

HOW TO MEASURE SUSCEPTIBILITY TO DEGRADATION IN LARGE POST-SOCIALIST HOUSING ESTATES?

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Abstract: In this paper methods for measuring susceptibility to social and landscape degradation in large post-socialist housing estates (LHEs) are proposed. This type of housing was especially popular in post-war Central and Eastern Europe run by communist regimes. As a result, LHEs today constitute a significant part of this region's housing stock, therefore, their eventual decline would affect millions of people as well as considerable urban areas. This paper is designed to have an applied dimension. The research included a survey of the residents of six housing estates in Katowice (Poland), fieldwork, and statistical analysis using the chi-squared test. On this basis, several factors are evaluated according to their 'degradation potential'. This leads to the creation of a model illustrating degradation processes taking place at LHEs. The decline in the quality of life is used as an analytical starting point. Research has shown that the large size of a given estate appears to be the most significant factor stimulating its decline. Other key factors are: low aesthetic qualities, poor maintenance of public spaces, weak social bonds, relative lack of public safety, and insufficient social infrastructure. In contrast, issues such as pollution, noise, undesirable surroundings and general management of the area appeared to have the least importance. The final result of the research procedure is a rating of the six studied estates on the basis of their susceptibility to degradation.

Keywords: large housing estates, degradation, quality of life, Katowice

Introduction and background

Large housing estates (LHEs) were the most common type of residential housing over the course of three decades starting from the late 1950s until the late 1980s in many countries, especially those that remained under communist regimes in Central and Eastern Europe. The LHE concept evolved from the modernist idea of tall buildings located in park-like settings, exposed to a lot of sunlight, far away from heavy industry, and providing "healthy and fair" living conditions to low and middle-income families. In many LHEs from the 1950s, we actually can find such features. However, this concept later found its continuation in "concrete deserts" of high-rise prefabricated

panel blocks, following a monotonous design, consisting of small flats with multiple technical inadequacies from the very beginning. Today LHEs provoke mixed feelings and connotations in Poland.

Especially in Eastern Europe, LHEs were seen as a perfect solution to a dramatic post-war housing shortage, which resulted from huge material losses during the World War II and then a rapid rise in urban populations due to a baby boom and mass migration from the countryside to jobs in new and rebuilt industries in urban areas. Moreover, in countries behind the “Iron Curtain”, LHEs were also a tool of politically-determined “social engineering” (new, “modern” living conditions as a way to create a new communist society) and the propaganda of egalitarianism (large housing estates featured blocks and flats that all seemed to be identical).

Some Western countries also created extensive public housing programmes of this type, especially for immigrants in large agglomerations, e.g. French and Swedish “one million flats” programmes (Rębowska 2000; Węclawowicz 2007). However, LHEs in Western countries faced rapid decline, which resulted not only in the ceasing of further construction, but also in the demolition of some buildings at the beginning of the 1980s (Mesnard, Plassard 2000). At the same time, socialist countries were still building LHEs on a large scale. Today there are approximately 41 million Europeans (Dekker, van Kempen 2004) living in high-rise blocks situated in LHEs (and this not including the territory of the former Soviet Union), which in some countries means 20–30% of the population. In Poland, this is about 8 million people, which is 20% of the country’s population (Węclawowicz 2007). Since in many Polish cities LHEs are the most common type of residential housing, their decline means the fall of large parts of cities. Some social, landscaping and technical problems are beginning to affect them. However, these problems are not advanced to the extent observed in Western countries where the ghettoization of LHEs is often rooted in ethnic tensions (see for instance van Beckhoven, van Kempen 2006; Mesnard, Plassard 2000). In contrast, Polish society has not rejected blocks of flats thus far, and they are still perceived as suitable places to live, especially for lower-class and middle-class households. Therefore, there is a real chance to slow down the LHE degradation process and protect a considerable part of country’s housing reserves. These circumstances appear to justify an investigation into the susceptibility of LHEs to physical and social decline.

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There is growing academic interest in the condition of large housing estates. Most research studies and projects have very practical dimension and are focused on identifying good development strategies for these areas. For example, the RESTATE project (Restructuring Large Housing Estates in European Cities: Good Practices and New Visions for Sustainable Neighbourhoods and Cities), led by scientists from Utrecht University from 2003 to 2005 and financed by the EU. In RESTATE, 29 case studies of estates from 10 European countries were analysed, including Western countries as well as Central Europe (Poland, Hungary, Slovenia). In Poland, two LHEs in Warszawa (Wrzeciono and Ursynów) were investigated. Several papers and

