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Edited by Gloria Niin & Himansu Sekhar Mishra

# Landscapes in FLUX

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# FROM “GREEN WEDGES” TO “GREEN INFRASTRUCTURE”. BACK TO THE FUTURE?

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Green Spaces Planning and Development, Concepts, Poland

## ABSTRACT

Evolution of ideas, discourses or theoretical concepts result in changing planning, design or management practices of urban green spaces. These mechanisms are true irrespectively from planning traditions and systems worldwide. The paper describes the evolution of ideas towards green-spaces-planning in Poland, from theory to practice. It aims in discussing the most influential ideas, which directed the green spaces development in Polish cities, in the 20th and 21st centuries. Basing on the literature review, as well as examination of planning documents for selected Polish cities, several such concepts were identified. Amongst them, there are concepts recognised all over the world, likewise those, which are very specific for Polish cities. The performed analysis of concepts allowed us to identify three main groups: (1) Ideas, which are not used anymore, but their physical effects are still evident in urban fabric, e.g.: “Green Wedges”, “Multifunctional Centres for Leisure and Entertainment”, “Indicators for Green Spaces Development”; (2) Ideas still influencing green-spaces-planning in Polish cities, e.g.: “Urban Natural System”; (3) Ideas just emerging in Poland, e.g.: “Green Infrastructure”. Comparative studies of examined discourses allowed us to draw two main conclusions. First, depending on the time, when the particular idea was born and/or implemented, one can observe the dominance of social or ecological discourse, often correlated with specific political, social and economic situation in the country. Second, conclusion is linked to the notion of revivable ideas that were popular at the beginning of the 20th century, and nowadays are gaining interest again. One such example is an integrated approach to green spaces development, actualised through the concept of “Green Wedges” (widespread in the initial stages of planning history in Poland) and Green Infrastructure that is still not well developed, but gaining the attention nowadays.

## INTRODUCTION

Evolution of ideas, discourses or theoretical concepts result in changing planning, design or management practices of urban green spaces. These mechanisms are true irrespectively from planning traditions and systems worldwide. The tradition of green-spaces-planning and existence of public recreational spaces in cities date back to 18th century in Europe and North America. The legacy of 18th and 19th centuries is enormous and amongst founders of concepts and ideas important for green-spaces-planning in cities one should mention C.C. Hirschfeld, J.C. Loudon, F.L. Olmsted, E. Howard (Jørgensen 2005). The changes of approaches toward planning and design of urban fabric have been progressing gradually following development of environment related knowledge. The worldwide recognised concepts or plans significant for urban design and green-spaces-planning include: J.C. Loudon’s “Greenbelt Plan” for London, F.L. Olmsted’s “Parkways”, E. Howard’s “Garden City”, C. Perry’s “Neighbourhood planning” or later related to modern movement – Le Corbusier’s “Radiant city” and Radburn’s “Cluster concept” (Laurie 1980, Woudstra 1997, Maksymiuk 2008, 2009).

The principles for planning and realisation of green-spaces in cities have been changing thoroughly the twentieth century in Poland. The changes of discourses over the decades reflect altering social, economic and political circumstances. The paper describes the evolution of ideas towards green-spaces-planning in Poland, from theory to practice. It aims to discuss the most influential ideas, which directed the green spaces development in Polish cities, in the 20th and 21st centuries.

## MATERIALS AND METHODS

**The carried research consisted of two main phases-**

(1) Identification of concepts and ideas that were or still are relevant for green-spaces-planning in Polish cities. In order to search for discourses that usually first appeared

as theoretical concepts a literature review was performed, including Polish and international publications;

(2) Analysis of selected concepts in order to find out their specific characteristics and to understand their influence on design and planning of cities in certain times. The examination of spatial planning documents and strategies for all Polish cities over 200,000 inhabitants was performed (totally 19 cities).

The survey of Polish achievements in regards to green-spaces-planning was accompanied by a comprehensive summary of international historical background for a better presentation of a wider context.

## RESULTS

Critical analysis of sources including scientific papers and spatial planning documents for selected Polish cities resulted in identification of 11 concepts that were influential or still are significant for the planning practice. Amongst them, there are concepts recognised all over the world, likewise those, which are very specific for Polish cities. A summary of main characteristics of above mentioned concepts and ideas is presented in Table 1 [at the end of paper].

