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Real estate function impact on its value exemplified by the city of Gdańsk

Spatial planning is connected with speculations in real estate market, which deepens the process of urban sprawl. Adequate land management supporting free market – both investment decision of businesses and location decisions of households – is necessary if amorphous city growth is to be prevented. A change, or even information about change in the local plan determines decisions in the real estate market. On the basis of the studies conducted it can be said that the factor causing the greatest value increment is the possibility of development. To assess the possible success of investment projects and the value of real estate it is important to identify the changes that have been occurring in the growth of urban areas and their suburban expansion; whether they follow a certain pattern and whether it is possible to foresee them. The article presents city growth stages and models as well as selected concepts of sustainable growth as a response to the adverse process of suburbanisation.

Key words: *city development, spatial planning, land valuation*

Parole chiave: *sviluppo urbano, pianificazione spaziale, valutazione paesaggistica*

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1. Introduction

Spatial planning, and local planning in particular, is inseparable from speculation in real estate markets, additionally strengthened by urban sprawl. At the same time, the greater the scale of land speculation, the more amorphous spatial development, causing more land to be taken for development even when the population is declining. Whereas planning intervention is meant to decrease the speculation, a bad planning system and inadequate public institution may result in more speculative activity in the real estate market. Public intervention in the form of plans, however, is not aimed to replace the free market. The realities of individual countries point to the need for flexible adjustment of the instruments used to the general and specific conditions in which space and land management takes place. These conditions are: the specific geographic location of the problem area, the political system, the socio-economic system, the stage in the development of a given city, the shape of the metropolitan area. Any decision contained in the plan – depending on its wording, the expected duration of the plan and the stability of the authority that approves it – means actual and possible changes in the cost/benefit allocation seen from the spatial perspective (Markowski 2010, p.24). Provisions of the bylaws can produce most significant changes. In economic terms, they may be targeted at real estate market stimulation.

The absence of local plans in a given city space reduces the supply (the construction of new housing or office space). A spatial policy correlated with an anal-

ysis of the property market and its needs may, in the long run, give a possibility of influencing real estate prices and, consequently, help to achieve specific goals that are important for the municipality, like reduced migration. Excessive supply of particular space types may effectively be reduced by avoiding these functions in the plan which are already abundant in the city. A significant disadvantage of such activities, though, is the time needed to approve the local plan, making quick response to the signals from the market impossible.

The goal of this article is thou to identify, and describe the development model of the city and to examine the differences in the values of real estate of various functions defined and changed by local plan, as can be seen in the Polish city of Gdańsk.

2. City location, urban form, pattern of city development – theoretical background

There are several theories which help to explain the pattern of city location. These include: centripetal (economies of scale, economies of agglomeration, positive location externalities) and centrifugal forces, Central Place Theory, theory of urban hierarchy and Economic Base Theory. Urban form is intimately linked to land value and to basic real estate business activities such as building construction location and investment decisions. There are fundamental economic principles and concepts that underline the joint determinants of land value and urban form: residual value of land, bid-rent function (curve), land market equilibrium, the highest and the best use principle (HBU), rent gradients[1]. These principles explains how cities grow, develop and change over the time. There are also fundamental city models (Table 1).

In the days of rapid growth and intensive industrialisation, the characteristic feature of city centres is excessive land development and congestion. The utility value decreases due to traffic congestion, which reduces accessibility. As the environment is becoming difficult to bear, people move out, which leads to urban sprawl. The suburbanisation process, while functionally and socially natural and proper, is uncontrolled and disadvantageous in social terms. The intensity of the process results from (Plan Zagospodarowania Przestrzennego Województwa Pomorskiego 2009 [*Regional Spatial Development Plan for Pomorskie*], p. 171):

- departure from the densely populated housing estates;
- revival of the residual value of land;

[1] These theories and principles are broadly described in the literature: Gertner D. M., Miller N. G., Clayton J., Eichholth P. (2007). Commercial Real Estete, Analysis & Investment. Cengage Learning. West Group. USA: p. 76; Tarkowski M. (2007). Ład przestrzenny jako czynnik rozwoju gospodarczego Pomorza. In: Nowicki M. Pomorski Przegląd Gospodarczy. Wyd. Instytut Badań na Gospodarką Rynkową. Gdańsk: p. 12; Markowski T. (1999). Zarządzanie rozwojem miasta. Wyd. Naukowe PWN. Warsaw: pp. 84-94.