reports were published as the part of this project, e.g. Węclawowicz *et al.* (2003) Dekker and van Kempen (2004), Černič Mali (2005), van Beckhoven and van Kempen (2006), Černič Mali *et al.* (2008), Górczyńska (2008). Apart from RESTATE, there are many studies on large housing estates in Central and Eastern Europe created at the national and local levels; e.g. Czech Republic (Těmelová *et al.* 2010), Romania (Constantin 2006, 2007), and Slovenia (Dimitrovska Andrews, Sendi 2001). In Poland, the subject matter has been explored by researchers from several disciplines (architects, urban planners, sociologists, geographers) since the very beginning of the country's economic and political transformation started in 1989: G. Praweńska-Skrzypek (1990), Z. Bać (1994), Z. Ziobrowski *et al.* (2000), A. Zborowski (2005, 2009), M. Szmytkowska (2008), E. Szafrńska (2008). LHEs in Katowice have not been investigated until very recently. In February of 2011, a research project called "Large Housing Estates (LHE) – Katowice–Leipzig" was initiated. This Polish-German initiative aims to identify development scenarios for large housing estates in Katowice and Leipzig and identify the key drivers of future events (*Large...* 2012). It is conducted by the Faculty of Architecture at the Silesian University of Technology in Gliwice (SUT), Department of Sociology at the University of Silesia in Katowice (US) and the Department of Urban and Environmental Sociology at the Helmholtz-Centre for Environmental Research (UFZ) in Leipzig. This research is going to cover two of the estates considered in this paper (Paderewskiego and Tysiąclecia estates). However, none of the results of this research project have been published as of mid-June 2012.

The general image of this type of housing in research papers is ambivalent. The predominant view from the 1990s claimed that LHEs are dehumanized concrete "bedrooms" or "deserts" with hardly any familiar spaces, discouraging people from spending there more time that they really have to, provoking anonymity and crime, disintegrating Poland's urban society (Praweńska-Skrzypek 1990; Kwiatkowska 1994; Markowski 1998; Rykiel 1999; Szmytkowska 2008). Today LHEs are perceived in a more positive manner, especially when compared to old central city housing or new residential housing built by contemporary developers. The availability of basic services and infrastructure as well as quality of public spaces are the more and more often perceived as strong sides of LHEs (Zborowski 2005; Kotus 2006; Zborowski, Dej 2009; Zborowski *et al.* 2009; Górczyca 2009). At the same time, many researchers take note of LHEs decline, which may accelerate in the near future in Poland. Differences in social status between housing estates are sometimes also viewed as negative (Słodczyk 2001; Węclawowicz *et al.* 2003; Węclawowicz 2007; Górczyńska 2008; Szafrńska 2008; Zborowski, Dej 2009).

Among the theoretical and analytical approaches considered by the author while preparing this study, two related papers by I. Mironowicz and T. Ossowicz (2005) and P. Lorens (2005) should be mentioned. Their methodology and hypotheses will be described and compared to those presented in this paper in the discussion section.

The aim and the area of the study

The main aim of this paper is to present and discuss a method of measuring the susceptibility of large housing estates to social and landscape degradation. Additionally, the author aims to determine the significance of selected factors in the LHE decline process. The outcome of this analysis is the following: a) a model of LHE decline, b) a rating of LHEs based on their susceptibility to degradation using the model just mentioned. The study is designed to have practical value, especially for local authorities, by providing them with a simple method of evaluating the current state of LHEs as well as by forecasting the future one. This is supposed to help decision makers select estates for urban renewal programmes and provide support in managing these areas.

In this paper, we understand *degradation* or *decline* as a group of processes that result in the worsening of the state of a given LHE in a given manner. The result of these processes is hereby called *the state of degradation*, which can have several dimensions; e.g. social, technical, spatial, environmental (soil erosion and contamination, deformation of the ground surface due to human activity). In the scientific literature, we can even encounter notions of functional or moral degradation of an area (Mironowicz, Ossowicz 2005). In this paper, we will only differentiate between social and landscape degradation. However, it is understood that degradation can mean a large array of socio-economic as well as aesthetic, technical, functional and management issues.

In order to better examine differences between estates on a local level, the study covers just one city (Katowice), with a population of around 300,000. Katowice is the capital of the Upper Silesian region of southern Poland. Katowice, as well as Upper Silesia in general, experienced a large increase in population in the 1960s and 1970s due to the intensive development of traditional branches of industry (coal mining, metallurgy and associated branches) followed by mass immigration of workers from virtually all of Poland. In order to provide them with places to live, many large housing estates were built by the government. Some of them were constructed on the outskirts of Silesian cities, although the construction of housing blocks close to mines and steelworks was also not unheard of. In the process of the construction of modern concrete buildings, many traditional single-family and multi-family houses were demolished. This created tension in a country with the government not used to considering public opinion. For instance, the Witosza and Kukuczki housing estates mentioned in this paper were built on land previously occupied by so-called “wooden Finnish houses” (Szaraniec 1996). In the case of another housing estate, Giszowiec, a large number of single-family and two-family houses from the beginning of the 20th century were demolished in order to make room for the new housing estate. This dramatic event even became the main topic of a film entitled “Paciorki jednego różańca” (“The Beads of One Rosary”) directed by K. Kutz. As a result, some LHEs acquired a negative reputation among local residents at the very beginning of their existence, becoming examples of communist authorities’ disregard for public opinion and cultural heritage.

