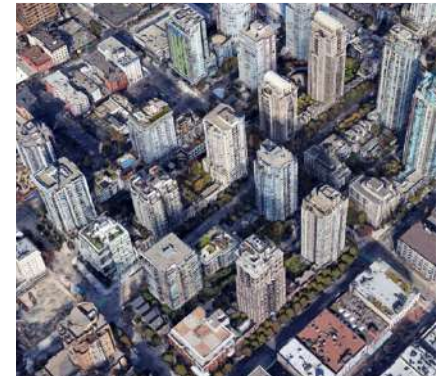




## *Zoning and its impacts on the neighborhoods we live in*





**Public Sector NYC** 1996-2006 New York City Department of City Planning: Urban Design and Rezoning Studies



**Private Sector Asia** 2006-2014 SOM, Arup Urban Design and Master Planning in China



**1] Significance of zoning**

**2] Zoning in NYC**

**3] What if's**

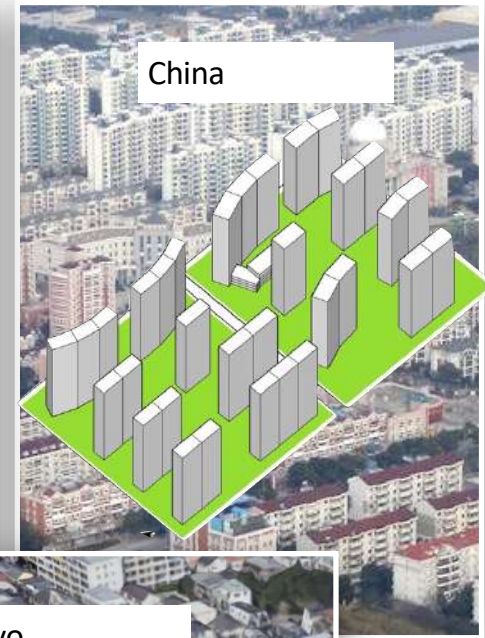
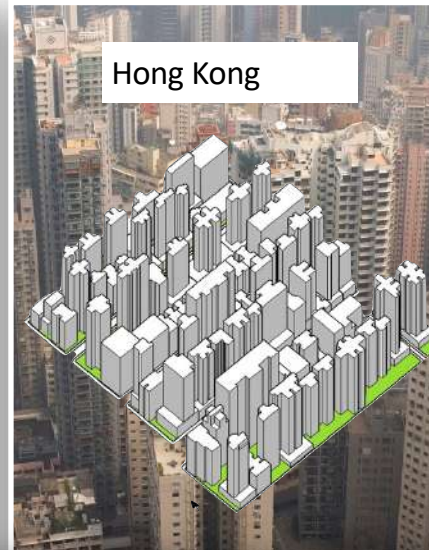


## ***Zoning regulations establish different types of built environments***





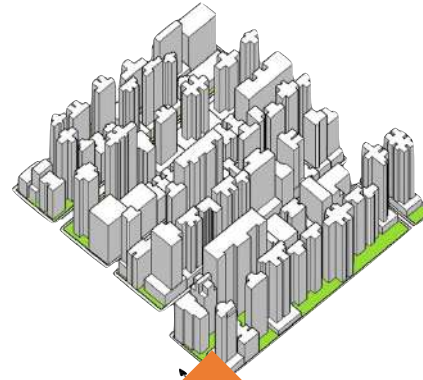
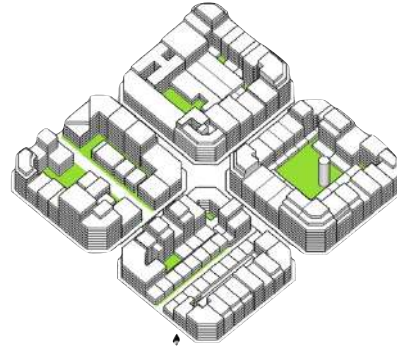
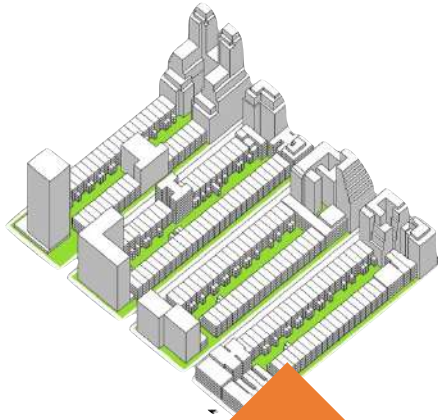
# ***Zoning regulations establish different types of built environments***





