New York and specifically Transitional Yards, a segment of vibrant and lively Midtown Manhattan, is characterized by a ‘texturology of extremes’: social and spatial contrasts exist in close proximity. Recent developments such as the creation of the office, leisure and residential paradise Hudson Yards and touristic attractions High Line and Vessel are attracting a new group of people to an area currently characterized by residential social housing projects and an industrial art district. All of these areas seem to have 1 connecting factor: The High Line.

In the early 20th century Chelsea was characterized by its many factories along the waterfront. The trains that served these factories ran along 10th avenue, soon known as death avenue because of the many collisions with trains and people. In 1933 an elevated train track was built to serve the factories more safely and more efficiently. The High Line. Over the years the train traffic diminished and in 1983 the train tracks were abandoned. Two young members of the community, Robert Hammond and Joshua David, took the initiative to preserve and transform the tracks. After years of fundraising architects Diller Scofidio + Renfro partnered with James Corner Field Operations and Dutch landscape architect Piet Oudolf to transform the High Line into a beautiful, unique, elevated park. The park was a major success: Hammond and David had expected to receive 300,000 visitors annually but a year after its opening in 2009 the High Line received 1.3 million visitors. Visitors kept coming and the park is now visited by more than 8 million people annually, an astonishing amount of visitors when comparing it New York’s other renowned attractions, such as the MET (7.4 million visitors in 2018), the Empire State Building (4.3 million visitors in 2018) and MoMA (5.3 million visitors in 2018). Besides tourists, numerous buildings have started to move from gentrified Soho into galleries and studios in West Chelsea. Between 2009 and 2019 the High Line was developed and currently the office, leisure and residential paradise Hudson Yards is being finalized. Nowadays, this results in socially and architecturally contrasting areas. First of all the social housing area, a stable community, is demographically characterized by a high population density of almost 45,000 pp/km², compared to Midtown, housing 34,000 pp/km². This area also houses the people with the lowest median incomes of Transitional Yards, with just over $50,000 per household and 55% of the Penn-South population earning less than $40,000. With 35% of elderly residents (65+) and 10% of children, the social housing area houses the most diverse age groups with a relatively high median age of 54, compared to Midtown’s average of 37.5. The area is characterized by 17 brick clad residential blocks of 11 to 21 floors, surrounded by open public space, such as parks, playgrounds and shared amenities. Secondly, the art district is characterized by industrial warehouses, home to over 200 galleries between 22nd and 29th Street and 10th and 11th Avenue. Hudson Yards, on the contrary will be home to New York’s highest glass skyscrapers and many amenities, located around a public square with the eye-catching touristic attraction Vessel in the middle, a city within a city. Hudson Yards is turning a desolate area into a highly populated one with high median incomes. All these areas are finally connected to the High Line, gently weaving through the new landscape of towers of Hudson Yards and the existing, industrial, artistic and residential neighborhoods, bringing thousands of visitors a day into the area. How and why did the High Line affect its surrounding neighborhoods economically and socially?

The High Line

Besides the development of the High Line, Transitional Yards is known for its residential character and large scale housing projects, such as London Terrace, constructed in 1930, and social housing projects Chelsea-Elliot, constructed in 1947 with additions in 1964 and 1968, and Penn-South, a limited equity co-op constructed in 1982, providing affordable apartments for moderate-income residents. Approximately 20 years ago artists started to move from gentrified Soho into galleries and studios in West Chelsea. Between 2009 and 2019 the High Line was developed and currently the office, leisure and residential paradise Hudson Yards is being finalized. Nowadays, this results in socially and architecturally contrasting areas. First of all the social housing area, a stable community, is demographically characterized by a high population density of almost 45,000 pp/km², compared to Midtown, housing 34,000 pp/km². This area also houses the people with the lowest median incomes of Transitional Yards, with just over $50,000 per household and 55% of the Penn-South population earning less than $40,000. With 35% of elderly residents (65+) and 10% of children, the social housing area houses the most diverse age groups with a relatively high median age of 54, compared to Midtown’s average of 37.5. The area is characterized by 17 brick clad residential blocks of 11 to 21 floors, surrounded by open public space, such as parks, playgrounds and shared amenities. Secondly, the art district is characterized by industrial warehouses, home to over 200 galleries between 22nd and 29th Street and 10th and 11th Avenue. Hudson Yards, on the contrary will be home to New York’s highest glass skyscrapers and many amenities, located around a public square with the eye-catching touristic attraction Vessel in the middle, a city within a city. Hudson Yards is turning a desolate area into a highly populated one with high median incomes. All these areas are finally connected to the High Line, gently weaving through the new landscape of towers of Hudson Yards and the existing, industrial, artistic and residential neighborhoods, bringing thousands of visitors a day into the area. How and why did the High Line affect its surrounding neighborhoods economically and socially?