There are many housing estates consisting of high-rise blocks of flats in Katowice, however, only six were selected for the purpose of this study based on the following criteria:

- population of more than 4,000 (the study covered the largest estates);¹
- majority of housing blocks erected by the state between the early 1960s and the late 1980s; representing main features of socialist housing of this period: multi-storey blocks of flats of simple and replicable design, made of grey concrete panels with hardly any decorative elements;
- spatial cohesion of the estate.

The following six housing estates were analysed: Paderewskiego, Kukuczki, Tysiąclecia, Giszowiec, Witosa and Odrodzenia (Fig. 1). Selected differences between the six housing estates are listed below:

- population² (ranging from 4,718 inhabitants [Kukuczki estate] up to 23,518 inhabitants [Tysiąclecia estate]);
- age³ (1961 – beginning of the construction of the Tysiąclecia estate, 1981 – beginning of the construction of the Odrodzenia estate);
- distance from the city centre⁴ (1.2 km – Paderewskiego estate, 6.6 km – Odrodzenia estate).

These features have been included in the set of factors analysed in this study and therefore in the model of degradation processes.

Research methods and techniques

The research included the following elements:

- survey of the residents of six studied housing estates;
- fieldwork;
- interview at a real estate agency;
- query of the scientific literature, maps, plans, local newspapers and bulletins;
- statistical analysis (including chi-squared test).

The research was conducted in the autumn of 2009.

The survey of residents covered the following issues: quality of life, advantages and disadvantages of living at an LHE, social bonds, social activity and the feeling of responsibility for the neighbourhood, perception of selected problems in the neighbourhood. The survey study was conducted with the assistance of local primary schools (one at every estate); the obtained sample featured 432 questionnaires.

¹ According to A. Zborowski *et al.* (2009), a common understanding of the term *large housing estate* assumes that it consists of at least 2,000 flats, among other features. As social research and social issues are especially important here, the author modified this criterion towards a corresponding demographic aspect of the estate's size.

² Data for 2009, Source: Urząd Miasta Katowice (Katowice City Hall).

³ According to L. Szaraniec 1996.

⁴ The measured distance between Katowice Market Square and the first high-rise block of flats in a given estate.

Fieldwork included a review of buildings, public institutions, public and commercial services as well as an evaluation of the quality of public spaces, access to the city centre, important institutions, main roads, quality of the vicinity of the estates in question and the amount of park space. The fieldwork was conducted in September and November 2009.

A non-structured interview was done at one of Katowice's real estate agencies in May 2010. This interview focused on the topic of the reputation and rank of the estates selected. A query of the scientific literature, maps, plans, local newspapers and bulletins helped to verify and explain field observations and the results of the survey. It also helped to gain some additional insight into issues such as resident-resident interactions and the management-resident ones.

The purpose of statistical analysis was to determine relationships between responses to the questions in the survey. The data obtained in this manner were mostly qualitative. Therefore, the chi-squared test was used, as it is often recommended for this kind of data (Norcliffe 1986; Józwiak, Podgórski 1997; Sobczyk 1997). Chi-squared statistic was calculated using this formula:

$$[1] \quad \chi^2 = \sum_{i=1}^k \sum_{j=1}^l \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

Where:

k – number of categories

l – number of samples

O_{ij} – frequency observed in category i of sample j

E_{ij} – frequency expected in category i of sample j

The number of degrees of freedom (v), necessary to learn the critical value of chi-squared statistic from statistical tables, was obtained using the following formula:

$$[2] \quad v = (k-1) \cdot (l-1)$$

In every case described in this paper, a significance level of 0.05 was considered.

Considering the purpose of this study, the most important relationship investigated was the link between perceived advantages/disadvantages of living at an LHE (including problems and inconvenience observed by the respondents in their neighbourhood) and perceived quality of life in housing of this type.

Obtaining this information made it possible to follow the next steps in the analytical procedure – building a model of LHE degradation and rating of the studied estates based on their susceptibility to degradation.

