup>5</sup> Scale reliability is measured by means of Cronbach's alpha coefficient = 0.76

<sup>6</sup> Scale reliability is measured by means of Cronbach's alpha coefficient = 0.86

there should be three factors-scales separated here. However, for the purpose of maintaining the scale reliability, we decided to combine cognitive and behavioural factors into one scale F2.

Tab. 1. Items in emotional dimension scale (F1) – emotional attitude to object  
 Tab. 1. Pozycje wchodzące w skład skali F1 – ustosunkowania emocjonalnego do obiektu

F1		<b>How would you describe your feelings when looking at the presented object?</b> <i>Looking at the presented object I feel...:</i>				
1	Depressed	<input type="checkbox"/> Definitely not	<input type="checkbox"/> Rather not	<input type="checkbox"/> I don't know	<input type="checkbox"/> Rather yes	<input type="checkbox"/> Definitely yes
2	Sad					
3	Angry					

Tab. 2. Items in cognitive-behavioural dimension scale (F2)  
 Tab. 2. Pozycje wchodzące w skład skali F2 – oceny poznawczej obiektu

F2		<b>How do you evaluate the presented object?</b> <i>I think the presented object is...:</i>				
1	interesting	<input type="checkbox"/> Definitely not	<input type="checkbox"/> Rather not	<input type="checkbox"/> I don't know	<input type="checkbox"/> Rather yes	<input type="checkbox"/> Definitely yes
2	nice					
3	attractive					
	<b>Do you agree with the statement below?</b>					
4	I would often come back to such an object					

Tab. 3. Alternative preferences  
 Tab. 3. Alternatywne preferencje

		<b>Do you agree with the statements below?</b>				
1	This building would appeal to me as my place of residence	<input type="checkbox"/> Definitely not	<input type="checkbox"/> Rather not	<input type="checkbox"/> I don't know	<input type="checkbox"/> Rather yes	<input type="checkbox"/> Definitely yes
2	This building would appeal to me as the place where I go shopping – shopping mall					
3	This building would appeal to me as my workplace					
4	I would like to have similar buildings in my town					

The total score of F1 scale could oscillate between the values of 3 to 15, where 3 referred to strongly negative emotions, whereas 15 meant lack of negative emotions. On F2 scale where the subjects expressed their opinions and possible intentions towards an object, the total score was between the value of 4 (lack of positive opinions) and 20 (positive opinions).

**Participants**

In the research proper discussed here there were 389 subjects involved: 107 men and 282 women aged from 18 to 49 (*Me* = 21). They were students of the University of Wrocław, Wrocław University of Technology and Higher School of Education TWP Department in Wałbrzych as well as employees of a Wrocław company (non-representative convenience sampling). Nevertheless, while preparing the research an ef-

fort was made to balance the groups as regards their sex, origin (geographic)<sup>7</sup> and major of studies.

The subjects were divided into 12 groups with 31–33 persons in each group. A pollster contacted each group separately. Each member of a group evaluated one object (photograph) by means of the Questionnaire. Next, the subjects filled in the Temperament Questionnaire (FCZ-KT). The whole examination took about 30 minutes in each of the groups.

<sup>7</sup> At the time of carrying out the research the subjects lived in the following places: towns with the population exceeding 500 000 residents (54% of the subjects), towns with the population up to 500 000 residents (13%), towns with the population up to 100 000 residents (12%) and villages (13%). 4% of the subjects lived in towns with the population up to 10 000 residents. At the same time, a majority of the subjects (33%) came from small towns with the population up to 100 000 residents and villages (23%).

## Results

### Appearance of an object and its evaluation

For the purpose of determining the meaning of formal characteristics in an attitude towards objects an SPSS 17 statistical package was employed. We started from a three-factor variance analysis (GLM) with the following factors: colour scheme (three levels: non-contrastive, aposematic and contrastive), shape (two levels: sharp and smooth) and formal diversity (two levels: diverse and non-diverse). Dependent variables were: emotional attitude (F1) and cognitive evaluation (F2) respectively. This analysis was aimed at finding out the answer to the following question: **does the appearance of an object itself can have major significance in its evaluation?**

As it turned out, **the colour scheme of an object does not differentiate significantly an attitude towards an object** – various colour schemes do not lead to statistically different cognitive evaluations<sup>8</sup> or diverse emotional attitudes<sup>9</sup> towards an object.