Table 1. City model characteristic/principles.

City model	Principles
Monocentric	• Other things being equal, larger cities will have higher average location rents; • if a city grows by increasing area rather than density, property rent growth will be relatively greater closer to the periphery; but if a city grows by increasing density instead of area, property rents will tend to grow towards the centre of the city; • declining transport costs (per person, per mile, per year) holding population and income constant, will always reduce the value of location rent in the centre of the city; the effect on the location rent near the periphery is generally ambiguous, depending on changes in density; • increasing real income per capita (holding population constant) will tend to decrease rent gradients, with possible result of absolute reductions in land rent in the centre of the city, although a secondary transport cost increase effect (and/or increased open space reduction) due to higher incomes may mitigate this result or even reverse it, especially if the spatial expansion of the city is constrained.
Polycentric	• Tend to have cheaper land and therefore to increase floor space consumption; • small businesses find it easier to find land in a polycentric city; • although more pollutants are emitted because of longer trips, pollution is less concentrated in a polycentric city and therefore less damaging to health.
Amorphous	• Erratic, non-functional development.

Source: Gertner D. M., Miller N. G., Clayton J., Eichholth P. (2007). Commercial Real Estate, Analysis & Investment. Cengage Learning. West Group. USA: p. 66.

- the existing road network concentrating the living function, business activity and single-function service centres;
- growing private car use.

At the same time, the process leads to (Plan Zagospodarowania Przestrzennego Województwa Pomorskiego 2009, p. 171):

- unreasonable land use;
- decreasing area of agricultural land and the open spaces;
- higher cost of municipal infrastructure construction and maintenance;
- more traffic with all the consequences for the environment (growing transport problems within the city and on access roads, especially in the centre, increasing pollution and noise, more road accidents and collisions, etc.);
- more urban space taken by car parks,
- less recreation time as people spend hours in transit.

Urban sprawl is a stage in city development. The never-ending process of city transformation may be divided into the following principal stages (Table 2). A city is a living and changing organism with certain development options. These are connected with the choice of specific development strategies of individual settle-

ment units, all of which except intensification involve suburbanisation. They determine the shape of the boundaries, the continuity and the street pattern of developed areas (Table 3). Furthermore, each option can shape new central places or consolidate the existing ones. From this point of view, they may be of monocentric, polycentric or amorphous nature (Plan Zagospodarowania Przestrzennego Województwa Pomorskiego 2009, p. 176).

Table 2. Description of city development stages.

City development stage	Characteristic features
Urbanisation	• Population growth in central areas is faster than in peripheral ones; • population of the whole urban agglomeration is growing; • birth rate in the whole urban agglomeration is positive and is primarily migration driven.
Suburbanisation (urban sprawl)	• Population growth in peripheral areas accelerates and the whole urban agglomeration continues to grow; • population decentralises; • birth rate is positive, but occurs mainly in the peripheral areas, while some central areas are beginning to show negative birth rate; • total employment in the city is growing, yet there is a sectoral shift (from manufacturing to service industries); • there is more outward than inward development; • the demand for estates for development and housing in the peripheral areas is growing, while the central areas face oversupply of residential space.
Disurbanisation (urban decline)	• Population is declining in both central and peripheral areas, making the whole urban agglomeration smaller; • the demand for residential space is limited; • there are empty flats of poor technical standard in central areas; • there is hardly any new construction activity; • unemployment is growing and the purchasing power of households is falling; • city in decline; • the built-up areas are shrinking.
Reurbanisation (urban revival)	• The share of central areas in population total is growing; • the character of the city and its functions must be redefined (urban revival); • preservation of existing heritage.

Source: Wojewnik-Filipkowska, Rymarzak, Trojanowski, based on: Bury P., Markowski T., Regulski J. (1993). Podstawy ekonomiki miasta. Fundacja Rozwoju Przedsiębiorczości. Łódź: 97-100.

3. Functional determinants of city growth and sustainable development

A city, therefore, grows not only quantitatively, but qualitatively as well. Quantitative city growth may be identified with its spatial expansion and a

Table 3. Options of strategic development.