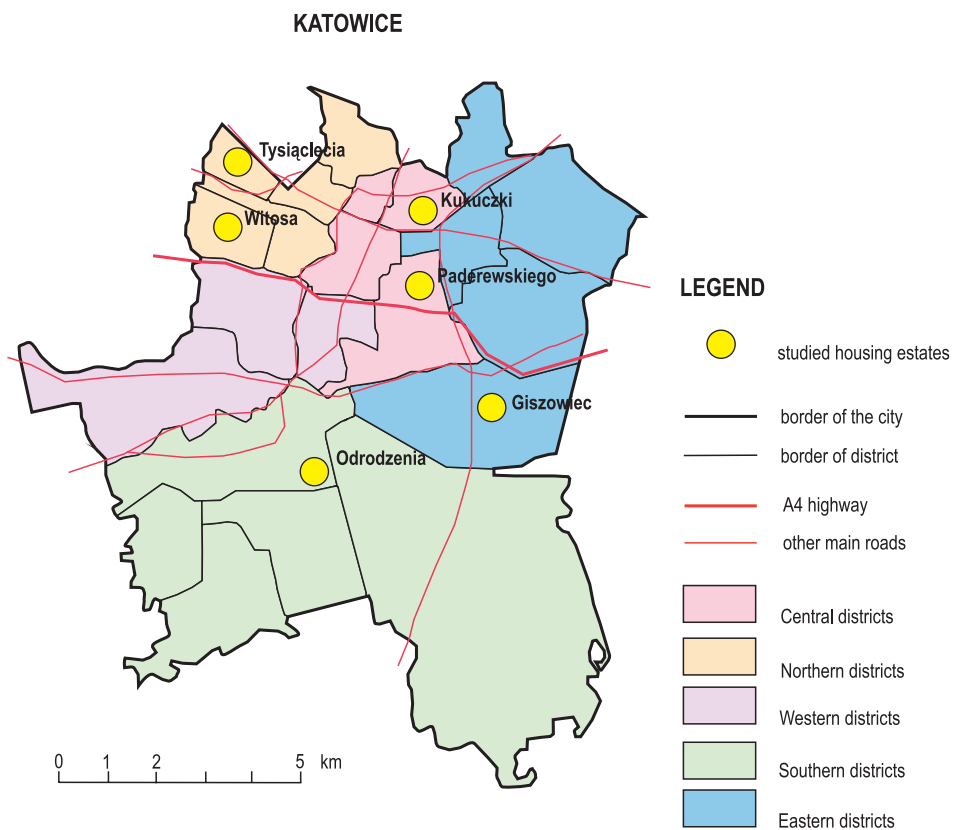


Fig. 1. Location of the studied housing estates in the city of Katowice

Source: Districts of Katowice 2012, modified.

Model of LHE degradation and rating of estates *vs.* susceptibility to degradation

The starting point for the construction of the model was the notion of the quality of life. This term describes a subjective feeling of satisfaction with one's life and consists of a whole range of factors – from very personal issues (satisfaction with private and professional life) up to social and material ones (Zborowski 2005). Therefore, the quality of life – in contrast to the standard of living – cannot be investigated using only measurable data. Qualitative information obtained via surveys or interviews is needed. Hereby, we naturally take into consideration mostly those aspects of the quality of life that concern a broadly understood living environment at LHEs. It is assumed that when the majority of the residents of a given area are not satisfied with their quality of life, this becomes a factor provoking positive feedback between social degradation processes. This is naturally followed by physical LHE decline. Moreover, the quality of life is a synthetic indicator of the situation of an area (here: an LHE) and can result from different factors in every case. In this paper, it is assumed that the influence of various factors on the quality of life is not identical and can be described at least on an ordinal scale, identifying groups of factors exerting a similar force. Weights were assigned to factors using the following criteria:

- percentage of respondents who mentioned the given factor in an open question on the most important features/circumstances affecting the quality of life at Katowice's housing estates;
- strength of the relationship between the presence of a given factor/problem and the quality of life, based on survey responses and measured using the chi-squared test;
- understanding of the significance of a given factor based on an interview at a real estate agency and/or scientific literature.

In order to achieve a better readability of the model, the factors were attributed weights on the 1–3 scale. This simple differentiation is justifiable in light of the applied nature of this paper. However, during the attribution procedure, it appeared that one factor (large size of an estate) was significantly stronger than the others. Therefore, in this one particular case, a weight of 4 was assigned. Then, the names of the factors to be considered in the model were selected, aggregating questions/issues from the questionnaire (Tab. 1).

The above mentioned results, along with the effect of each factor on the quality of life, and in consequence its decline, are illustrated by the model (Fig. 2).

The next step in the procedure was to attribute a set of grades to every studied estate, one grade for every identified “deterioration factor”. This evaluation was prepared on the basis of fieldwork, survey, local magazines and bulletins, web pages of estates, *etc.* The grades were assigned on the 1–5 scale – the more visible a particular factor at a particular estate, the higher the grade. Grade 1 means that a given factor was either not present or insignificant in the case of a given estate.