### Historical Concepts and Ideas

The concept of “Green Wedges”, elaborated at the beginning of the twentieth century, dominated perception and a way of thinking about green spaces in cities. It is considered to be the first such comprehensive notion of the urban green spaces system in Poland (Wilski 1990, 1993, Kotaszewicz 1994, Kicińska 2000, Szulczewska, Kaliszuk 2003, 2005, Maksymiuk 2008, 2009). The concept was implemented in 1916 in „A draft regulation plan for Warsaw”, which was the first complete land-use plan for the capital city (Fig. 1). The concept established a radial pattern of green wedges, connecting a hinterland with the city centre (Fig. 2). The main green

spaces functions were to secure a proper air ventilation in a downtown zone and provide city dwellers with places for recreation (as the green wedges mainly included parks, children’s gardens, squares and allotments). This regional approach toward spatial planning was also prominent in Europe and America at that time (Szulczewska, Kaliszuk 2003 after Ndubisi 2002). The “Green Wedges” concept had been an inspiration for generations of town planners. Nevertheless, in the later succeeding land-use plans, the spatial contours of “green wedges” had been systematically limited, the concept has left a trace in a layout of Warsaw green spaces.



Fig. 1. A draft regulation plan for Warsaw, 1916. Source: Kotaszewicz, T., 1994.

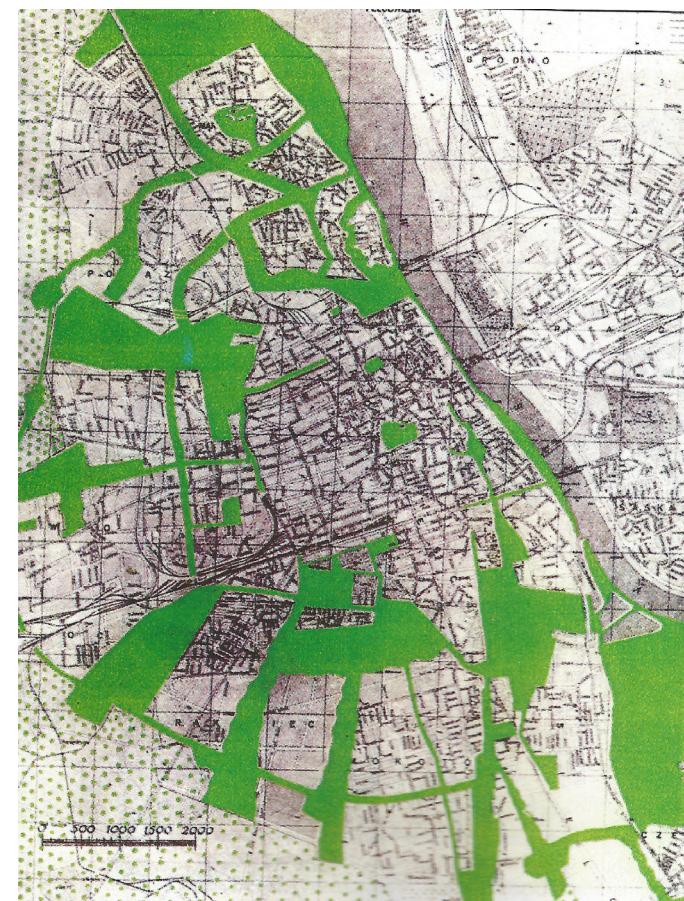


Fig. 2. “Green wedges” as implemented in Master Plan for Warsaw, 1931. Source: Kotaszewicz, T., 1994

The above concept was continued in a further theoretical concept of a row-and-satellite development of Warsaw. It was popularised by edition of a book by Chmielewski and Syrkus (1934) with iconic title “Functional Warsaw”, which later on became a name of the concept (Fig. 3). The authors believed in concentrating city dwellings along transportation routes and dividing them by rows of areas covered by vegetation. The importance of linking urban and regional natural structures



(which were treated with the same level of significance as transport or economic connections) was emphasised.