# Zoning

Regulations that control *use and bulk* of what can be built *by zones*



New York City  
Zoning Districts



Barcelona  
Zoning Districts



Hong Kong Zoning  
Districts



Tokyo  
Zoning Districts



## ***Zoning is ...***

*“ A **legislative** process that divides privately-owned urban areas into different **zones** (such as residential, commercial, industrial) according to the **specified land use**.  
Each zone is regulated as to the density, location, size, and  
type of buildings permitted therein.”*

source: <http://www.businessdictionary.com/definition/zoning.html>



## Zoning is ...

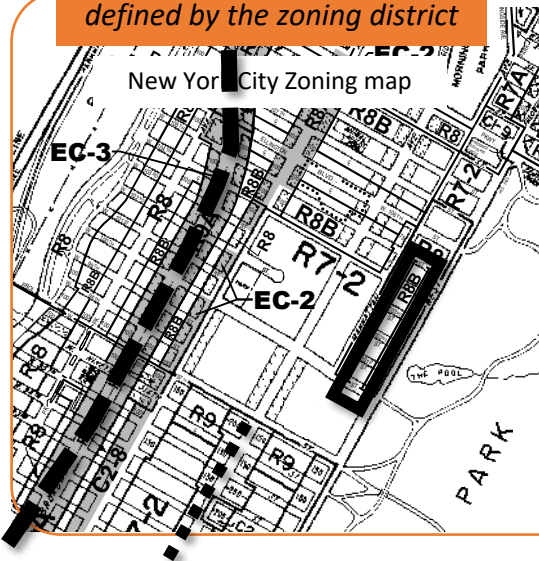
“A **legislative** process that divides privately-owned urban areas into different **zones** (such as residential, commercial, industrial) according to the **specified land use**.

Each zone is regulated as to the density, location, size, and type of buildings permitted therein.”

source: <http://www.businessdictionary.com/definition/zoning.html>

**Different ways to indicate “zones”  
by blocks, by street corridors, by district areas, by overlays**

### Permitted Land Uses defined by the zoning district



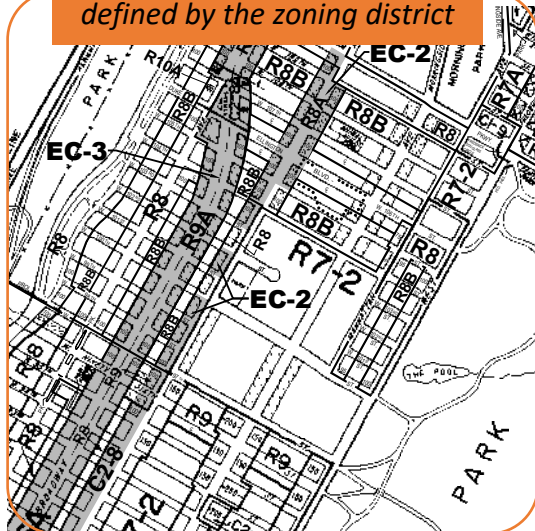
15

## Zoning is ...

*“A legislative process that divides privately-owned urban areas into different zones (such as residential, commercial, industrial) according to the specified land use.*

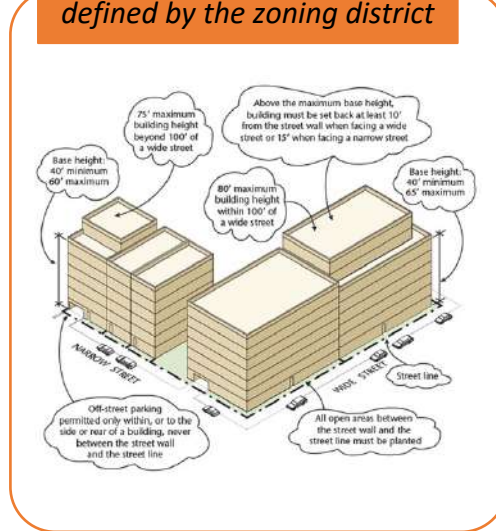
*Each zone is regulated as to the density, location, size, and type of buildings permitted therein.”*