In spite of statistical insignificance, there were some cases of isolated controversies in emotional attitudes towards an object. They particularly referred to contrastive objects (pistachio-violet) where 25% of the subjects evaluated objects between 5 and 11 points (negatively and moderately) and 75% between 11 and 15 points (moderately- or totally-non-negatively). In the case of an emotional attitude, there was a number of subjects who significantly differed from the others in their assessments. Therefore, we noticed that **evaluations of external features of architecture tend to be differentiated to a large extent, however, it is not possible to define any statistical regularities here.**

In this regard, the most interesting is the result achieved for the non-contrastive colour scheme where we observed a relatively high consistency of the subjects in their emotional attitudes towards objects – the attitudes are to large extent totally non-negative, which is clearly indicated by the insignificant interquartile range ( $Q = 2$ ) around  $Me = 13$  (half of the subjects is in the range of 12–14 points, i.e. totally non-negative emotions, and almost everybody above 9 points, i.e. in the middle of the scale). It must be stated that in this case we also observed evaluations which were extremely distant from the majority of the subjects – two persons from the group of 133 persons looking at objects in this colour scheme definitely expressed their negative emotions towards these objects.

We can easily imagine that these two persons are opinion leaders<sup>10</sup> – for example, world-famous architects who do not tolerate the standard widely known (and – as proved by the discussed research – commonly accepted today) colour scheme of buildings. They can express their own separate opinion on a building – the opinion which is controversial

and different from a general opinion. If they are influential, visible and charismatic enough, after some time general opinions about the discussed non-contrastive colour scheme could start changing in the negative direction [1, pp. 322–323], [17, pp. 108–117]. This is, inter alia, how trends and fashions are started, in architecture as well.

The next examined feature, i.e. **shape – does not significantly differentiate the emotional attitude towards an object<sup>11</sup>, but it has a certain meaning for a cognitive evaluation** of an object<sup>12</sup> – smooth shapes are evaluated minimally more positively than the sharp ones (however, it is an unusually weak effect).

**Diversity of forms does not significantly differentiate either the emotional attitude towards an object<sup>13</sup> or its cognitive evaluation<sup>14</sup>**, thus – briefly speaking – it does not have any great significance in its evaluation.

It is particularly interesting that attitudes towards buildings do not depend on a determined total combination of appearance features of these buildings<sup>15</sup> (jointly, colour, shape and diversities). In other words – it turned out that none of the buildings was evaluated statistically in a different way or did not significantly arouse other emotions than any other buildings. However, each of them *did look* a bit different.

Finally, it is worth noticing that, other than in the case of emotional attitudes, cognitive evaluations were characterised by a relatively even distribution of results. Basically, there were no cases of non-typical evaluations. Cognitive evaluations are slightly more averaged than emotional attitudes. We must bear in mind that the cognitive scale (F2) included questions about an object, i.e. whether it was ‘nice’ or ‘interesting’. It seems that the subjects were more moderate in such opinions than in the assessment of their own emotions towards objects.

On the other hand, our intuition tells us that not all the objects presented to the subjects are ‘the same’; not all of them would be statistically evaluated in the same way, even using categories ‘nice – ugly’. If our research indicates that the basis for our attitudes towards an object is not its *appearance*, then we must ask what is it? Perhaps, the appearance itself is not enough for our evaluations to be statistically different. Extremely significant in this regard were the questions about alternative preferences (Tab. 3), which included hypothetical variable functions (meaning) of a building.

### Appearance of an object and its function versus preferences

During the next stage a one-factor analysis of variance was carried out, where the object’s appearance was a factor (12 levels, each object was represented separately) and subsequent alternative preferences were dependent vari-

<sup>8</sup>  $F(2, 377) = 0.400$ ; *ns*;  $\eta^2 = 0.002$

<sup>9</sup>  $F(2, 377) = 0.515$ ; *ns*;  $\eta^2 = 0.003$

<sup>10</sup> An opinion leader is a person who is perceived as an individual role model because of the post held, functions performed or prestige and knowledge, or whose information and opinions are sought for by others. People who create fashion, propagate new ways of dressing, new lifestyles, etc. can be the leaders.