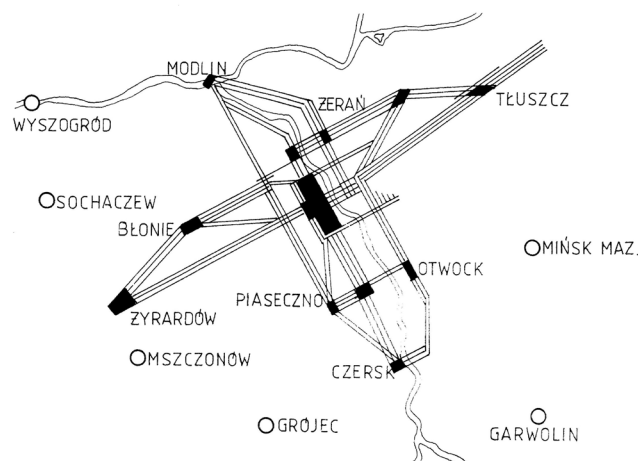


Fig. 3. Functional Warsaw scheme by Chmielewski, J. and Syrkus Sz. Source: Warsaw Master Plans, 1990.

Similarly to the previous concept, the functions of those vegetated spaces were mainly recreation for citizens and improving of the city's climatic conditions (Wilski 1990, 1993, Szulczewska, Kaliszuk 2003, 2005, Maksymiuk 2008). The post-war period for Warsaw was 'a period of reconstruction' after a vast war destructions. This new situation produced a possibility of rebuilding Warsaw according to modern urban ideas and concepts, which at that time in Poland revolved around the political and social issues. The new paradigm actualised through a concept of "Parks of Culture and Leisure" elaborated in the 1950s (Piątkowska 1983, Kicińska 2000, Szulczewska, Kaliszuk 2003, Maksymiuk 2008). The discussed idea derived from the soviet experiences, where the Parks of Culture and Leisure had served as a place for recreation, but combined with a political programme. The programme of such parks was carefully described, aiming at providing cultural entertainment for dwellers

(by dint of cinemas, amphitheatres, etc.) and enhancing sporting activities (stadia, playgrounds, etc.), but also serving a place for propaganda mass events (Czarnecki 1961). Nevertheless, over the years a character of the Parks of Culture and Leisure has been evolving from a socio-political towards more concentrated on recreation, leisure and entertainment. During the 1960s and the 1970s, many parks in Poland were reconstructed in order to serve newer trends in a recreation, what could be considered as a clear shift in leading concepts. The new idea of "Multifunctional Centres for Leisure and Entertainment" appeared, with main aim to provide places for a massive recreation. According to the concept's principles, each multifunctional centre was supposed to consist of several individual leisure objects, such as parks of different programme and area, sports grounds with diverse facilities, etc. Altogether, these elements constituted an important part of the system of open spaces (Piątkowska 1980, Kicińska 2000, Szulczewska, Kaliszuk 2003, Maksymiuk 2008, 2009).

The next concept that gained popularity in the 1970s is "System of Open Spaces in Cities", elaborated in 1968 and further developed in 1974 (Smogorzewski, 1968, 1974). It underlined a structural role of all open spaces in forming the cityscape, not emphasising recreation significantly (Maksymiuk, 2009).

The 1960s in Poland it's time when diverse norms, standards and indicators concerning a vast range of human activities became popular. In 1964 and 1974 "Standards and Indicators for Green Spaces Development" were implemented. These regulations indicated that recreational areas and sports grounds had to be evenly distributed within a city, following a minimum standard of 8 square metres per inhabitant. In overall city structure, the recreational spaces and sports facilities were thought to cover at least 50 per cent of the built-up area. Additionally, the standards introduced a rule to incorporate basic recreational and sports facilities within a distance of 500 metres for dwellings (Król 1995, Kicińska

2000). Implementation of these standards resulted in a multi-layered hierarchical concept of a recreational system – from neighbourhood level to a whole city. Besides, each level consisted of recreational facilities provided to fulfil different needs (Kicińska 2000, Szulczewska, Kaliszuk 2003, Król 2004, Maksymiuk 2009).

### Ideas still influencing green-space- planning in Polish cities

The growing awareness of environmental protection that spread from early 1970s around the world had also influenced Polish planning profession and brought a change in thinking about the city's green and open spaces. Their recreational function, which up to that time had been considered as crucial in elaborated spatial documents, took a second place and was exchanged with an ecological role. The environmental awareness is clearly visible in the appearing concepts and ideas of that time (Stala 1986, 1990). The environmental function of the green areas started to be perceived as key issue, while the recreational one became less important (on a contrary to the previous decades) (Maksymiuk 2008). Promoted ideas and proposed concepts at that time follow 4 key approaches towards ecological planning: (1) sustenance of ecological niches equilibrium, (2) support of functioning ecosystems connectivity in time, (3) maintenance of ecological systems structural connectivity and (4) keeping proper relation of ecological systems to existing abiotic conditions (Andrzejewski 1980, Kaliszuk 2003).