**Permitted Land Uses**  
defined by the zoning district



+

**Bulk (Building Form)**  
defined by the zoning district



=

**Built environment**  
defines the neighborhood character







**Built environment**  
*Different neighborhood characteristics*





**LAND USE****BULK**

- Building form
- Building distances
- Building heights
- Density (FAR)
- Site coverage
- Setbacks
- Sunlight access
- Streetscape
- and more ...

*Most cities around the world use zoning to control development. They rely on a similar set of zoning regulations to control the **Land Use & Bulk** of what can be built*

**In combination these codes impact more than just how neighborhoods look ... But also how they function and for whom:**

- *Density construction*
- *Access to amenities & services*
- *Access to open space*
- *Health: physical and mental*
- *Transportation & circulation modes*
- *Affordability, Equity & Inclusivity*
- *Sustainability & Resilience*
- *Density of people*
- *Diversity of people*
- *And more ...*



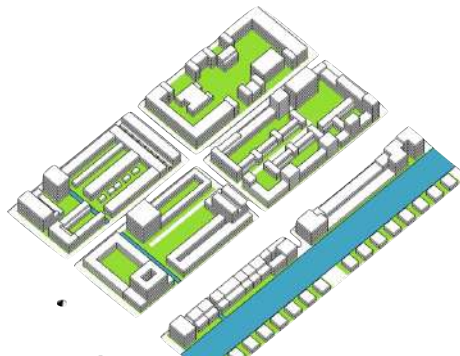
**Built environment**  
Different neighborhood characteristics



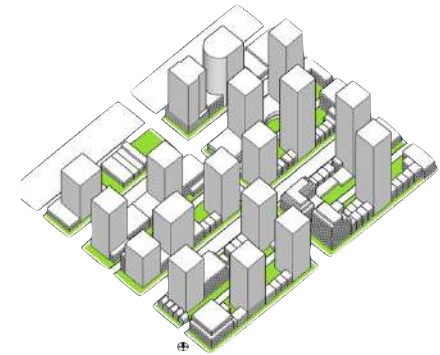


## ***What zoning regulations would create these different neighborhood types?***

Amsterdam - Ijburg



Vancouver - New Yaletown, Canada



## LAND USE

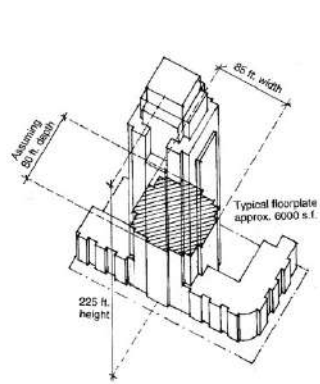
## BULK

- Building form

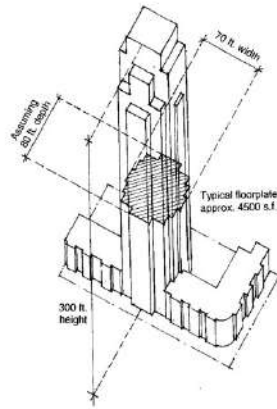
## Zoning Regulations :

***Limit the floor-plate size and dimensions to keep towers slender***

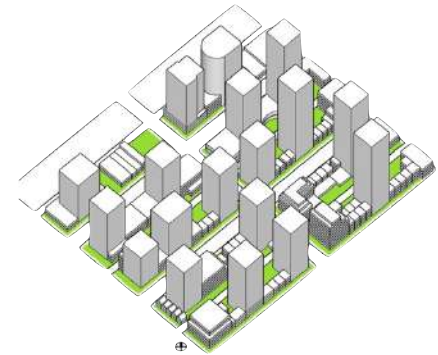
Figure 9 and 10. Tower Massing Flexibility



Lower, wider tower configuration floorplate.



Higher, slimmer tower configuration with larger configuration with smaller floor plate.