<sup>11</sup>  $F(1.377) = 0.964$ ; *ns*;  $\eta^2 = 0.003$

<sup>12</sup>  $F(1.377) = 8.079$ ;  $p < 0.01$ ;  $\eta^2 = 0.021$

<sup>13</sup>  $F(1.377) = 0.268$ ; *ns*;  $\eta^2 = 0.001$

<sup>14</sup>  $F(1.377) = 1.610$ ; *ns*;  $\eta^2 = 0.004$

<sup>15</sup> Effects of factor interaction influence on emotional attitudes:  $F(2, 377) = 0.854$ ; *ns*;  $\eta^2 = 0.005$ ; effects of factor interaction influence on a cognitive evaluation:  $F(2, 377) = 0.872$ ; *ns*;  $\eta^2 = 0.005$ .





Fig. 3. Object A1 (colour: sandy/beige red) – most preferred as a dwelling place

II. 3. Obiekt A1 (kolor: piaskowy/beżowoczerwony) – najbardziej preferowane miejsce zamieszkania



Fig. 4. Object B4 (colour: light pistachio/amethyst violet) – not preferred as a dwelling place

II. 4. Obiekt B4 (kolor: pistacjowozielony/fioletowy) – niepreferowany jako miejsce zamieszkania



Fig. 5. Object C3 (colour: orange/black) – not preferred as a dwelling place

II. 5. Obiekt C3 (kolor: pomarańczowy/czarny) – niepreferowany jako miejsce zamieszkania



Fig. 6. Object A4 (colour: sandy/beige red) – preferred as a shopping mall

II. 6. Obiekt A4 (kolor: piaskowy/beżowoczerwony) – preferowany jako galeria handlowa



Fig. 7. Object C4 (colour: orange/black) – preferred as a shopping mall

II. 7. Obiekt C4 (kolor: pomarańczowy/czarny) – preferowany jako galeria handlowa



Fig. 8. Object A2 (colour: sandy/beige red) – rather not preferred as a shopping mall

II. 8. Obiekt A2 (kolor: piaskowy/beżowoczerwony) – raczej niepreferowany jako galeria handlowa

ables. This analysis was aimed at finding out whether **the preference of an object as a dwelling place, workplace, place of doing the shopping or a building ‘somewhere in the subject’s town’ may depend on its appearance.**

In other words – whether among 12 examined objects there are the ones which we would prefer as a dwelling place, etc. as well as the ones which in particular functions we would definitely not prefer.

As it turned out, **the appearance of an object is significant as long as we are to choose it as our potential dwelling place**<sup>16</sup>. The most often chosen in this regard was object A1 (Fig. 3), whereas objects B4 and C3 (Fig. 4 and 5) were the least popular. These are the only actually significant differences<sup>17</sup>.

Similarly, it turned out that **the appearance of an object is significant as long as we are to choose it as our potential place of doing the shopping**, shopping mall<sup>18</sup>. Here, definitely most preferred (and surprisingly unanimously!) were objects A4 and C4 (Fig. 6 and 7). The least preferred was object A2 (Fig. 8), although the response median here was 'I don't know'. These are the only actually significant differences.

<sup>16</sup> Statistically significant effect  $F(11, 375) = 1.875$ ;  $p < 0.05$ ;  $\eta^2 = 0.052$

<sup>17</sup> Games-Howell Test

<sup>18</sup>  $F(11, 375) = 1.741$ ;  $p = 0.063$ ;  $\eta^2 = 0.049$

On the other hand, the appearance of an object **was not significant** if we were to choose it as our workplace<sup>19</sup> or a building 'somewhere in my town'<sup>20</sup>.

