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Houses and skyscrapers of Manhattan
– a horizontal or vertical city?

Domy i wieże Manhattanu
– miasto horyzontalne czy wertykalne?

Abstract

Residential towers undeniably changed the reality that surrounds us. Vertical structures have influenced the landscape of cities by shaping new, previously unknown panoramas. Infinite peripheries were split and reassembled again in the vertical form. Is it possible to create a comfortable living space in a small area? Can residential towers fit into a fully fledged and well-functioning urban structure? Problematic aspects of this scenario are discussed on the basis of the most representative example in the world, which is Manhattan, located in New York City. Analysis of the urban structure of specific districts and examples of residential towers enables the presentation of the differences, advantages and disadvantages resulting from a specific given forms of architecture and urban planning.

Keywords: New York, Manhattan, city, house, residential tower, hybrid

Streszczenie

Wieże mieszkalne niezaprzeczalnie zmieniły otaczającą nas rzeczywistość. Wertykalne struktury wpłynęły na krajobraz miast, kształtując nową, nieznaną wcześniej panoramę. Nieskończone peryferia zostały poddane rozczłonkowaniu funkcjonalnemu i ponownie scalone w formie pionowych konstrukcji. Czy dzięki temu udało się stworzyć dogodną przestrzeń życia na niewielkim terenie? Czy wieże mieszkalne mogą wpisać się w pełnowartościową i dobrze funkcjonującą strukturę miejską? Problematykę omówiono na podstawie najbardziej reprezentatywnego w świecie przykładu, jakim jest nowojorski Manhattan. Analiza struktury urbanistycznej poszczególnych dzielnic wyspy oraz konkretnych przykładów wież mieszkalnych pozwoli na dokładne przedstawienie różnic, zalet i wad wynikających z danej formy architektury i urbanistyki.

Słowa kluczowe: Nowy Jork, Manhattan, miasto, dom, wieża mieszkalna, hybryda

1. Introduction

Residential towers have been built since prehistoric times. The first examples that can be found primarily in the territories of France, Great Britain and Italian cities such as San Gimignano, Bologna, had various characters. They were residential buildings, also providing a shelter in uncertain times[1]. Over the years, along with urban development and technological progress, architecture and urban planning have gone through numerous changes and has been presented with new opportunities. The horizontal landscape began to give way to vertical forms, which irretrievably changed the panorama of big cities. It would seem that the present world would not function without the skyscrapers that concentrate city life, but they played the largest role at the end of the 19th century. The invaluable influence of the Industrial Revolution and the Chicago School have made the city rise upwards[2]. Skyscrapers have become the answer to the problem of the rapid spread of people to suburban areas (urban sprawl). They allow the population to be concentrated in a limited area. They become an inspiration for future creativity and reflection, and a change in style and quality of life.

The city consists of elements necessary for its proper functioning. The urban structure consists not only of single residential buildings but also public buildings, cultural facilities, recreational spaces, and technical and transport structures. Street grids mark building plots, squares and parks.

In front of our eyes, the concept of the city is changing. From fragmented structure extended on the endless peripheries, it is concentrated into the compact form of the tower. There are not only houses and recreational spaces for residents, but also offices, shops, kindergartens, schools, hospitals, restaurants, cinemas and theatres. Functionally self-sufficient units create vertical cities within the city. Is it worth considering whether hybrid towers are able to replace metropolises? What differences, advantages and disadvantages do they have? Will their appearance in the city improve the quality of life and create a connection between the people and the place? Can concrete jungles compete with historical districts of Manhattan?

2. Manhattan

New York is a global capital of life, economy and culture. It attracts both people and business. The former capital of the country is an amazing, diverse and mysterious city. Located on the east coast of the United States, it seems to be created from many myths and tales, it is the symbol of America, the dream destination. In its heart is Manhattan,

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[1]   The first knight towers, built in the 10th century, come from the cities of Norman and Anjou. Later they were seen in Great Britain, where they func-tioned mainly for defence. The main reason and motivation for building towers in the medieval cities of Italy was primarily the lack of space for the spread of urban structures. Cities often built in the hills were built with countless towers that are still part of the Tuscan landscape [9, pp. 20–21].

[2]   The Chicago School was founded in the United States at the end of the 19th century. Its greatest achievement was the introduction of a steel struc-ture that allowed movement from horizontal architecture of limited storeys to vertical towers [10].

surrounded by the Hudson River and the East River. The picturesque island with its limited area for development means that construction cannot spread infinitely beyond its shoreline. These limitations, however, stimulate the creativity and imagination of world-famous urban planners and architects. It is thanks to them that Manhattan has a carefully planned city grid and the largest number of squares and parks that we can find in any American city, including the most famous – Central Park.