The High Line

The first characteristic of the High Line is that it is a pedestrian, cultural connection, with hidden entrances along its sides. The elevated park connects three cultural destinations and touristic attractions: Vessel, cultural venue The SHED and Whitney Museum. In 2018 the High Line itself and the surrounding apartments were transformed into a live exhibition called ‘The Mile-Long Opera’, showing the High Line’s ability of being a pedestrian experience. Secondly, the High Line instigated a real estate boom. Over 50 developments, worth $2 billion, have been built in the immediate area, since construction on the High Line began in 2009. Most of them extremely high-end apartment buildings, not few of...
them built by famous 'starchitects', such as Zaha Hadid and Heatherwick. All of them advertise life right on the High Line ('A striking new profile on the High Line', 'Masterpiece on the High Line', 'Luxe living on the High Line'). This rapid transformation of the area was possible because of the rezoning of the former manufacturing low-rise district into the Special West Chelsea District, allowing for different building functions and a higher FAR. The development of the High Line resulted in rising land values over the past 10 years, consequently leading to an annual tax revenue of $65 million for New York City, which 'only' invested $125,2 million in the project. The development however also led to a phenomenon which is called super-gentrification: the displacement of the rich by the ultra-rich.

Thirdly, due to the rising land values existing businesses have been forced to move from the area, while others, such as High Line Dell, High Line Pizzeria, High Line Wine market, High Line Hotel, are thriving, profiting from the High Line's publicity. Due to the skyrocketing rents also several galleries are moving to Tribeca, lower Manhattan, but they are currently being replaced by other galleries according to interviewed gallery employees, because of the unique, big spaces that West Chelsea offers. Besides, developers are investing in the art market, with amongst others Related planning 15 new Chelsea galleries.

Finally, the High Line has a diverse user spectrum and is used in many more ways than the architects could have ever imagined. However, about 70% of the High Line's 8 million annual visitors are not from New York City, and on some days the extremely busy High Line almost looks like a Disney attraction.

These characteristics result in three main statements about the High Line: (1) The High Line is pedestrian, cultural connection from A to B. (2) The High Line and its rezoning led to a real estate boom, attracting new residents and businesses. Most of them are however non-inclusive developments, leading to super-gentrification. (3) The High Line stimulated (unintended) uses by all people, but is overflooded by tourists.

The High Line Effect

All of these consequences are part of the High Line Effect. Soon, similar proposals started popping up: The Midtown Viaduct, an extension of the High Line towards Penn Station, a park extending north of Hudson Yards and a green Broadway. These are all examples within New York City, but globally over 65 similar projects have been proposed since 2009 of which 27 have been realized. Chicago’s 606 is an example of such a project. A linear park with 1.46 million visitors annually, resulted in a 50 percent surge in home prices since construction in 2013 began. Detroit’s Dequindre Cut connects the city and the waterfront for pedestrians and cyclists, with 3 million visitors a year. But many other cities have their own high line, amongst which Seoul (‘Skygarden’), Bethlehem (‘Hoover Mason Trestle’), Jerusalem (‘The Rail Park’), Toronto (‘West Toronto Railpath’ and ‘The Bentway’) and Rotterdam (‘Lichtsangels’). But the projects are not only high lines. Atlanta’s Belt Line for example is a park surrounding the city. Once completed, the Beltline should develop nearly 3.000 acres of underused property and is expected to generate more than $20 billion in new economic development. Home prices increased from $250.000 to $305.000 on the northside, from $25.000 to $65.000 on the westside, from $200.000 to $285.000 on the eastside and from $155.000 to $275.000 along the eastside extension. Similarly, Klyde Warren Park in Dallas, covering a highway, resulted in a major economic boost, creating more than $2 billion in economic development and increased property values in the area around the park. Rental rates changed from $22 to $36, $19 to $25, $13 to $19 and $25 to $37 in the surrounding areas. But also revitalizing rivers such as the Cheonggyecheon river park in Seoul, or parks (Bryant Park and Central Park) resulted in similar effects. Another famous example of public space as a real estate development tool is Guggenheim Museum, which put Bilbao on the map led to the urban revitalization of an entire town. And last but not least, the Markthal and Rotterdam Centraal Station, famous architectural developments, have revitalized and connected the city center of Rotterdam.