It is worth adding that, as it turned out, virtually each presented object was preferred or not *depending on the hypothetical function it was given*. Not all of the objects could be 'to the same extent' a shopping mall and a flat. For instance, the greatest discrepancies were observed in preferences towards object C3 (Fig. 5). Comparison of the four alternative preferences showed a strong statistically significant differentiation<sup>21</sup> – this object was given a very low rate of preference as a flat but very high as a shop or workplace. Similar results were obtained for preferences towards object C4 (Fig. 7). Object A4 (Fig. 6), which was preferred as a shopping mall, was not accepted as a place of dwelling.

<sup>19</sup>  $F(11, 375) = 0.448$ ;  $ns$ ;  $\eta^2 = 0.013$

<sup>20</sup>  $F(11, 375) = 0.724$ ;  $ns$ ;  $\eta^2 = 0.021$

<sup>21</sup>  $\chi^2 (N = 31, df 3) = 32.85$ ;  $p < 0.001$

## Discussion of results

What is the meaning of the aforementioned results? It is unlikely that a mere differentiation of formal characteristics of architectural objects such as colour, shape or diversity (including their specific interaction) could significantly differentiate attitudes towards these objects. Formal features do not significantly differentiate an emotional attitude towards objects or a cognitive evaluation of objects; therefore, in other words, statistically **it does not matter whether the colour of a building is, for example, salmon-yellow, orange-black or pistachio-violet – the subjects' attitudes towards all of these objects did not statistically differ!** The emotional attitude or cognitive evaluation in the case of all of these objects, which were obviously different, was almost identical – on average 12 points on the emotion scale (F1) and 13 points on the cognitive evaluation scale (F2). This means that all the buildings, regardless their colour (and other features) were cognitively 'medium-positive' and emotionally they definitely did not arouse negative emotions. These results are even more interesting if we take into account the fact that each object was evaluated separately, while each subject looked at one object only (thus, there were no possibilities of comparative judgments on the assumption that 'basically, all of these buildings are the same' because each participant did not see any other objects apart from the one that was shown to him). Therefore, to put it simply, we can say that **all the objects were evaluated as similarly good**. This of course does not exclude some controversies which can result from the existence of persons who distinctly 'get out of line' when compared with others (the aforementioned untypical cases of evaluation).

**An exception among insignificant features of appearance is shape**, which differentiates, although very slightly, **a cognitive evaluation** of an object. Sharp shapes were cognitively evaluated by the majority of the subjects slightly lower than smooth shapes ( $M = 12,83$  for sharp,  $M = 13,94$  for smooth). However, we must bear in

mind that such results mean that both objects with sharp shapes as well as with smooth ones are evaluated above the middle of the scale (12 points). We can conclude that both types of objects were evaluated differently, but all of them received mostly positive evaluations.

Although the appearance of a building itself does not 'decide' about attitudes towards it, we must admit that in some specific cases preferences towards differentiated (as regards the form) objects are significantly different. This is the case when an object was supposed to be a potential place of dwelling (however, this principle is not strong or unambiguous). It is similar with an object which is supposed to be a potential shopping mall. The obtained results make us suppose that whether an object is preferred or not is decided by the 'adequacy' of its appearance to its possible function and not by its appearance per se. In addition to that, we can see that acceptability of a building which has a particular appearance may differ to a large extent, depending on what this building was supposed to be in reality (place of dwelling, place of doing the shopping, etc.).

Differences in preferences seem to be connected with the level of representativeness of a given object as an example of a particular category (e.g. 'dwelling place', 'shopping mall') in the subjects' minds. This interpretation could account for the preference of a building which is the most similar to other buildings known to the subjects from their everyday life as a possible dwelling place, and objects which remind modern shopping malls as places of doing the shopping. These are simply the objects which are the most 'adapted' to what we already know.

This interpretation can be additionally supported by the fact that there is no significant differentiation in the case of alternative preferences as regards a possible workplace or just any 'building in my town'. Perhaps, such cognitive categories are relatively difficult to activate, very weakly defined and structuralized or too

broad. What should, in fact, 'a building in my town' look like? The majority of people will certainly answer: 'it depends what kind of building'. Hence, each object can be 'equally good' or 'equally bad', as an example of a category which for various reasons is not easily accessible cognitively. In other words, the subjects do not have easily accessible and concretized mental categories of a typical building – workplace, so it is hard for them to

assess which of the presented objects 'fits' in this category better and which worse. Therefore, all of them are statistically evaluated by them in the same way.