Fig. 1. Panorama of Manhattan as seen from Ellis Island (photo by Agnieszka Żabicka)

The relationships between the architecture and the surrounding landscape, and the unusual number of skyscrapers create the unforgettable panorama of Manhattan[3]. The unprecedented population density and the limited area of the island create a constant drive for taller more beautiful buildings.

3. Historical districts

New York is undeniably a city of contrasts, which are apparent not only in the diverse community but also in urban planning, architecture and details. Despite the overall image of Manhattan and its most famous panoramic views of the financial district reaching into the clouds in the south and Midtown rising to the sky just next to Central Park, this island is not just a high-rise forest. There are historical districts such as Little Italy, SoHo, West Village,

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[3] The number of skyscrapers rising above 150 meters in New York by the end of 2018 was calculated at 272, and by the end of 2019, this number is going to increase by 33 [22].
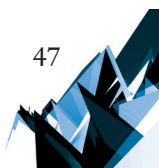
Greenwich Village, East Village and Harlem. Buildings there as opposed to skyscrapers centres are low having several floors. Often, there are historical objects of inestimable value and the streets in this urban structure are vibrant with life. The pavements and cycle paths throng with residents. The buildings of the human scale preserve the harmony of man in connection with the environment and place and foster a sense of safety.

Fig. 2. Life on the streets of Little Italy (photo by Agnieszka Żabicka)

Little Italy is now more of a tourist attraction than a district that is actually inhabited by people of Italian origin[4]. Many restaurants, small shops and bars evoke the atmosphere of a European city. Relatively wide streets with small buildings allow people to 'catch the breath'. Multi-coloured buildings increase the attractiveness and individuality of the place. There are also some of the best bars in New York in this district. The inhabitants' identity is created not only with the building itself, but also with the district that provides residents with the necessary facilities for daily life.

Another example of the Manhattan neighbourhood is Greenwich Village. Its centre with Washington Square Park has become a popular place to visit for students, tourists and residents. It is an extraordinary part of the city in which "modernity neighbours with history" [5]. Narrow streets, which are lacking in other parts of Manhattan, have numerous trees and cobbled streets creating a rural picture that almost does not match the rest of the island. People can find single-family houses, yards, squares and parks here.

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[4] Little Italy was named after a large group of immigrants mainly from Naples and Sicily who settled in this area at the end of the 19th century [24].

Is it possible to transfer this extraordinary character of small, historical, artistic districts to the concrete jungle, the maze of towers? Is the energy of the city, the sense of security and easy accessibility possible to obtain in skyscrapers?

Fig. 3. Small houses of Lower Manhattan which are rich in greenery (photo by Agnieszka Żabicka)

4. Residential hybrids

Urban hybrids provide answers to the questions posed at the end of the previous section. Multifunctional facilities, which apart from apartments and offices, have complementary functions and maintain the continuity of the 'life' of the building during the day and after sunset. These are skyscrapers in which there are no dead spaces, and the most-needed elements of the extensive urban structure are at residents' fingertips. Towers offer a different perception of their surrounding areas and they have a significant influence over the identity of the districts they occupy.

5. Beekman tower (Eight Spruce), proj. Frank Gehry, 2011

One of the unique buildings in New York is the Eight Spruce residential tower. This is a project by Frank Gehry that was completed in 2011 and cuts into the urban plan of Lower Manhattan. This is the first skyscraper of a world-renowned architect. Although it has been already eight years since it was completed, it remains the tallest luxury residential tower in this part of the city. The main facade of the skyscraper faces the central part of the island and the East River. Because of the wide arteries of the Brooklyn Bridge and

the low buildings of Lower Manhattan, there is little to obscure its view. The only simple, geometric facade is directed at the Downtown Manhattan financial centre. The building rises to 271.6 m. This seventy-six-storey tower, covered with stainless steel, is a symbol of wealth. The skin reflects the rays of the rising and setting sun. It shows a fluid breakthrough between modern architecture and the futuristic age of digitalisation [20]. The sculptural form of the main facade almost is symbolic of the waves of the East River, creating their contemporary interpretation. The building, designed around the main shaft of fifteen elevators, houses more than nine hundred apartments, and its underground section can accommodate 175 cars.