These examples result in the following major conclusions: (1) public space can be used as a redevelopment tool. (2) Many projects cause inequality, the only way to solve this is to confront it from the very beginning. (3) Successful public spaces are pedestrian connections, rooted in the urban logic. (4) They turn something unattractive in something attractive and (5) are unique in their neighborhood. These conclusions are translated into the elements that led to the development of the design brief.
The Hybrid Market
Public Space as a Redevelopment Tool for West Chelsea’s Residential Neighborhood

The test ground for this project is Manhattan, one of New York’s five boroughs and more specifically the south-western segment of Midtown: Transitional Yards. The group strategy in which we predict future changes within this area identifies three main problems in Transitional Yards: The exclusive developments along the High Line that are targeted at a very homogeneous section of society, the congestion of vehicular and pedestrian traffic in important infrastructural nodes and the High Line, and an isolated mid-Transitional Yards. The introduced interventions are three public connections and infrastructural pop-up points, which will alleviate congestion and will insert life into the area in between the lively eastern neighborhoods and rapidly developing waterfront areas. The goal of this project is to focus on the most southern public connection and redeveloping West Chelsea’s residential area by copying the High Line Effect: The research about the High Line and The High Line Effect examined through studying the High Line and other public spaces all over the world, ranging from parks, to museums, a market hall and station, results in the following elements that can be used for the development of a neighborhood: firstly public space will be used as a real estate development tool. Secondly the space must be a pedestrian connection and to provide overcrowding it should, thirdly, provide places to linger. Finally, it should be as inclusive as possible, attracting both visitors as well as locals. These elements will be used in the search for a program in Transitional Yards.

Search for a Program
In the search for a program I have looked at the following public space types: the linear park, square/pedestrian street, covered square, park, market hall, library, museum, station, touristic attraction and recreation. Based on the elements resulting from the research a market hall and/or museum, connected to a pedestrian street and square seem to be the best fit. Especially because of the possibility to connect West Chelsea’s art district and vibrant Midtown, characterized by a multiplicity of bars and restaurants. New York however already has a lot of museums for basically everything. Taking a closer look at the museum typologies, three main types of museums can be distinguished: the historic museum (such as MET and the American Museum of Natural History), the modern museum (such as MoMA and Whitney Museum and the Guggenheim Museum) and the interactive museum (science centers such as Nemo in Amsterdam).

Museums have been changing over time and I think that the future museum is actually a hybrid. Looking at the facilities a museum offers and the role art plays in society these days, there are many differences with traditional museums. First of all: the market. Over history, the market has transformed from an unorganized toward an organized floorplan. New materials provided new possibilities and the market has become more and more multifunctional. However, large open spaces covered by a roof as a big gesture have always been part of covered market designs. The Markthal in Rotterdam (95.000m²) is an example of a completely covered market in which a big market place is combined with amongst others restaurants and apartments. All of these functions are accessible form the market but also have their own entrances. Manifesto Market in Prague (1.950m²) is a small open market, with modular market stalls and space to linger in between. The Baltic Station Market in Tallinn (25.000m²) has an outdoor as well as an indoor market and also retail, restaurants and a fitness space, all accessible from both the market and outside. Nigata market in Japan (1.085m²) shows the possibilities of multi-functionality of a market, gallery and event spaces on a small scale. Museum Voorlinden’s gallery spaces are examined for their shape, size and organization. A program breakdown analysis of Museum Voorlinden in Wassenaar, MoMA and Whitney Museum in New York and Ningbo Urban Planning and Exhibition Center in Ningbo, Japan, gives an indication of the amount of mechanical space, storage, offices and circulation required, compared to the amount of gallery space, a relatively small amount of the total GFA of a museum. Finally, the recent development by Diller Scofidio + Renfro of The SHED and 15 Hudson Yards is, like Markthal Rotterdam, an example