Graphical interpretation	Option	Description
	Existing city	
	Intensification	inward development by compacting the existing structures
	Edge expansion	outward development by expanding developed areas along the boundaries of the settlement unit
	Linear corridor	development along specific ribbons of development
	Satellite	the emergence of new settlement areas, not connected with the existing development (satellites or islands)
	Free market	erratic expansion – a conglomerate of options, often complicated even further by the forms of scattered development
	Polycentric	• means a spread of separate sub-centres, that have an urban significance less than the city centre but greater than the rest of the internal and external suburbs; • is usually associated with a network of meeting points, and local intensification at those points • it may often be connected with the development around village centres originally outside the nearby area of a city • the process of becoming polycentric may involve either or both of internal selective intensification and external development

Source: Stephen Marshal Institute of Community Studies (2005). Urban Pattern Specification. London: p. 28

change of function of certain areas within the city or in its suburban areas. Qualitative growth should be related to the optimisation of urban space use by choosing the most efficient land use, providing the best possible level of services to the

inhabitants while retaining the high quality of the natural environment (Mierzejewska 2008, pp. 60-61). According to the threshold theory (Malisz 1969), a city or a settlement system does not grow in a smooth but rather in a jerky manner as it encounters various obstacles called growth thresholds. The thresholds can be of physical, environmental, infrastructural or functional nature and they are connected with the current land use pattern which does not satisfy current needs. Further city growth requires, therefore, a redesign of the spatial layout. In other words, a decision has to be made on the best possible course of city development and the sequence in which particular areas will be developed. Without some capital investment connected with overcoming the specific barriers, further population growth will mean a deterioration in the quality of life or, in the worst case, depopulation of the city (disurbanisation).

Spatial aspects of city growth can be understood as seeking a spatial order which will be accomplished through a local plan. There is more to spatial order than just an agreeable, geometric distribution of structures within the urban area, with priority given to functional aspects, i.e., the best possible functioning of the urban territorial system. Spatial order is also to deal with the disparities in spatial development and to cover land use conflicts. A defined spatial order in a city determines its social and economic development, in both quantitative and qualitative terms (Mierzejewska 2008, pp. 60-61). The literature of the subject does offer certain proposals of how to make a city develop in a sustainable way. They are, among others, the concepts of a smart city and of a compact city (Table 4).

Smart growth works towards the basic goals of sustainable development, therefore the application of this model is expected to foster not only economic growth, but also the quality of the natural environment and the recreational opportunities offered by the city. It will also favour social equality, especially because of the availability of housing and the development of social ties. Smart growth favours compact land use models, oriented at public transport as well as pedestrian and cycling mobility. In this way, it helps to maintain a proper population density in the city centre, which prevents urban sprawl. From the planning perspective, smart-growth-oriented solutions involve in the first place, a planning system that favours multifunctional, diversified development. Such development preserves to the greatest possible extent areas free from development and connects with the existing development into one system. At the same time, it should help to preserve the resources, minimise waste and boost the energy efficiency of the urban environment.

A compact city, on the other hand, is a city of streets and squares – structures providing an opportunity for social interactions, while its compact character helps to meet high standards of safety and security. Compact city is an ideal place to live and experience the liveliness and diversity of urban life. Often, the compact city is imagined as an option for a more sustainable urban form — a city of mixed uses, short travel distances, with vivid public spaces and a vital urban society. The compact city idea has been recently promoted as an urban form and as a model for counteracting the urban sprawl of European cities (Jenks et al. 2004, p. 193).

Under integrated planning, the expected quality of the natural environment in various city areas depends on their function and the form of development. It is a

Table 4. City types description.

City model	Characteristics
Smart city	Interpreted in terms of order that results from the integration of five others: environmental, social, economic, spatial and institutional. The concept of the model has been developed in response to the adverse effects of suburbanisation. Sustainable growth depends on the spatial and functional arrangement of the city. The layout of the city and the way in which it has been built up generates a specific demand for energy (heat, electricity, fuels, etc.), also through the mobility needs of the inhabitants. This, in turn, determines the possibility of providing efficient public transport, water and sewage management, waste management, public spaces etc.
Compact city	An idea for a residential environment combining many functions and services, including cultural goods. The concept provides for the creation of public spaces in which you can hardly talk about privacy, but which are to ensure the feeling of security, as it is empty or depopulated areas where the hazard of assault, vandalism or theft is the greatest. A compact city is marked by liveliness and activity, which favour social contacts.