The grades were then multiplied by their respective weights. The obtained values were added for every estate and their total ‘score’ served as the basis for the final rating

Table 1. Procedure of aggregation of questions/issues from the questionnaire into factors and the attribution of weights

Question/issue in the survey*	Response rate (%)	Calculated value of the χ^2 statistic**	Name of the factor in the model	Factor's weight (effect on degradation)
The estate is too large	x	82.02	too large size of the estate	4
<i>The size of the estate, the size of the human community</i>	21	x		
There are not enough shops, kindergartens, medical clinics	x	6.30	insufficient social infrastructure	3
<i>Social infrastructure, basic services</i>	35	x		
The estate's architecture is monotonous, ugly	x	31.80	low aesthetic qualities of the estate	3
<i>Aesthetics of the neighbourhood, visual state of buildings and their surroundings</i>	11	x		
The estates' playgrounds, squares, pavements, lawns are neglected	x	23.93	neglected public spaces	3
<i>Technical infrastructure</i>	7	x		
The inhabitants of the LHE feel anonymous	x	25.73	weak social bonds	3
<i>Interpersonal relationships in the neighbourhood</i>	24	–		
<i>Company for the children</i>	3	–		
Thefts, acts of vandalism and petty crime are frequent at the estate	–	40.70	lack of public safety	3
<i>Safety (feeling of public safety)</i>	12	–		
The city centre and other important places are far away from the estate	x	3.46	poor transport access	3
<i>Accessibility, the distance from the city centre</i>	22	x		
Flats are inconvenient, too small	x	28.02	poor technical state of buildings and flats	2
Buildings are in poor technical state	x	13.39		
<i>Features of flats, staircases, lifts</i>	1	x		
Young and wealthy people do not want to live in blocks of flats	x	20.08	no feeling of attachment to the estate, negative social selection	2
<i>The feeling of attachment to the estate</i>	1	x		
The estate has bad image/opinion in the city	x	16.65	bad image of the estate	2
<i>Lifestyles, behaviour of the inhabitants</i>	8	x	social contrasts	2
<i>Social contrast</i>	2	x		
The estate's location is unaesthetic/unhealthy	x	1.87	low quality of the surrounding area	1
<i>Features of the area surrounding the estate</i>	5	x		
<i>The quality of ecological components</i>	5	x	pollution/noise	1
<i>The quality of the estate's management / administration</i>	2	x	low quality of management of the estate	1

Explanations: * italics – aggregated responses to open questions ** with a significance level of 0.05, the critical value is 3.841, 1 – weak effect, 2 – moderate effect, 3 – strong effect, 4 – very strong effect.

Source: authors' work.