When the subjects are asked to evaluate the buildings which were not ascribed any meaning (even the simplest function), then, like in the case of the questions about emotions and cognitive evaluations, each building is assessed rather positively, regardless of what it looks like.

## Summary

The aforementioned research results indicate that aesthetic features such as **colour, shape or diversity are probably not independent and basic criteria which we use when evaluating architectural objects**. Each colour scheme and shape of a building is basically equally 'good' until these features are combined with other non-formal attributes of an object.

According to our own research, **the attribute that can decisively change the reception of a given building is its function**. The appearance can be significant two ways. Firstly, for example, particular, smoothly shaped buildings in orange-black or pistachio-violet colour scheme are less preferred as dwelling places than a simply shaped salmon-sand building. Secondly, for example, a smoothly shaped diverse building in orange-black colour scheme can be accepted and preferred as a potential shopping mall and at the same time rejected as a potential block of flats. Therefore, firstly, it is possible that a particularly looking building is more preferred in a given function than other buildings; secondly, a particularly looking building in some functions can be visibly accepted by people and at the same time in other functions it can be decisively unaccepted.

In the research conducted by the CBOS [7], Poles indicated that the appearance is important, but there are factors even more important such as safety and the price of a potential dwelling place. This seems quite probable. According to our own research, the appearance is important,

but only when we combine it with other features and even then it does not constitute a decisive criterion of the object evaluation. This can be a significant practical hint for designers that ought to be taken into account.

Of course, we must bear in mind that the results of the aforementioned research cannot be representative for the whole Polish population although they show some probable tendencies in relations man-architecture.

Our research results indicate that probably it would be difficult to assume that colours or shapes in themselves are universal as far as meaning is concerned and are (psychologically) understood inter-subjectively. We must admit that there are many limitlessly formulated colloquial hypotheses that are aimed just at this direction, for example, 'yellow colour raises your spirits', 'blue calms you down', 'green is soothing', 'black means negative things' (however, luxury goods are very often black, which adds to their elegance though!). These hypotheses enjoy constant popularity and are gladly promoted in various mass-media. Thus, we must remember that an attitude towards a colour or shape as features is probably inextricably linked with an object itself **as well as** with the semantic, physical and psychological context. It is similar in the case of attitudes towards objects that are diverse and non-diverse formally. To put it simply, we can conclude that the appearance itself is not important for us; **what is really important is the appearance in a particular context**.

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***Czy o ocenie i emocjach związanych z budynkiem decyduje jego wygląd zewnętrzny?  
Postawy wobec zróżnicowanych formalnie obiektów architektonicznych***

Artykuł dotyczy psychologicznych aspektów odbioru obiektów architektonicznych, istotnych uwarunkowań relacji człowiek–architektura. Przedmiotem zainteresowania autora są oceny, ustosunkowanie emocjonalne i deklaracje zachowań wobec różniących się wyglądem zewnętrznym obiektów. Omówiono tu część projektu badawczego „Uwarunkowania postaw wobec obiektów architektonicznych”, realizowanego przez autora w latach 2007–2010. Szczególny nacisk położono na możliwie syntetyczne omówienie psychologicznych podstaw spostrze-

gania obiektów oraz pojęcia deklarowanych wobec nich postaw. Zaprezentowano kluczowe elementy autorskiego schematu strukturalizującego hipotetyczne determinanty postaw wobec obiektów architektonicznych. Zasadniczą część artykułu stanowi natomiast prezentacja i omówienie wyników autorskich badań postaw wobec określonych obiektów. Ich zwieńczeniem jest próba odpowiedzi na pytanie: „Czy cechy wyglądu, takie jak kształt, kolor i różnorodność bryły, mają decydujące znaczenie w ocenie obiektu architektonicznego?”.

**Key words:** attitudes towards objects, assessment of architectural objects, evaluation of buildings, environmental psychology, perception of architecture, aesthetical preferences

**Słowa kluczowe:** postawy wobec obiektów, ocena obiektów architektonicznych, ewaluacja budynków, psychologia środowiskowa, spostrzeganie architektury, preferencje estetyczne