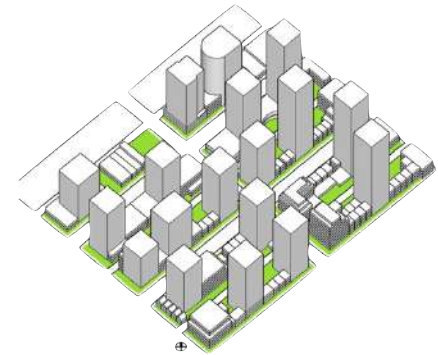
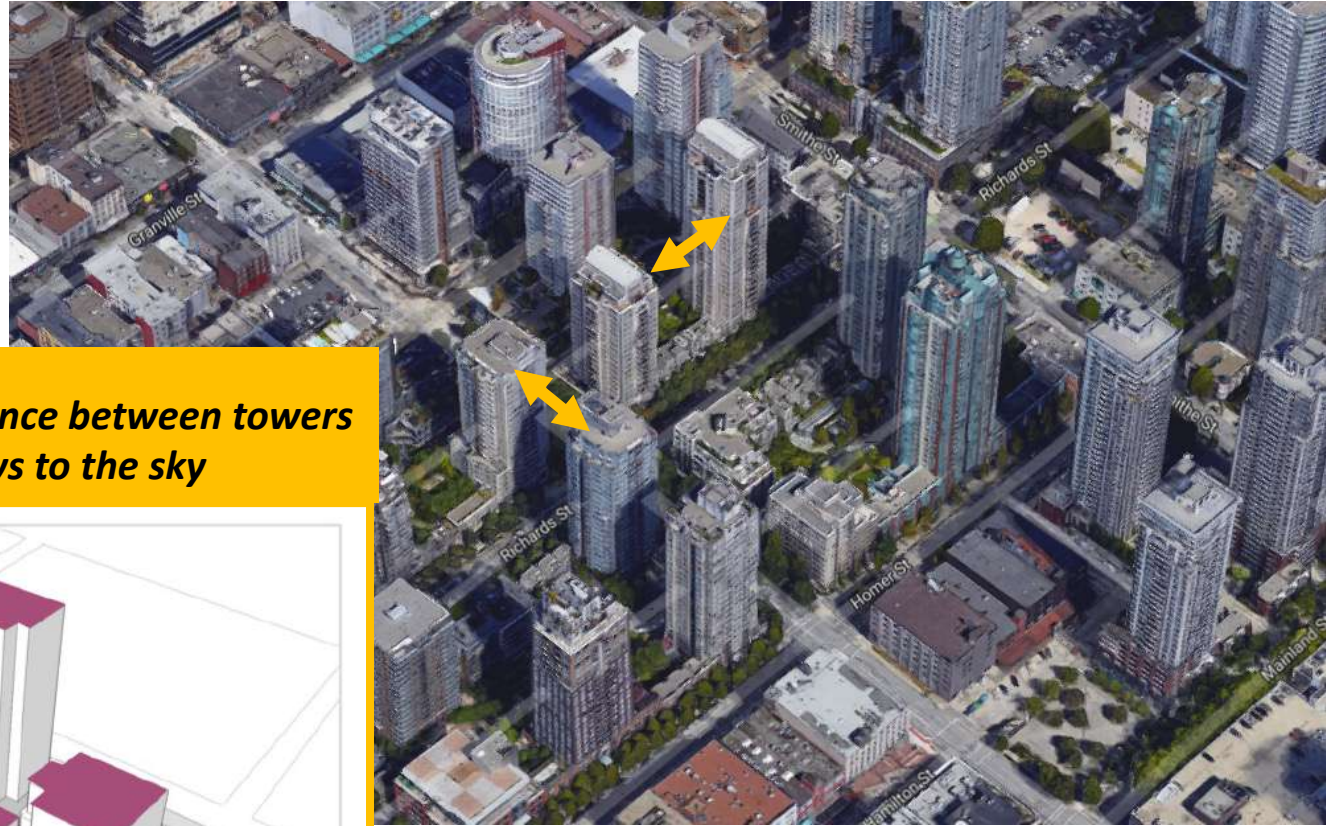
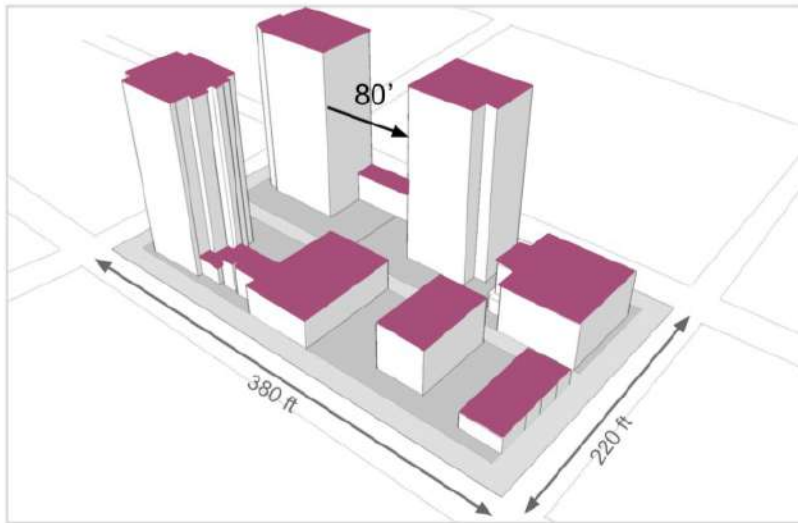
## LAND USE