Source: Wojewnik-Filipkowska, Rymarzak, Trojanowski, based on: Mierzejewska J. (2008). Zrównoważony rozwój miasta: aspekty planistyczne. Biuletyn Instytutu Geografii Społeczno-Ekonomicznej i Gospodarki Przestrzennej Uniwersytetu im. Adama Mickiewicza w Poznaniu, Seria Rozwój Regionalny i Polityka Regionalna (5). Poznań: pp. 51, 60; Kobylarczyk J. (2010). Komfort środowiska zamieszkania w obszarach centralnych niewielkich obszarów miejskich. Architektura. Czasopismo Techniczne. Wydawnictwo Politechniki Krakowskiej. Cracow: p. 222; Jenks M., Burgess R. (2004). Compact Cities. Sustainable Urban Forms for Developing Countries. Taylor & Francis e-Library.

fact that residential areas require a different quality of the environment than areas dedicated to industrial, commercial or transport activities. This seems fairly obvious in areas where one function prevails. It becomes more complicated in multifunctional areas, where different functions have to meet different environmental standards. In such a case, the standards should be decided by the local authorities, conducting their policy of future development or redevelopment of the area. The role of the authorities (local or regional) is also to define certain minimum environmental standards that will be in force in every city area, whatever the form of development. The standards have to secure the proper quality of the environment also in terms of proper ratios (for air and water quality and noise levels), and the related safety and security of the inhabitants and their property (Mierzejewska 2008, pp. 60-63).

Proper land management in the city is the basic way of giving direction to development processes. Its inherent instrument is the land use plan. If city areas are not to develop in a haphazard way, land use changes should preserve the spatial order, understood as a harmonious whole which reconciles planning, architectural, environmental, cultural and social considerations.

In Poland, planning issues are basically regulated by the 27 March 2003 Physical Planning and Spatial Development Law and the relevant secondary legislation

(Dz. U. Nr 80, poz. 717). On this basis, the following planning documents can be identified:

- Land use and spatial development study, which is prepared for the area of the whole municipality and is a spatial policy-making document, but not a law.
- Local plan, which does not have to be prepared for all areas, but which shapes the way in which property ownership rights are exercised, defines the use and rules of development of sites and upon which building permits are issued. Local plan is a law.
- Local development framework – in areas not covered by a local plan the framework is, in a way, its substitute and is binding for the body issuing building licences.

It should be stressed here that under the 27 March 2003 Physical Planning and Spatial Development Law, the basic document upon which building permits are issued is the local plan and, in its absence, the local development framework. When a decision is issued on the basis of the local development framework, it is called the location decision for a public goal project and development framework decision for other projects. These documents and the planning guidelines determine how a site can be developed, and consequently, what the future profits from the property and its value will be.

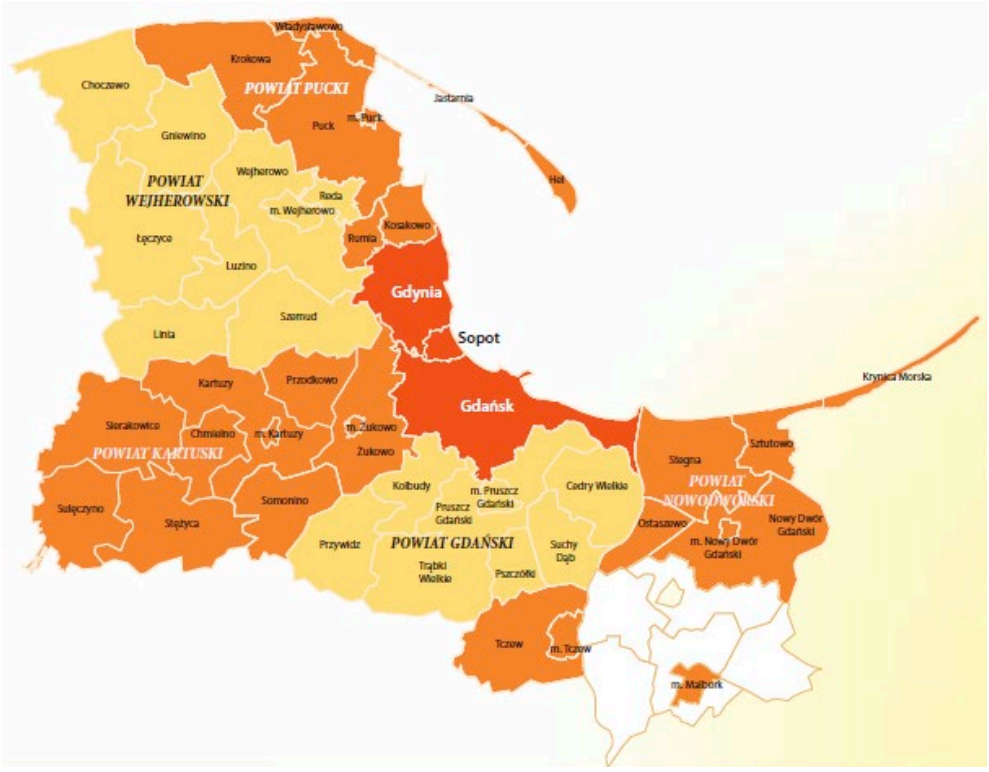
The conditions in Poland and especially the planning powers granted to local authorities cause a situation whereby spatial order can effectively be shaped within one administrative territory only. The situation is very different in an area composed of a few administrative units (or their parts) and this is the case of a city and the suburban areas around it. Urban sprawl and the strong ties between the city and its suburban zone make it necessary to study city development problems in conjunction with this zone (Mierzejewska 2008, p. 67). With the city development models in mind, we will now attempt to discuss the spatial and functional situation of Gdańsk.