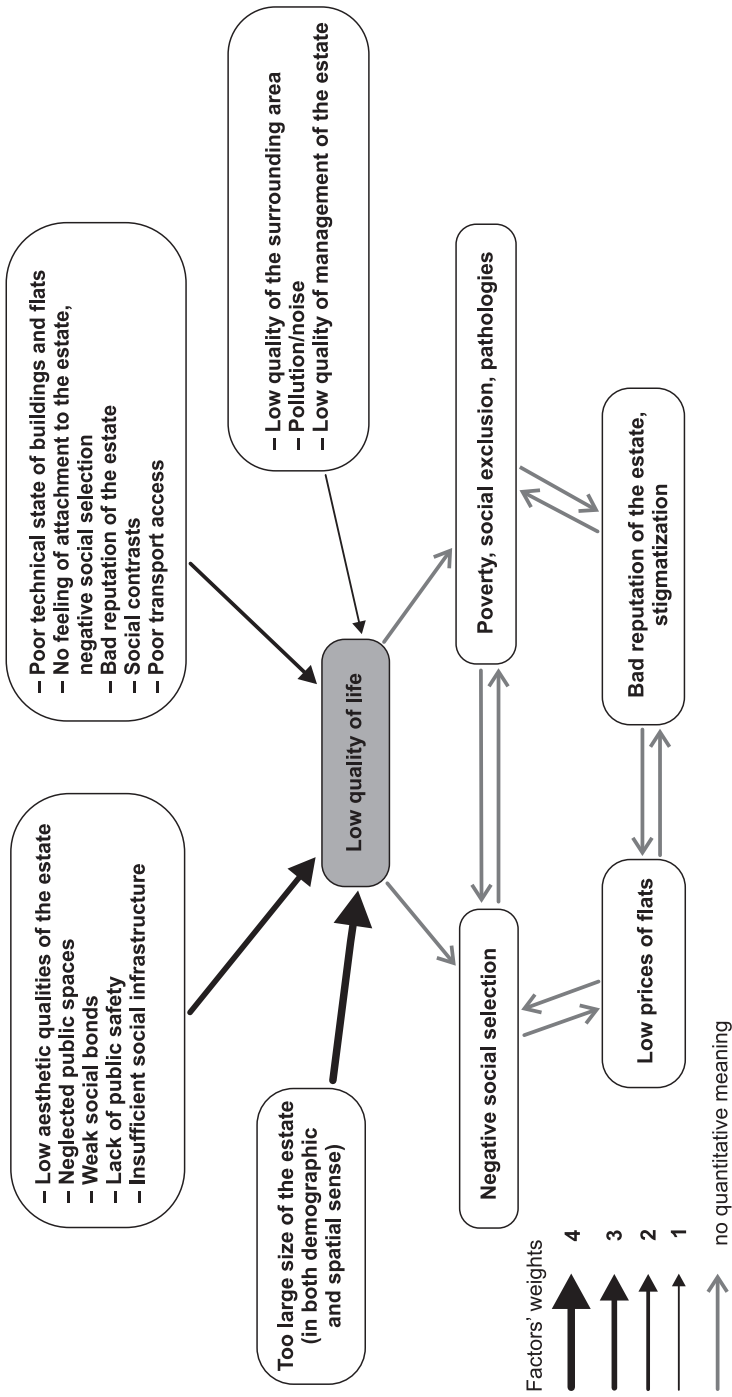


Fig. 2. Degradation model for large housing estates, based on Katowice (Poland)

Source: authors' work.

of the susceptibility to degradation. The higher the grade and the weight, the worse the situation of the estate. Therefore, the higher the rating, the greater the susceptibility to decline (Table 2).

The most susceptible area appears to be the Witosa estate, with the following characteristics:

- very low aesthetic quality;
- bad reputation in the city;
- neglected public spaces (playgrounds, squares and lawns, roads and pavements, lighting, benches);
- common feeling of a lack of public safety, feeling of a threat from local hooligans and vandals (the effects of their ‘activity’ were very much visible across the estate, especially vulgar graffiti);
- poor technical state of buildings resulting from age of buildings (the Witosa estate is one of the oldest of the six estates studied) as well as from insufficient renovation and very slow modernization (e.g. entry phones, which are standard equipment in multi-family buildings in Poland, have not yet been installed in many buildings).

The second most susceptible estate (according to the criteria described) appeared to be the Odrodzenia estate – one of the newest housing estates, but insufficiently

Table 2. Procedure for calculating final points for degradation susceptibility of large housing estates, based on research conducted in Katowice, Poland

Factors		Estates – grades weighted / (without weight)					
name	weight	Giszowiec	Kukuczki	Odrodzenia	Paderewskiego	Tysiąclecia	Witosa
Too large size of the estate	4	12 (3)	4 (1)	8 (2)	8 (2)	20 (5)	12 (3)
Low aesthetic qualities of the estate	3	9 (3)	3 (1)	12 (4)	12 (4)	9 (3)	15 (5)
Neglected public spaces	3	9 (3)	3 (1)	6 (2)	12 (4)	6 (2)	12 (4)
Weak social bonds	3	3 (1)	6 (2)	9 (3)	9 (3)	6 (2)	3 (1)
Lack of public safety	3	9 (3)	3 (1)	6 (2)	6 (2)	6 (2)	12 (4)
Insufficient social infrastructure	3	3 (1)	3 (1)	9 (3)	3 (1)	3 (1)	6 (2)
Poor technical state of buildings and flats	2	6 (3)	4 (2)	4 (2)	6 (3)	6 (3)	8 (4)
No feeling of attachment to the estate, negative social selection	2	4 (2)	4 (2)	8 (4)	6 (3)	6 (3)	6 (3)
Bad image of the estate in the city	2	8 (4)	4 (2)	6 (3)	2 (1)	4 (2)	10 (5)
Social contrasts	2	4 (2)	2 (1)	2 (1)	4 (2)	2 (1)	6 (3)
Poor transport access	2	4 (2)	6 (3)	10 (5)	2 (1)	4 (2)	6 (3)
Low quality of the surrounding area	1	2 (2)	3 (3)	3 (3)	1 (1)	1 (1)	4 (4)
Pollution, noise	1	3 (3)	2 (2)	1 (1)	3 (3)	3 (3)	3 (3)
Low quality of the management of the estate	1	2 (2)	1 (1)	4 (4)	2 (2)	2 (2)	2 (2)
	Total	78	48	88	76	78	105

Source: authors' work.

equipped with basic amenities, social services and public institutions. In addition, the city centre is not easily accessible from this area – it is peripherally located, without easy access to main roads and features notorious congestion problems. Finally, this negative result of the evaluation was also affected by the low aesthetic qualities of this estate and relatively low feelings of attachment and identification of the residents with their neighbourhood.

In contrast, the Kukuczki estate was found to be the least susceptible to decline. Among the most important factors that determined this result were the following:

- small size of the estate;
- visible care for aesthetic and technical state of buildings and public spaces;
- high availability of basic amenities, services, institutions;
- strong social bonds among inhabitants and strong feelings of attachment to their neighbourhood.