## BULK

- Building form
- Building distances

*Zoning Regulations :*

***Require Minimum 80' distance between towers to ensure sunlight and views to the sky***









## LAND USE

## BULK

- Building form
- Building distances
- Building heights
- Density (FAR)
- Site coverage
- Setbacks
- Sunlight access
- Streetscape
- and more ...



Zoning Regulations :

**Encouraging a mix of densities  
in the same neighborhood:**

Building density (FAR) is based on  
the zoning district type and street width



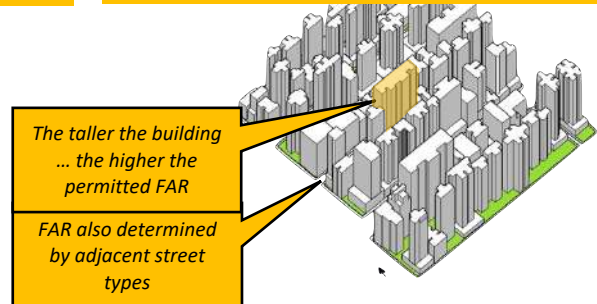
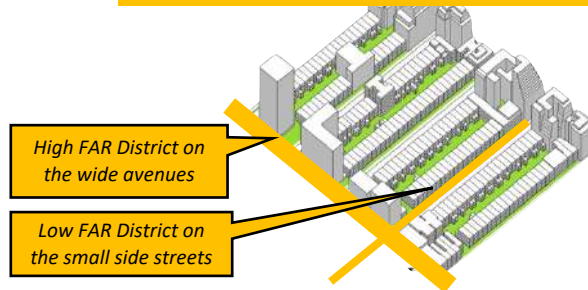
Zoning Regulations :

**Encouraging high density  
everywhere**

Building density (FAR) is based on  
the height of the tower and the street type

**Zoning can control  
the distribution  
of building densities**

These two districts have very  
different ways of distributing  
towers





## LAND USE

## BULK

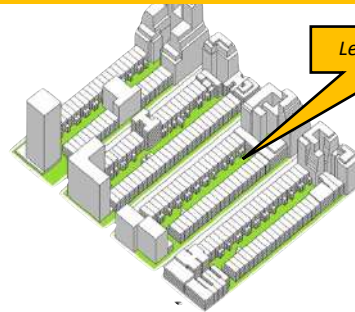
- Building form
- Building distances
- Building heights
- Density (FAR)
- Site coverage
- Setbacks
- Sunlight access
- Streetscape
- and more ...