4. Space and land use in the city of Gdańsk

Gdańsk Metropolitan Area (GOM) covers towns and municipalities located in ten counties, including three city counties forming the core of the GOM: Gdańsk, Gdynia and Sopot (the Tricity conurbation), the urban and the rural municipalities of Tczew and the municipality of Malbork (Figure 1). GOM total area amounts to 5,051 square kilometres, inhabited by 1.4 million people[2]. The average population density for the whole of Gdańsk Metropolitan Area is nearly 265 per square kilometre while 56% of GOM population live in the three core cities of Gdańsk, Sopot and Gdynia.

[2] www.gdansk.pl - figures for 4th quarter of 2010.

Figure 1. Gdańsk Metropolitan Area – boundaries and composition.



Source: www.gdansk.pl.

Tricity and the towns of Tczew, Pruszcz Gdański, Rumia, Reda and Wejherowo form a spatial system of a polycentric, ribbon layout. Such layout is a result of both, geographical and social factors on the one hand and political and economic ones on the other. The coastal location has decided the shape of the spatial and functional structure of the urban agglomeration through:

- port location spatially determined by accessibility conditions and hydro-engineering considerations: the port of Gdańsk at the mouth of the Vistula in the Gulf of Gdańsk and the port of Gdynia in the glacial stream valley at the mouth of the River Chylonka;
- the growth of the cities of Gdansk and Gdynia in the neighbourhood of the ports, which is a spatial and functional consequence of their location;
- ribbon development of the cities along the communication terrace at the foot of the Kashubian plateau between, south and west of the two ports.

An important factor shaping this pattern is the fact that development takes place along major transport routes that meet in Gdańsk or Gdynia. Zones and

ribbons of suburban, non-agricultural districts have formed in this way, converging in Gdańsk and in Gdynia. This process can be seen most clearly along the exit roads to the towns of Tczew, Wejherowo and Kartuzy. The growing number of commuters and the progressing urbanisation of rural areas are the most visible impact of the agglomeration on the region around it. Apart from these connections and the processes they stimulate, there is also growth in the functional and spatial relations of more than local dimension, connecting:

- place of residence with the centre of the agglomeration, where highly specialised services that are not used on a daily basis are available;
- place of residence with the universities in Tricity;
- place of residence in the centre of the agglomeration with areas of daily and weekly recreation.

The nature of the spatial and functional connections above and their layout is marked by irregular development and a varying spatial extent of particular functions. The rapid development of the centre of the agglomeration, its ever-strengthening links with the functional zone and its integrating role determine the shape of the functional region with all the classic characteristics of a metropolitan area (Plan Zagospodarowania Przestrzennego Województwa Pomorskiego 2009, p. 139).

Gdańsk is the main city of the developing subregional settlement system. The urbanisation processes in Gdańsk makes the inhabitants leave for the peripheral city districts like Osowa, Matarnia, Kokoszki, Chełm, Orunia or Rudniki. These districts offer ample space for development (usually with all the utilities) in environmentally attractive areas and at a lower price than in the city centre (Figure 2). The situation in the commercial property market is similar, resulting in businesses also moving to the districts mentioned above. There is concern in Gdańsk about the rapid growth of the suburbia while a proportion of the living structures in the centre remain vacant (Uchwała Nr XVIII/431/07 Rady Miasta Gdańska z dnia 20.12.2007, p. 3 [*Gdańsk City Council Resolution*]).