The reflection of implementation of ecosystem theory into a planning process was actualised through a concept of the **Urban Natural System** (UNS) (Szulczewska, Kaftan 1996). The UNS underlines the importance of a protection and, at the same time, formation of ecological systems

in order to secure proper living conditions for city dwellers (mainly in a relation to climatic condition related to air ventilation) (Szulczewska, Kaliszuk 2005). In the theoretical concept, the UNS structure consist of

areas important for climatic, hydrological and biological natural processes – the so-called “core areas”, which are supplemented by “supporting areas”, crucial only for one or two functions (e.g. air ventilation and hydrology). The provision of recreational function was not fully recognised originally, and it was supposed to be additional, however green spaces were considered as linkages between UNS structural elements. In Warsaw the UNS has been implemented in the spatial policy under the name of Warsaw Natural System (Fig. 4).



Fig. 4. Warsaw Natural System as implemented in Warsaw Spatial Policy, 2006 amended in 2010.

The notion of ecological systems was developed in several cities in Poland, however sometimes under different concepts' names. Thus, in 2006 in Warsaw, the Urban Natural System was applied as Warsaw

Natural System and it implemented into a city spatial policy (amended in 2010). Also in previous plans and strategies that had been elaborated for Warsaw since 1998 there were references drawn towards Urban Natural System. It should be reckoned as a positive experience, however at the same, this concept and regulations cannot ensure an efficient level of the recreational provisions for Warsaw dwellers. Moreover, it should be mentioned that a spatial range of the Warsaw Natural System, as it was delimited originally compared to today's layout, is greatly limited.

A specific transformation or re-definition of main UNS objectives can be found in an “**Ecological Framework**” concept presented in 2002 (Przewoźniak, 2002). The author does not assign individual structural elements for specific functions (biological, hydrological or climatic), but underlines that properly delimited ecological framework will sufficiently regulate these processes. However, integration of regional and local ecological frameworks and providing connectivity between those structures are strongly stressed in the concept's objectives (Kaliszuk 2003). The examples of application of this concept can be found in cities such as: Gdańsk, Gdynia, Elbląg or Tczew.

Simultaneously to Urban Natural System theoretical concept, a different application concept of “**River Parks System**” (1996) was proposed for the city of Cracow (Bohm 1996, Hrabiec 2007). It introduced a new system of green spaces, in which city hydrological network had been its backbone. The concept assumed integration of ecological, social and flood protection functions provided by green spaces

The next stage in the evolution of green spaces concepts started with an international acceptance of sustainable development idea as a leading policy. A general idea of “Ecological City” or “Sustainable city”, has actually acted as a base for two crucial concepts: “green city” and “compact city” (as both of them found themselves around

ecosystem theory) (Szulczewska 2002). However, the two concepts differ in their objectives. The “green city” concentrates on the relation between the built-up areas and natural spaces important for natural processes, while the “compact city” depicts on the model of ecosystem functioning. The examples of applications of both concepts can be found in Warsaw, where “green city” advocates promote protection of and development of green spaces and “compact city” supporters choose densification of urban fabric at the expense of green areas.

### New ideas just emerging in Poland

Concept that is slowly gaining attention in Poland nowadays is “**Green Infrastructure**” (GI). However, the concept has been identified since over a dozen of years and in most European countries and in America is well recognised and applied (Benedict & McMahon 2006, Davies et al. 2006, Hostler, Allen, & Meurk, 2011; Mell, Henneberry, Hehl-Lange, & Keskin, 2013; Mell, 2014), in Poland it is still rather discussed by academics than practitioners (Giedych et al. 2012, 2014, Szulczewska 2014, Drapella-Hermansdorfer 2014, Pancewicz 2014). The EC Green Infrastructure Strategy (2013) brings forth the need to implement this concept in countries where GI concept has not yet been adopted, so it marks a new trend also in relation to urban planning and more specifically green spaces planning.

### DISCUSSION AND CONCLUSIONS

Comparing leading 20th and 21st centuries' discourses concerning green-spaces-planning in Poland, it can be stated that the main emphasis has been moved from their recreational function to their natural function (important from ecological point of view). Some of the Polish concepts can be easily linked to ideas recognised or promoted worldwide. For example, in objectives of Functional Warsaw concept influence from Corbusier's Radiant city can be traced.

Also authors of River Parks System point Emerald Necklace by Olmsted as their inspiration.