*Amount of Open versus  
Built Space on the site*

NEW YORK CITY



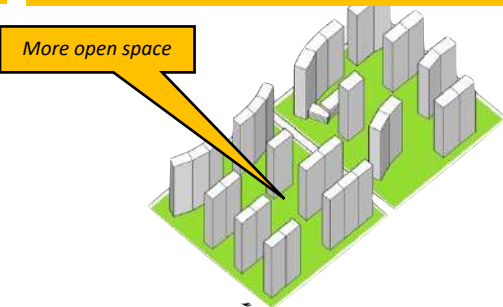
Zoning Regulations:  
**Max. 75% site coverage**



SHANGHAI



Zoning Regulations:  
**Max. 35% site coverage**





## LAND USE

## BULK

- Building form
- Building distances
- Building heights
- Density (FAR)
- Site coverage
- Setbacks
- Sunlight access
- Streetscape
- and more ...

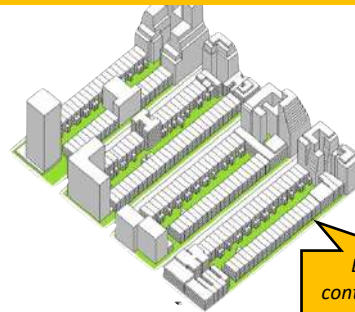
*Sidewalk setback distance from the property line*

## NEW YORK CITY



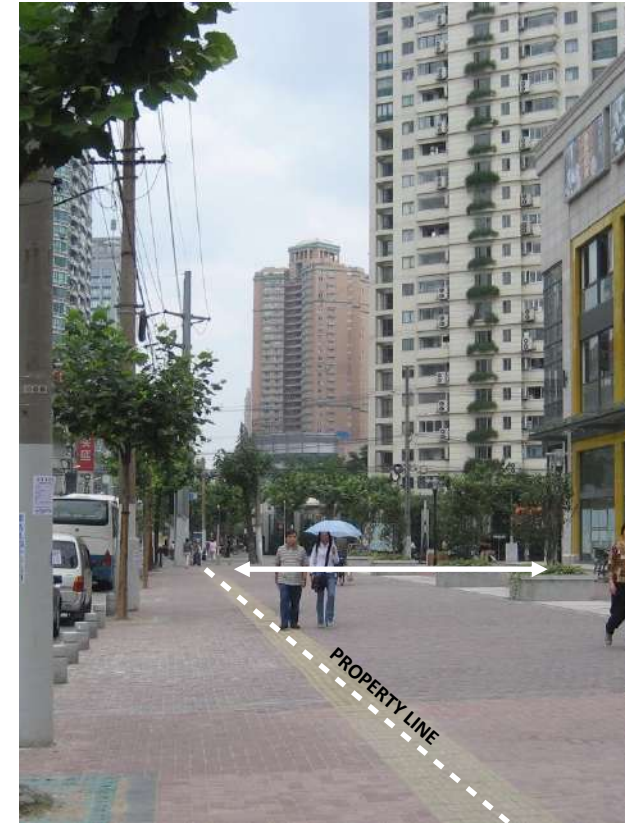
**Zoning Regulations:**

***Prohibiting any sidewalk setbacks***



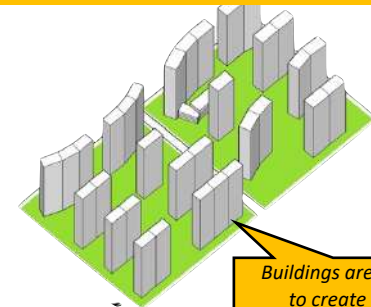
*Buildings create continuous street front walls*