The spatial and land-use pattern of modern Gdańsk is, in the first place, determined by the natural conditions. The lower terrace, until recently concentrating all the areas of urban development, may be considered to be an area which has been mostly shaped and filled with residential and commercial development. The city centre (Śródmieście) is here, with the historical structures of the Main Town (*Główne Miasto*) and the Old Town (*Stare Miasto*), the 19th-century Wrzeszcz, the Cistercian Oliwa as well as the harbour and industrial parts of Nowy Port and Port Północny. The historical districts were, after WWII, filled with residential development, mostly blocks of flats. They are intersected by the main North-South transport axis of the agglomeration, comprising the thoroughfare, the long-distance rail and the city rail (SKM). This axis groups most of the city services, creating the so-called central service belt (CPU) of the city and the whole urban agglomeration. The CPU is undergoing massive refurbishment of the existing structures and new structures are being erected – predominantly services and housing, gradually filling the system. Śródmieście, in particular, has a vast reserve of land for develop-

Figure 2. Administrative structure of Gdańsk.

Source: Referat Informatyki UM Gdańsk (2010).

ment, as a result of restructuring of the former shipyard grounds as well as industrial and warehousing spaces. The growing awareness of the economic value of space, especially in heavily built-up areas, has recently caused interest to grow in undeveloped areas once meant to be district central places. Some of such areas have been assigned to other purposes (e.g., Wyspa Piecewska – for multi-family housing and the accompanying services), others can emerge as sites for large retail outlets (WOH), like Przymorze or Zaspa – the former airport runway.

The lower terrace in the south-east of the city includes parts of the agricultural land of Żuławy Gdańskie. On the western side of the lower terrace is the edge of the Gdańsk plateau, grown with the forests of the Tricity Landscape Park in the north. In the south, it is filled with sets of open spaces and developed land. There are valuable sites of interesting landscape exposure in the zone (possible outstanding natural beauty spots), but they are hardly accessible and, consequently, not in use. The upper terrace is the areas incorporated into the city of Gdańsk and its development started only after WWII. Most of the area remains undeveloped and is the main territory of future city development. Major transport projects have been completed here, like the Tricity ring road and the airport, but also numerous retail park projects (Centrum Handlowe Osowa, Centrum Handlowe Matarnia, Auchan, Outlet Fashion House, Morski Park Handlowy). We may, therefore, talk about the western belt of retail trade and services (ZPHU) – competitive for the CPU. Development taking place along the ring road (streets of Galaktyczna and Przywidzka) changes the nodal pattern of the ZPHU into nodal-ribbon pattern (Plan Zagosp-

odarowania Przestrzennego Województwa Pomorskiego 2009, p. 99). It should be stressed that within the developed areas of the lower terrace there is also land available for development, not built-up or extensively built-up areas or with temporary structures only. Development of such areas is gradually taking place.

However, the idea of inward city development, i.e., the filling of the existing spaces and greater development density is still difficult to effect, due to:

- the difficulty in eliminating the current land-use patterns (allotments, garages, trees);
- unclear ownership and planning situation (lack of local plans);
- protests of inhabitants and NGOs;
- greater development costs because of higher land prices, utility relocation, road redevelopment and the use of more advanced and more costly construction technologies.

The impediments listed above as well as capital intensity of the process drive investors outwards, to areas with clearly defined planning status (Studium uwarunkowań i kierunków zagospodarowania przestrzennego Miasta Gdańska [*Land use and spatial development study*] 2007, p. 18).

Not the whole of Gdańsk is covered by local plans. Although local plans preparation in Gdańsk has gathered momentum in recent years, less than 57% of the total area of the municipality was covered by local plans as at end of 2009, which equals 14,840.60 hectares (Raport o stanie zagospodarowania przestrzennego województwa pomorskiego. Ocena realizacji inwestycji w latach 2005-2008). At present, a significant proportion of the area of the city is covered by local plans – there were 466 plans in force in the early September 2011, and another 74 were underway. 112 local plans are still missing, primarily for areas requiring land consolidation or estate division, and for areas permanently excluded from development – forests, waters or farmland[3].