The Hybrid Market

The street
The current street layout of West 26th Street, New York, provides space for cars, cyclists and pedestrians on the sidewalk. Exhibition Road in London is an example of the possibility for the integration of vehicular and foot traffic. Superkilen Square in Copenhagen is an example of a street as a playful public space, reserved for cyclists and pedestrians.

The square
A square is a good example of how public space can provide for a variety of activities with only some key spatial elements. Nathan Philips square in Toronto is frequented by tourists, used for art exhibitions, huge gatherings or ice skating. Similarly, the Markt in Delft can be programmed for concerts, farmers markets, sports events or movie nights.

The hybrid market
Reference projects for the hybrid market consist of markets, museums and public venues combined with residential units. First of all: the market. Over history, the market has transformed from an unorganized toward an organized floorplan. New materials provided new possibilities and the market has become more and more multifunctional. However, large open spaces covered by a roof as a big gesture have always been part of covered market designs. The Markthal in Rotterdam (95.000m²) is an example of a completely covered market in which a big market place is combined with amongst others restaurants and apartments. All of these functions are accessible form the market but also have their own entrances. Manifesto Market in Prague (1.950m²) is a small open market, with modular market stalls and space to linger in between. The Baltic Station Market in Tallinn (25.000m²) has an outdoor as well as an indoor market and also retail, restaurants and a fitness space, all accessible from both the market and outside. Nigata market in Japan (1.085m²) shows the possibilities of multi-functionality of a market, gallery and event spaces on a small scale. Museum Voorlinden’s gallery spaces are examined for their shape, size and organization. A program breakdown analysis of Museum Voorlinden in Wassenaar, MoMA and Whitney Museum in New York and Ningbo Urban Planning and Exhibition Center in Ningbo, Japan, gives an indication of the amount of mechanical space, storage, offices and circulation required, compared to the amount of gallery space, a relatively small amount of the total GFA of a museum. Finally, the recent development by Diller Scofidio + Renfro of The SHED and 15 Hudson Yards is, like Markthal Rotterdam, an example

Fig 04-134: Schematic organisation of functions
Fig 04-135: Programmatic breakdown

Program 90.000m²
Hybrid Market 21.850m²
Residential 46.800m²
Apartments 38.100m²

- Hybrid market 21.850m²
- Residential 46.800m²
- Apartments 38.100m²

43% 15% 10% 28%
24% 51% 26%

38.100m²
31%

46.800m²
15%

21.850m²
43%

90.000m²
24%

Public toilets 250m² 1%
Mechanical 2.300m² 5%
Apartments 46.000m² 83%
Mechanical 2.200m² 10%
Apartments to 30.100m² 50%
Mechanical 2.200m² 10%
Apartments to 30.100m² 50%
Mechanical 2.100m² 9%
Apartments to 30.100m² 50%
Mechanical 2.000m² 10%
Apartments to 30.100m² 50%
Mechanical 1.900m² 9%
Apartments to 30.100m² 50%
Mechanical 1.800m² 10%
Apartments to 30.100m² 50%
Mechanical 1.700m² 9%
Apartments to 30.100m² 50%
Mechanical 1.600m² 10%
Apartments to 30.100m² 50%
Mechanical 1.500m² 9%
Apartments to 30.100m² 50%
Mechanical 1.400m² 10%
Apartments to 30.100m² 50%
Mechanical 1.300m² 9%
Apartments to 30.100m² 50%
Mechanical 1.200m² 10%
Apartments to 30.100m² 50%
Mechanical 1.100m² 9%
Apartments to 30.100m² 50%
Mechanical 1.000m² 10%
Apartments to 30.100m² 50%
Mechanical 0.900m² 9%
Apartments to 30.100m² 50%
Mechanical 0.800m² 10%
Apartments to 30.100m² 50%
Mechanical 0.700m² 9%
Apartments to 30.100m² 50%
Mechanical 0.600m² 10%
Apartments to 30.100m² 50%
Mechanical 0.500m² 9%
Apartments to 30.100m² 50%
Mechanical 0.400m² 10%
Apartments to 30.100m² 50%
Mechanical 0.300m² 9%
Apartments to 30.100m² 50%
Mechanical 0.200m² 10%
Apartments to 30.100m² 50%
Mechanical 0.100m² 9%
Apartments to 30.100m² 50%
Mechanical 0.000m² 10%
Apartments to 30.100m² 50%