Some of these features are obviously a logical consequence of the small size of the estate, e.g. a small estate is more easily managed and can achieve a satisfactory density of basic amenities quite rapidly. In the case of the Kukuczki estate, an additional advantage was also its location of only 1.6 km from Katowice's Main Square, which is the central part of the city with key government institutions and the "life" of the city.

Evaluation of methods and procedures. Discussion

The LHE methodology presented in this paper is somewhat novel at this point in time. At the same time, it is a very modest, preliminary study – based on research in only one city, undertaken within a very limited amount of time for the purpose of a master's thesis. Therefore, the methodology used will be critiqued and the final results analysed in the next few sections.

Given the applied nature of this research study, its mathematical simplicity appears to be a key advantage. The possibility of its practical application is also enhanced by the fact that fieldwork of this type is relatively easy to pursue, especially for local authorities who have significant manpower and organizational power at their disposal. However, many aspects of the proposed research procedure need to be improved.

First, due to the very limited timeframe for the research, not all potentially important sources of information were considered. More information could be obtained via:

- a study of the real estate market in Katowice (flat prices, more interviews);
- interviews with LHE community leaders and representatives of community groups – leaders of local institutions and clubs creating social life in the area, leaders of housing cooperatives, teachers, senior citizens *etc.*;
- interviews with experts in disciplines such as architecture, sociology, and psychology in order to verify hypotheses and observations in a broader context.

One of the limitations was the low return rate of the survey questionnaires at some estates. This implies that results at the estate level should be treated as approximations. Moreover, the distribution procedure of the questionnaires – through primary schools (one at every estate) – generated an over-representation of females and the 30–40-year-old age group. This manner of reaching respondents was selected is

considered to provide a relatively high return rate in a relatively short time. Although the sample was not fully representative, the author claims that the results are still credible. Parents of young children are a group of residents who tend to pay special attention to the quality of a neighbourhood and are usually sensitive to issues such as public safety, quality of infrastructure, quality of public spaces and amenities, and access to basic services (schools, kindergarten, medical centres, shops, pharmacies). However, future studies should try to obtain a more representative sample via a different survey distribution method.

Finally, some issues undoubtedly deserve a more in-depth investigation, e.g. the technical state of buildings and flats as well as the question of the (potential) influence of monotonous architecture and spatial organization of an estate on the inhabitants' psyche. Due to the lack of specialist knowledge in fields such as engineering, architecture and psychology, the aforesaid issues were only superficially discussed. Exploring these unique issues would require an interdisciplinary research team.

As for the construction of the model and the resulting rating, the procedure of weight assignment needs to be improved. The simple chi-squared test appeared to be an insufficient analytical tool because of the need to intuitively compare results with responses in open questions. Furthermore, the evaluation of the estates' features was rather arbitrary, although obviously based on real and objective evidence (e.g. evaluation of the state of the playground included features such as the state and safety of the infrastructure, surface type, presence of a fence protecting from dogs *etc.*).

The open question here is whether the susceptibility of an urban area to degradation could (or should) be described with a synthetic index. The measurement of susceptibility to degradation has not been a frequent subject of geography research. The same can be said of other disciplines. I. Mironowicz and T. Ossowicz (2005) described research methodology for metropolitan areas experiencing degradation, while P. Lorens (2005), referring to this methodology, developed a typology of areas with "metropolitan potential" that are threatened by decline. I. Mironowicz and T. Ossowicz (2005) distinguished a great variety of degradation types, paying the most attention to functional degradation, which occurs when a given area possesses functions of a rank lower than it potentially could possess. This line of thinking led to the determination of 26 possible combinations of states of functional change with types and quality standards of economic activity in a given area. All these combinations were then evaluated according to degradation level. This methodology, although inspiring, appeared to be too complicated to help us here, especially because of the difficulty of some important factors to be measured if we were to apply it.

Following this deliberation, P. Lorens proposes a hypothetical determination of susceptibility of different urban areas to four degradation types, according to the typology by I. Mironowicz and T. Ossowicz: 1) material, 2) functional, 3) moral (reflecting the image of the place), and 4) compositional (referring to the stage of development of composition functions). In this classification, a given area type can have a low, moderate or high susceptibility to every degradation type. "Residential areas of post-war origin" (very frequently LHEs) received the following evaluation of susceptibility to:

- material degradation: low;
- functional degradation: low;
- moral degradation: high;
- compositional degradation: moderate.

This evaluation is hypothetical and generalized. Nevertheless, it will be compared to the research results obtained for this paper.

We have confirmed that the threat of technical degradation of LHEs is relatively high. However, this problem does not concern all of the studied estates to the same extent, and it is not that serious compared to many 19th century central districts (in Silesia, also most of the old working-class neighbourhoods). Nevertheless, this study as well as other studies confirm that shoddily executed construction work and then decades of improper maintenance (linked to an ineffective rental system) have created housing estates in dire need of repair. The potential danger caused by a non-renovated nine-storey block is much more serious than that in the case of a two or three-storey tenement building. Therefore, the issues in the hereby proposed degradation model have at least ‘moderate’ effect on LHE decline.

