



Aesthetic Design of Tall Structures in Historical Cityscape

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Summary

The paper describes research challenges of aesthetic design of the tall structures of contemporary cityscape and is based on the analysis of dynamic 'vertical' transformation of the capital of Poland where the coexistence of two different landmark clusters is visible – historical and modern. They are followed by important symbolic values - e.g. reconstruction, ideology, freedom and modernity. Different forms and qualities related to tall structures in Warsaw – among them over 70 skyscrapers – allows to formulate up-to-day conclusions on the perception and design of very high objects in the context of the 'horizontal' cityscape. The paper proposes redefined approach to the aesthetic design of rising metropolises and return in creation of monumental and contrasted space to harmony and finesse – values that in design context can correspond to Japanese term 'Wa' – with complex methodology based on perception theory, social psychology, local identity and digital 3D modeling.

Keywords: reductive perception; error of scale; visual synergy effect; balanced contrast; multiscale context; high-rise structures; mega-dominant; vertical skyline; visual anomalies; visual integrity.

Warsaw experience with 'vertical' city skyline dates back to the medieval times when a 80-meter high tower of the gothic cathedral loomed above the city. The most valuable portrait of panorama of Warsaw with vertical objects was painted by B. B. Canaletto in 18th century (Fig. 1). Two centuries later Canaletto's vedutas helped in the reconstruction of totally destroyed city after the WW2. The

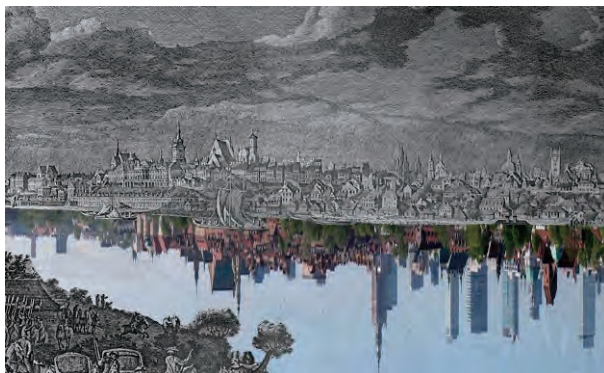


Fig. 1: Two different skylines: the historic panorama of Warsaw painted by Bernardo Bellotto 'Canaletto' (1772) and the present-day silhouette of the city reflected in Vistula River (captured by W. Olenski, 2009)

unique process of 'rising up' historical cityscape (1945-1980) was honored by the UNESCO inscription. The main recognized value was 'restitution' - integral reconstruction of physical and symbolic qualities which contributed to changes in planning doctrines [1].

Many high-rises erected in the post-war period in Warsaw were related not only with building a new city but also with attempts to reduce the exposure of the enormous symbol of Soviet domination – the Palace of Culture and Science (built 1955, 231 meters high). The result was location of two high-rise districts with modern skyscrapers (1960-1989) which entered the '3rd dimension' to the Warsaw cityscape: the Eastern Wall and the Western City Center ('Warsaw Manhattan' which

silhouette can be seen on the Figure 1). Both high-rise clusters designed in the opposition to heavy stone architecture of Soviet Palace are reflecting two different conceptions of tall objects' design that can be named as 'linear' layout or 'dynamic' layout. Architectural forms of skyscrapers are

‘steel-and-horizontal’ or ‘glass-and-vertical’. Selected features reveal important design principles of ‘out-of-scale’ objects - balanced contrast and multiscale perception - which allowed to avoid extreme spatial solutions in upper level of cityscape: monotony or chaos.

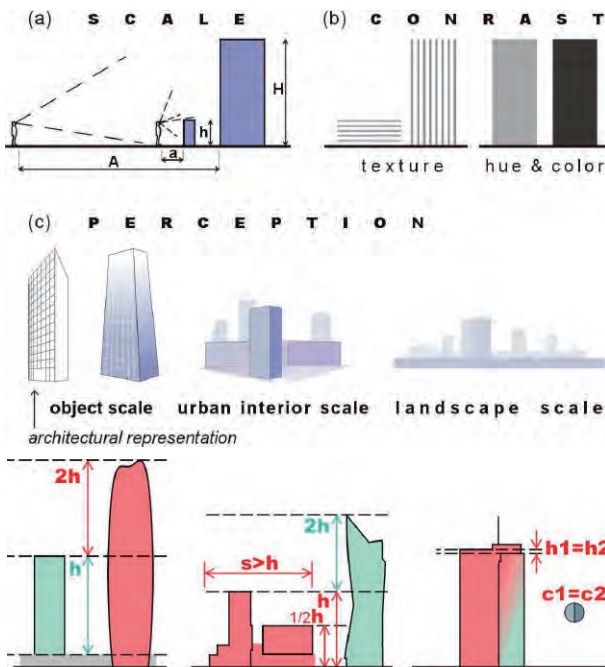


Fig. 2: Basic elements of visual perception of tall objects: (a) scale, (b) contrast, (c) different scales of perceptions and (bottom) compositional and visual anomalies of high-rises located in Warsaw city center.

(Fig. 2, bottom). Very strong visibility of tall objects spreads into the area of entire city [5] and all visual anomalies are multiplying leading to the ‘Visual Synergy Effect’.

Vertical development of contemporary cities with very dense and extremely high urban structures is equally subject of economy and urban planning as well as symbolic perception of height and historical role of very tall buildings in cityscape. Aesthetic design of tall structures must unify this complex and divergent nature of verticality taking into account multiscale visibility of tall objects with emerging view anomalies, reverse rules of perception or similarity to natural landscape scale. To avoid reductive perception of high-rises (error of scale) the aesthetic design should refer to the deepened and systematized approach to the vertical cityscape where artistic values and aesthetic perception are equally important as physical form and function of urban space.

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After transformation of Poland (1989) the growing number of tall buildings made the capital of Poland important high-rise metropolis in Europe [2]. The analyzes made by the author on the spatial configuration and shapes of over 70 skyscrapers in Warsaw [3] allowed to discover and classify different aspects of vertical cityscape. Digital 3D simulations proved that perception of city landmarks occurs simultaneously in 3 different scales: city panorama, urban interiors and in single building scale.

The perception of extremely high structures is determined by 2 main factors: scale and contrast (Fig. 2). Scale is related with object’s vertical dimensions and distance. And the contrast concerns the relationship of visual form of single object and of the entire cluster of vertical elements.

The achievement of right quality of rising cityscape - ‘imageability’ [4] - requires the use of ‘balanced contrast’ principle - suitable combination of opposite shapes and forms. Lack of compositional rules and ignorance of perception theory of vertical forms leads to visual anomalies in cityscape