Beekman Tower is an excellent example of urban hybrids. It combines not only high--class apartments and accompanying facilities. There is also a hotel, and the six-story building base includes a kindergarten, a primary school and a floor dedicated to the administration of the New York Downtown Hospital. The building also houses an amphitheatre, cinema, a playground, a library and a spa and wellness section for residents. Various facilities create a compact structure. Each of the main facilities has a separate entrance; in this way, the architect was able to preserve the privacy of residents. The accessibility to basic services makes it unnecessary for residents to leave the building. The Eight Spruce project also has a positive effect on the safety of residents and makes their lives easier. Children can move between home and kindergarten, or school, almost without leaving the tower, without going through any street. It has become an incentive for many tenants and makes the building unique.

Fig. 4. Beekman Tower (photo by Agnieszka Żabicka)

6. 432 Park Avenue, proj. Rafael Viñoly, 2015

The crowded Midtown in the middle of Manhattan does not seem to be able to accept new buildings anymore. Although the density of buildings is still growing, the goal is to design a building higher than the others, with the smallest build area. With reference to the skyscraper at 432 Park Avenue, it has been said that "the Avenue beats all the records so far – it will be the slimmest, highest and definitely the most expensive" [14]. This residential tower was completed in 2015. The skyscraper at 432 Park Avenue stands out over the surrounding buildings and trees of Central Park. The tower was designed by the office of Uruguayan architect Rafael Viñoly, with unparalleled slenderness at these heights and concrete construction. The geometric shape of the cuboid has a height-to-width ratio of 15:1. The white, monolithic form, which is more than four hundred and twenty-five meters high, is the second highest building in New York after One World Trade Center. Eighty-five floors house one hundred and four apartments serviced by ten elevators [18]. By placing residences over sixty-three meters high, the property offers an unobstructed view of Manhattan's green lungs – Central Park.

Fig. 5. 432 Park Avenue (photo by Agnieszka Żabicka)

The modern aesthetics of the facade with respect for traditions, seems to reflect the orthogonal grid of Manhattan streets. Clean lines and scaled windows, allowing for the best lightning and views, create an elegant, symmetrical form, and give the block a lightness.

432 Park Avenue in addition to luxury apartments also offers offices, conference spaces, a restaurant overlooking one of Manhattan's main streets (57th Street), golf fields, a health and relaxation zone, a swimming pool, a fitness club and underground parking.

7. VIΛ 57 west, proj. Big, 2016

An excellent answer to the question of how to enclose a piece of tradition in a modern form is the project of the Danish architectural studio BIG. Finished in 2016, this hybrid building is a combination of a European building quarter with a courtyard in the middle and a high-rise that is characteristic of this part of New York. It is 142 meters high in one of the corners and proudly pierces Manhattan's air as a compositional dominant feature on the shoreline, open to the Hudson River.

Fig. 6. VIΛ tower with the view of Manhattan (by Agnieszka Żabicka)

The other three corners remain at the level of the bottom glazed base. The use of a hyperbolic paraboloid as an idea for the main form of the building has provided each apartment with a direct view of the river and the Jersey City skyline, and additionally, allows natural light to penetrate both the interior of 709 apartments and the inner courtyard. The garden of the inner courtyard is connected to the lobby of the residential tower. It has become the green heart of the building, which gives a sense of privacy and security. It is isolated from the busy streets, but at the same time, it does not cut off residents from the rest of the outside world. The innovative approach to the project means that the user does not have the impression that the courtyard becomes a vertical tunnel surrounded by high walls, the feeling of life inside a well (which is characteristic of the concrete forest of skyscrapers) is completely rejected here.

The scaled VIΛ sculpture proudly faces the Manhattan skyline that is visible from the Jersey City shore. In addition to the predominant housing function, there are also many amenities. The building has relaxation areas, space for organising various types of parties and cultural

events, a golf simulator, a cinema room, a swimming pool, a tennis court, an exercise room, and a room for playing poker [11]. All public or semi-private functions have been placed in a glazed base, thus obtaining separation from the private part.