On the other hand, the author agrees with the statement that susceptibility to functional LHE degradation is low. The study showed that there were no problems with amenities, basic services and institutions and there were no visible signs of their decline. As this issue is of great importance to LHE residents, it was attributed a high rank in the degradation model. Not surprisingly, the studied estates differed in terms of access to higher ranked services.

The research also confirmed that LHEs usually possess a worse reputation than they really deserve. This is especially true of public safety. It is commonly believed that LHEs are dangerous places, where hooligans, vandals and gangs are active and a callous indifference reigns between neighbours. This can result from a “double negative” image of LHEs . First, LHEs used to be perceived as a symbol of communist ‘social engineering’ as well as general greyness, frustration and isolation during the communist era. Another negative stereotype refers to a time when LHEs were much younger in a demographic sense. Following high birth rates during the post-war era and due to the fact that there were many young families living in housing blocks, some gangs did form at LHEs . Although these connotations are often outdated, they continue to persist and research has shown that estates’ residents are aware of them. Nevertheless, it would be incorrect to assert that there is no crime at LHEs . Sometimes, LHEs are in fact an area of activity of youth gangs and other groups, especially football hooligans, that generate vulgar and ugly graffiti. The lack of funds for its removal and repainting leads to a so-called “broken glass syndrome”⁵ and further escalation of devastation and aggression. The negative image of the large housing estate was attributed a moderate significance in the presented model. The feeling of a lack of public safety appeared to be even more significant.

⁵ When minor damage or graffiti are not removed/cleaned/repared in a short period of time or are not addressed in any other way, this makes hooligans/vandals feel more self-assured and leads to a further escalation of devastation and aggression (Racoń-Leja, Kwiatkowski 2005: 29).

Aesthetic and compositional factors are of substantial significance in the study of LHE susceptibility to decline. Managing this type of residential area is often not only costly but also very difficult due to the large scale of most estates. Estate cooperatives usually do not do more than perform renovations and repairs without an overall governance strategy. Moreover, the tendency to build new residential buildings between older blocks is not likely to make estate management easier. Such actions are often justified by the need to make estate space more effectively developed and by these means to limit urban sprawl. However, this is usually not preceded by any strategy or concern for spatial order and attention to not exceed a certain density of population. A common practice is to erect new single multi-storey buildings in the middle of older estates. These new buildings are often gated and benefit from infrastructure and amenities already in place (playgrounds, shops, green spaces, schools and kindergartens). It may be argued that new buildings save some institutions (such as the kindergarten or the school) at ageing estates. However, this process also leads to a fragmentation of estate property, less green space, more pollution and traffic, and finally social contrasts in the form of higher quality new buildings in the vicinity of lower quality old buildings. Although the studied estates are only to some extent affected by this problem, the risk of compositional degradation in the near future is at least moderate.

Conclusions

In this paper, a method of measuring susceptibility to landscape and social degradation was presented and discussed. The method is based on statistical analysis of a broad set of objective and subjective factors, using a chi-squared test. Large housing estates were built for people and they either maintain or lose their potential because of people. Therefore, it was assumed that the most important research step was to investigate how estate residents themselves perceive the role of selected degradation factors. In cases where this opinion was not clear, not expressed or hard to explain, the scientific literature and secondary sources such as an interview at a real estate agency were used. The potential significance of a set of selected factors was tested and a model was created. Excessively large estate size (spatially and demographically) appeared to have the strongest effect on the decline of the quality of life, which is likely to initiate positive degradation feedback. This factor affects a large number of subsequent negative phenomena/features: overcrowding, additional traffic, pollution and noise, anonymity and the feeling of being lost at a large estate. Other factors that appeared to be significant were: poor access to transport, negligence of public spaces, low aesthetic value of the architecture, insufficient supply of basic amenities/services/institutions, and weak social bonds. On the other hand, factors connected with estate surroundings, quality of the environment and the management of the estate were relatively less important.

On the basis of the research and the model described herein, a rating of the six studied estates was created based on their susceptibility to (future) degradation. Considerable differences in estate rank confirm a tendency that is often observed in contemporary cities – the polarization of urban space. The gap between “good” and

“bad” estates is increasing, even though most estates started out mostly the same a few decades ago. Some other authors share this opinion (e.g. Węclawowicz *et al.* 2003; Węclawowicz 2007; Górczyńska 2008; Zborowski, Dej 2009). In summary, this issue needs to be investigated further. In addition, the research method proposed herein should be improved, especially in terms of its mathematical side, which would make it more reliable and more universally applicable.

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