Fig 04-134: Schematic organisation of functions
of merging a public venue with apartments. In these examples the public venue only takes up between 17% and 35% of the total floor area of the building. For the number and size of the apartments I referred to the apartments in the social housing co-op of Penn South, the Markthal and 15 Hudson Yards. 20% of the apartments will be affordable, 18% targeted at mid-income families and 53% high-end to provide for a social mix.

Just like the precedents, all public functions, as well as the apartments and the parking garage will have their own entrances. All will also be connected to the Market, which will be the heart of the building, with the biggest entrance. In the following phase I will personally focus on the design of the market and its supporting functions, the connections with the apartments and parking garage and the façade design of the entire building.

Back to New York

To see how the determined program will fit in its context, Transitional Yards has been examined further. The development of the High Line led to a real estate boom, that soon expanded to Hudson Yards and will move further north, crossing neighborhoods with different characters. The infrastructure mainly serves the eastern and northern neighborhoods of Transitional Yards, leaving the riverfront districts isolated. The Chelsea-Elliot social housing project, managed by the New York City Housing Authority, is facing high repair costs (about $166.000 per unit) and there are plans to either renovate or replace the buildings, converting them into a private-public partnership. Penn South is a limited equity co-op, maintained under the supervision of the New York City Department of Housing Preservation & Development (HPD), providing affordable apartments for moderate-income residents. Low rents can be maintained because to co-op pays taxes based on rent and not on the land value, and the apartments stay cheap because there is no profit on the sale of apartments. Penn South’s contract has recently been extended to 2052, after which the co-op might go private and tenants, member-shareholders, will be able to sell their apartments for a higher revenue. There is thus an opportunity for development of this residential neighborhood that currently isolates the riverfront neighborhoods from Midtown. The area is currently mainly zoned for residential functions (R8), which therefore make up the largest part of the building functions in the area, characterized by mainly badly maintained, brick high-rises. The built FAR is quite low compared to the available FAR of 6,02 in the area. Relatively high building heights ranging from 30 to 70m combined with the low FAR, result in a low lot coverage of 20% and much open space with surprisingly many playgrounds and sports fields. Remarkably many parking facilities are located in the area, and cars are parked on the street as well as on these big parking lots. The residential area is thirdly characterized by a large amount of trees and green, which are located on the side of the road or also fenced off. Finally, the area is surrounded by vibrant streets with restaurants, galleries, shopping and subway station, which this project will aim to connect.

Location

The project will be located on a plot of 16.500m², between 8th and 9th Avenue, bridging 26th West Street and will aim to preserve and provide west Chelsea’s residential character and green open space, and aim to improve the large amount of cars, fenced of public space and bad maintenance. The plot is currently largely covered by a parking lot. The plot is perfectly located to first of all instigate developments in the social housing area, secondly serve as a connection and thirdly provide places to linger to avoid overcrowding. After testing several typologies on the site, the following urban rules on the right page were defined for the project.

Design Scenario

The City of New York will invest in a plot, acquired from the Penn South Co-op and 5 smaller lot owners. The City government will develop the site into a public outdoor and indoor hybrid market, maintained and programmed by the city, to stimulate the development of the residential neighborhood in West Chelsea, possibly resulting in higher land values in the area and consequently high tax revenues for the city. The city will partner with a private developer who will invest in and maintain the rentable units: galleries, apartments, parking, etc. A good investment since these will increase in value because of the new public space that will revitalize the area.