8. 56 Leonard, proj. Herzog & De Meuron, 2017

The most recent of the presented examples is the project of the world-renowned Swiss architectural office Herzog & de Meuron. Completed in 2017, the residential tower reaches a height of 250 m, housing fifty-seven functional floors and 146 high-class apartments [19]. The use of raw concrete and cantilevered cubes, as well as cooperation with artists creates a place where architecture blends with art, and residents can enjoy unlimited life in the clouds.
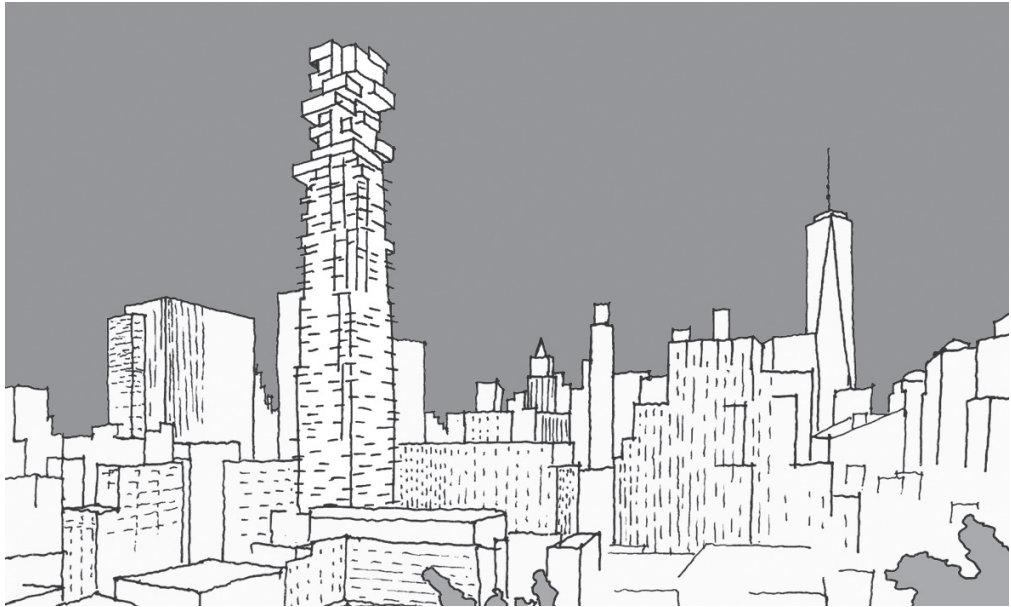
Fig. 7. 56 Leonard (by Agnieszka Żabicka)

A personalised tower, resembling glass houses placed on top of each other, creates a friendly environment. Architects departed from the idea of creating a homogeneous solid, whilst simultaneously giving the tower an individual character. Each floor plan is different, they differ with regard to cantilever bay windows, and the shape and arrangement of balconies. At the same time, the seemingly massive and vibrating shape smoothly transforms into a sky- -like background thanks to materials that reflect the surroundings.

In addition to the apartments, the tower has other facilities such as a theatre, cinema, conference centre, a twenty-three-metre swimming pool, a fitness club, a library and playgrounds for children. Residents can therefore spend entire days without actually leaving the building.

9. Summary

New York is a city of contrasts, and at the same time, an urban 'heart of the world' [7]. On the one hand, there are vertical skyscrapers towering above the clouds, on the other, there are low, atmospheric, historical districts with greenery, designed with respect for human scale. These are two completely different systems of structures, and yet their coexistence maintains the balance of Manhattan.

Fig. 8. Manhattan as viewed from Central Park (photo by Agnieszka Żabicka)

For years, architects have made every effort to ensure that the surrounding urban tissue supports and enhances the quality of our lives. Hybrid towers are one of the solutions aimed aimed at, at least partial, replacement the urban unit, to at least a partial extent. Within a small area, we can find the most important elements necessary for everyday life such as shops, recreation areas, and spaces for work and relaxation, which in a horizontal city, are spread over a large area. As a result of this, the time devoted to the everyday transfer to work or school in ubiquitous traffic jams is shortened. People can be at the centre of cultural events. Distances to theatres, opera houses, shops and offices have been minimised. The applied solutions support pro-ecological activities and a healthy lifestyle. All necessary elements and functions are on the doorstep.

But can concrete forests compete with the climatic and historical districts that can be found, for example, in Lower Manhattan? Does the constant emphasis on the sense of privacy mean that people isolate themselves? The answer is a matter of opinion and there are both opponents and supporters of each vision. Individual zones have their own unique atmosphere and everyone can find their own identity.

Apparently, it can be concluded that horizontal structures, which are closer to the ground, are at the same time closer to nature, greenery and a scale adapted to human beings. In such tissue, people can more easily and more naturally create semi-private zones in the form of courtyards. Horizontal cities need more space and this is not infinite. In dense cities, it is easier to design vertical tissue. It allows giving up cars and public transport, and districts do not form commuter towns. All public, cultural, and sports facilities are located within walking range and the space live continuously. It is unnecessary to resign from horizontal tissue, but in cities with high density, the advantage of vertical forms is undeniable.

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