Having examined the spatial and land-use situation of Gdańsk, we are now going to focus on the differences in the value of estates in the discussed area, depending on their land use situation.

5. Determination of changes in real estate value

Real estate market value is its most likely price which can be obtained in the marketplace, determined with regard to transaction prices and the following assumptions:

- the parties to the agreement were independent of each other, were under no obligation whatsoever and were intent on concluding the agreement;

[3] www.gdansk.pl.

- there has been enough time for the estate to emerge on the market and for negotiating the terms of the agreement.

The market value of real estate should be determined with due regard paid to, among others, the characteristics specified in Art. 154 section 1 of the 21 August 1997 Real Estate Management Law, i.e., estate type, location, actual use, local-plan use, the degree of fitting with utilities and the existing development. In the absence of local plan, estate use is defined on the basis of the municipal land use and spatial development study or the land development framework for the site.

The guidelines above indicate that the market aspect of the real estate, which greatly affects its value and which should be taken into consideration in the process of valuation is the use (function) of this real estate as specified in planning documents. This aspect has been specifically mentioned in Art. 154 section 1 of the said legislation and in Art. 134 section 2 of the same law and in other regulation. Its importance is supported by the fact, that "for sale" offers in estate agencies usually include land use information (Siemińska 2011).

On the basis of information acquired from the treasury department of the Gdańsk City Hall, a calculation has been made of estate value increment that occurs following a land use change. The information is based on the list of estates on which the so-called planning fees were charged[4].

Nineteen cases appeared in the period of 2006-2011. The cases have been studied and the market extremes were discarded. It should be noted that property market is not uniform and property price differences may result from a number of factors, time including (price changes with time). The data obtained give us an insight into land-use-driven changes in estate values. The respective values quoted concern the same estate, on the same date and the same condition[5].

The information obtained in this way exposes the changes described as land value growth resulting from the following land use changes:

- from urban greenery to residential and commercial;
- from industrial to residential and commercial;
- from a hospital function to residential and commercial;
- from a church function to residential and commercial.

The results of the study are shown in Table 5.

Value increment is the greatest (79-100%) when land use changes from greenery to residential and commercial. This is obviously because of the significant land

[4] Planning fees are basically administrative fees, which in Poland are charged on land value increment resulting from a change in its use upon the sale of such estate

[5] The value of neighbouring real estates were not investigated and it may be a incentive for further research, however due to the economic characteristic of real estate, it seems obvious, that the value of the neighboring real estate would also change, and these all changes would consequently determine the city development model.

Table 5. Value growth resulting from land use changes.

No.	District of Gdańsk	Total area m^2	Decision date	Estate value prior to land use change (PLN)	Estate value after land use change (PLN)	Land use – before and after	Value increment (PLN)	Value increment (%)
1	Osowa	903	04-06-2009	27,100	54,200	residential and commercial before: greenery	27,100	100.00
2	Brętowo	1173	23-09-2006	147,100	262,900	mixed use: residential and commercial before: child recreation or recreation-related (similar to greenery)	115,800	78.72
3	Osowa	3453	27-02-2007	32,688	39,505	residential and commercial before: industrial and warehousing	6,817	20.85
4	Osowa	1132	27-02-2007	42,563	50,827	residential and commercial before: industrial and warehousing	8,264	19.42
5	Orunia-Chełm	743	28-09-2006	68,356	84,702	mixed use: residential and commercial before: land reserved for a hospital	16,346	23.91
6	Łostowice	14505	11-10-2010	1,160,400	1,203,915	residential and commercial before: preferred use – a church	43,515	3.75

Source: Wojewnik-Filipkowska, Rymarzak, Trojanowski, based on Gdańsk City Hall figures.

use limitations of estates dedicated to greenery. Subject to specific local plan provisions, this function usually precludes residential or commercial development.

In the case of land use change from industrial to residential and commercial, we have seen a value increment of 19.5 to 21%. It is much smaller than in the previous situation, as both functions make development possible. It should be noted, that the district of Osowa, where some of the estates studied are located, is in the periphery of Gdańsk, yet its growth is determined by residential development, which drives out the industrial use.

The relation between residential and commercial function and the services like a hospital seems interesting. It should be noted, that most hospitals in Poland

are publicly, not privately owned facilities. Value increment in this case amounts to 24%.