The performed concepts check-up allowed us to identify three main groups of ideas, which can finally be classified as:

(1) Ideas, which are not used anymore, but their physical effects are still evident in urban fabric, the so-called historical concepts e.g. “Green Wedges”, “Parks of Culture and Leisure” or “Multifunctional Centres for Leisure and Entertainment”;

(2) Ideas that have been promoted in the past, but they are still influencing green-spaces-planning in Polish cities, e.g. “Urban Natural System”, “Ecological Framework” or “River Parks System”;

(3) “Fresh” ideas that are just emerging in Poland, such as Green Infrastructure.

Comparative studies of studied concepts allowed us to draw two main conclusions. First, depending on time, when the particular idea was born and/or implemented, one can observe the dominance of social or ecological discourse, often correlated with specific political, social and economic situation in the country. Second conclusion is linked to the notion of revivable ideas that were popular at the beginning of the 20th century, and nowadays are gaining interest again. One such example is an integrated approach to green spaces development, actualised through the concept of “Green Wedges” (widespread in the initial stages of planning history in Poland) and Green Infrastructure that is still not yet developed, but gaining the attention nowadays.

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Tab. 1 The review of studied concepts and ideas related to green-spaces-planning in Poland in 20th and 21st centuries.

No.	Name of concept / idea	Period of time / Year of elaboration	Author(s) / Promotor(s) in Poland	Scale (regional/ city/local)	Main objectives	Application / Implementation	Dominating discourse / function
1.	Green Wedges	1920s	Tołwiński T. et al.	City	- green spaces linkages between city centre and suburbs - recreation and air ventilation	- 1916 – implemented in a Draft regulation plan for Warsaw; 1929 implemented in Master Plan for Warsaw -	Recreational Hygienic
2.	Functional Warsaw	1934	Syrkus S., Chmielewski J.	City / regional	- minimising of conflicts between functional zones - zones: dwelling and spa, agrarian, orchard, horticulture, sport and industry	- theoretical concept prepared for international architecture contest (CIRPAC)	Structural
3.	Parks of Culture and Leisure	1950s – 1960s	Majdecki L.	Local (particular type of green spaces)	- providing of spaces for mass events - enhancing sporting and cultural activities (e.g. stadia, amphitheatres, etc.)	- designed and constructed in large cities all over Poland, e.g in Warsaw and Katowice	Political Social Recreational
4.	Multifunctional Centres of Leisure and Entertainment	1960s – 1980s	Piątkowska K., Kicińska E.,	Local (particular type of green spaces)	- creation of hierarchical system of green spaces fulfilling various recreational, cultural and sports needs of city dwellers	- Warsaw Multifunctional Centre of Leisure and Entertainment – Moczydło	Recreational Social
5.	System of Open Spaces in Cities	1970s – 1980s	Smogorzewski J.	City	- open spaces as main structural elements shaping the cityscape	-	Structural
6.	Standards and Indicators for Green spaces Development	1970s – 1980s	Ministry of Spatial Economy and Environment Protection	City / Local (by providing legal basis for construction of specific green spaces)	- ensuring the proportionality between built-up and green areas in cities (8 – 15 sq. m per inhabitant) - providing diverse recreational and sport facilities	1964 – Ordinance no. 118 1974 – Ordinance no. 9 Legally binding regulations till 1984	Recreational Social
7.	Urban Natural System	1996 – onwards	Szulczewska B., Kaftan J.	City	- enhancing and maintaining of natural processes	- implemented in Warsaw spatial policy as Warsaw Natural System (2006)	Ecological (climatic, hydrological, biological)
8.	Ecological Framework	2002 – onwards	Przewoźniak J.	City	- maintaining the continuity of urban and regional ecological framework - enhancing and maintaining of natural processes	- examples of implementation in Gdańsk, Gdynia, Tczew and Elbląg	Ecological Structural
9.	River Parks System	1996 – onwards	B hm et al.	City / Local (particular type of green spaces)	- incorporating of vacant land along rivers and streams into green spaces system to serve as recreational spaces - providing natural areas for flood protection	- implemented in Cracow spatial policy	Recreational Structural Flood protection
10.	Green Infrastructure	From 2010	Szulczewska B., Kowalski P., Giedych R.,	All scales from national through regional, city, local and site	- multi-functionality of spaces - structural and functional connectivity of GI elements - multi object approach	Not implemented yet, still discussed as theoretical concept	Multifunctional