Architectural Ambition

On this project I will test the following design question and ambition in the following design phase: “How to implement a hybrid market in Midtown Manhattan as a redevelopment tool for West Chelsea’s residential area, following the example of the High Line, while minimizing its negative consequences?”

Architecturally the buildings should be rooted in the urban context, creating a pedestrian experience, addressing the following architectural ambitions:

**Back to New York**

**Design Scenario**

**Architectural Ambition**

**Fig 04-136: Architectural ambitions**

**Fig 04-137: Urban rules**
Focusing on several of the functions, the market will be the space where visitors enter. A large open space with lots of natural light that can be crossed by locals with an interior street. The elements in the space need to serve multiple purposes and the space should allow for different programs such as a farmers market, art exhibitions and events, reminding of the programmed square. Based on references the space should be at least 20m high, with an interior street of 4,4m wide and elements such a tribune space of 50m² and bar of 30m², curtains and movable walls. There will be at least to kinds of galleries, the light galleries for exhibitions that require diffuse daylighting and dark galleries for projection exhibitions and light installations, a growing part of today’s art scene. These spaces have a visual connection with the market and/or the outdoor space so people can experience the exhibition without being inside. Based on a newly built West Chelsea Gallery and Museum Voorlinden the galleries have sizes ranging from 70 to 300m² and a minimum height of 5,5m. The outdoor space will be seamlessly connected with the indoor public space, providing space for exhibitions and markets to move outside, elements of play for children and green. The focus of the residential units will be on the connection of public to private, the connection to the neighborhood and how to provide some human scale in metropolitan Manhattan.

Materials

West Chelsea is characterized by industrial warehouses, brownstone residential streets, the big brick social housing projects, some old churches and the new glass towers of Hudson Yards. I will respond to that by investigating in a range of materials. Brick is a commonly used material in the area, but what are the new possibilities? The new glass towers are transparent, but are they really? And what other new materials provide this transparency? Or should the building explore recent increased possibilities of building big buildings with sustainable materials? For certain the building will partly consist of light materials with possibly color accents to return some light into the dark and heavy surroundings. Besides, the façade material should be durable to avoid the same decay as the current towers in the neighborhood.

All of these elements will result into a vibrant hybrid market, a durable to avoid the same decay as the current towers in the neighborhood.

Fig 04-139: The Hybrid Market in the future Transitional Yards

Fig 04-138: Site

264. Diller, “Preservation Cumbria University.”
266. Skyscraper, “Chelsea.”
267. Penn South, “FAQ - General Information About Penn South.”
269. Penn South, “Penn South History.”
270. NYC Department of City Planning, “Population FactFinder.”
272. Boocock, “The Milux Long Opera. All the High Line’s a Stage.”
273. West Chelsea continues to bloom .
276. High, “Talk examines negative perceptions of New York’s High Line project.”
277. Segal, “Whalefox Con. plans 15 Chelsea galleries, including ones in Zaha Hadid’s cords.”
278. The High Line, “High Line Venus Barts.”
279. Mies, “Highline World on the Hudson.”
280. Howarth, “The Midtown Viaduct offers pedestrian link between NYC’s Hudson Yards and Penn Station.”
281. Brace, “Feline Eeaston proposes turning New York’s Broadway into one long park.”
282. Gobster, Sachdeva, & Linder, “Up on The 606 understanding the use of a new Elevated Pedestrian and Bicycle Trail in Chicago, Brus.”
283. Spinella, “City’s legal conomie. Lightfoot halts ordinance targeting rising home prices along 606 trail.”
284. Detroit Riverfront Conservancy, “The Detroit Riverront Conservancy seeks a Public Investment.”
285. Green, “Study tabulates Atlanta Beltline home value explosion around full loop.”
286. The Eewn Team, “The Atlanta Beltline: One of the Most Impression Urban Revitalization Projects in the World.”
288. Perez, “How Klyde Warren Park Has Changed Dallas Real Estate.”
289. Brino, “Shored Surface in Exibition Road.”
293. Diller, “Presentation Columbia University.”