Gdańsk City Hall information allows us also to determine land value change when its function changes from religious (a church) to residential and commercial. The increment is insignificant – a mere 4%. This may result from the fact that there is little trade in estates with this function and the parties to such a transaction may be guided by the prices of adjacent land, usually meant for housing and services.

A general conclusion from the above is that what causes the greatest value increment is the possibility of development. A change between functions either of which makes development possible produces a much smaller value change.

6. Conclusion

The last few decades have seen transformation of microstructures (local settlement structures) of towns and cities forming the settlement network of the province of Pomorskie. For a long time, the historically-shaped towns partly preserved the continuous, concentric development pattern. Since the 1980s, however, development along major exit roads has continued, transforming oval or polygonal boundaries into urban ribbons or stellar forms. In the 1990s, a trend emerged for intermittent development of insular or granular forms. Also nodal satellite structures emerged. The 1980s and 1990s also saw the filling up of the space between individual settlement units.

Various undesirable models can be seen in Gdańsk: continuous ribbon (along exit or transit roads), intermittent of granular or scattered form. This creates vast, amorphous spaces, functionally disconnected, where access to services is becoming more and more problematic while the burden on the existing road network is growing, public transport is inadequate and rail transport is in decline (except the SKM axis). Continuous models are favourable in the case of small or medium-sized settlement units with a properly developed spatial and functional pattern, accordingly developed service centres capable of coping with the growth of new areas.

When a certain scale is exceeded, however, a monster city is likely to develop (its successive districts, despite certain differences between them, are beginning to create an illegible, continuous urban system). The side effects are poorer access to recreational areas, poorer exit from the city, high-density development and congested local road networks. With spatial pattern in disarray, all the benefits can be lost while the disadvantages are the source of greater hardship (the 19th-century model of cities). Urban growth of this kind may work against larger settlement units (Plan Zagospodarowania Przestrzennego Województwa Pomorskiego 2009, p. 70).

Suburbanisation within and around the Tricity conurbation is increasingly taking the form of urban sprawl, involving the emergence of large areas of intermittent development or single-function units that do not become centres. Among these amorphous, monofunctional units there are large areas with industrial zones and facilities as well as retail parks of various sizes, inaccessible by public transport. These units are not integrated by a defined central place concentrating pub-

lic spaces, the whole range of services and the basic ones in particular. Neither are they connected by a system of public transport with centres of higher urban hierarchy, or indirectly, with the central part of the urban agglomeration.

Urbanisation has a significant impact on agricultural and suburban areas as cities tend to expand. Most people stay within a territory marked by their home, the school, the work and the shop, and have no easy access to open rural spaces. This gives them the impression of being cut off from such areas on the one hand, and is characteristic of the current urbanisation of spatial systems on the other. Growth has been concentrating in large metropolitan areas, which continue their expansion as people tend to move to the suburbs. The expanding suburbs increase the distance to rural areas for the inhabitants of the central areas even further. The present model has a negative impact on the functioning of public transport and public utilities.

Too little attention is paid to various possible uses as land use models are prepared. In particular, the public sector (public authorities) should pay a stabilising role in the real estate market by taking proper action to determine the spatial development of the city (local plan approval). The activities of the municipality aimed at regulating (stimulating) the local property market may address other specific goals, like:

- preventing migration by driving property prices down, e.g. the prices of flats or land for single-family housing;
- preventing population inflow by controlling real estate supply and making the prices rise;
- easing congestion in city centres by changes in land use patterns that will move the working function to the periphery.

Measures like these could eventually affect the costs of the functioning of cities and their sustainable spatial development (Trojanowski 2010, pp. 208-209). In practice, though, investment projects based on an administrative decision are becoming a norm, which may lead to negative and irreversible spatial changes. Too little consideration seems to have been given by the lawmakers. Municipal bodies are under an obligation to prepare a local plan, which is universally binding and have legal consequences only when specifically required to do so by a piece of legislation. Simultaneously, they are under a strict obligation to prepare a land use and spatial development study which is just an act of management. It is stressed by the doctrine of law that the absence of local plan may be a source of anxiety for property owners and real estate transactions and may lead to ownership infringement. Approval of planning documents – a lengthy and complicated process – also seems to discourage possible investors from getting involved in the process of shaping the urban space (Sulewska et al. 2010, p. 97).

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