## SHANGHAI



**Zoning Regulations:**

***Requiring large sidewalk setbacks***



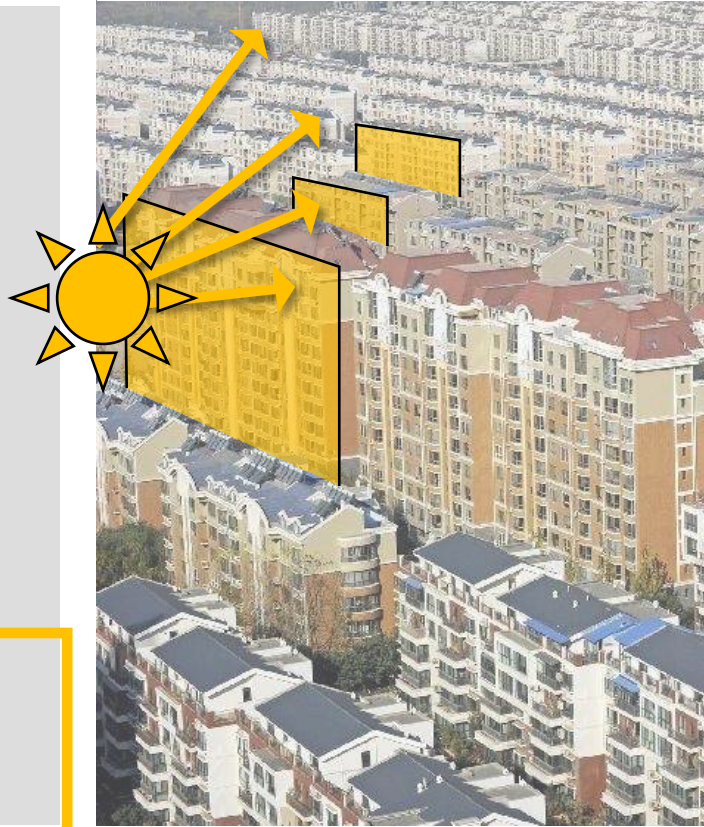
*Buildings are setback to create more spacious sidewalks*



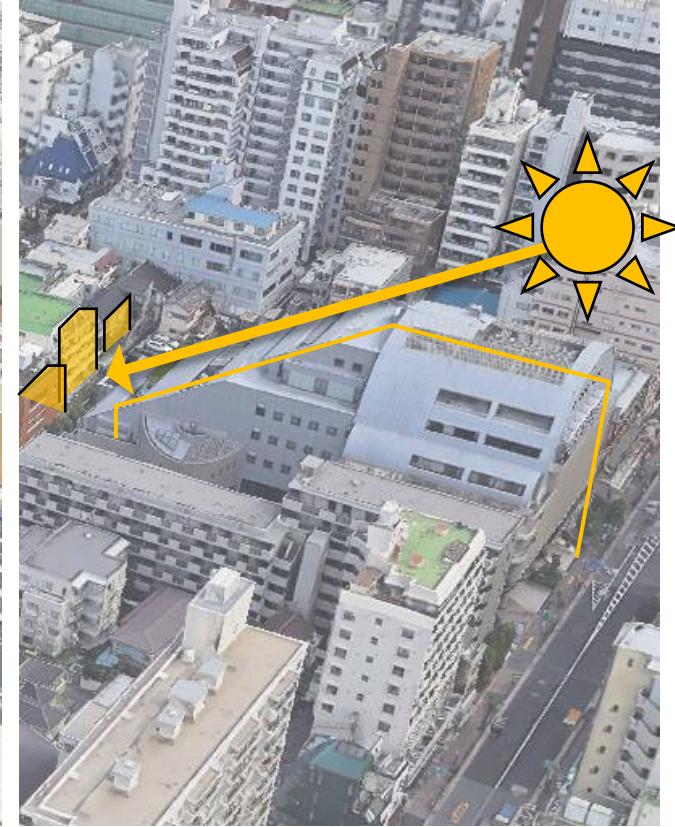
## LAND USE BULK

- Building form
- Building distances
- Building heights
- Density (FAR)
- Site coverage
- Setbacks
- Sunlight access
- Streetscape
- and more ...

SHANGHAI

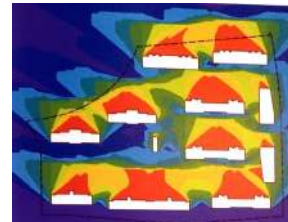


TOKYO



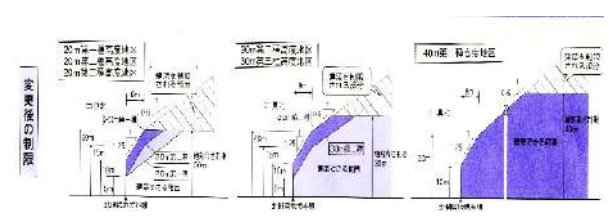
### Zoning Regulations :

**Require minimum number of  
hours of direct sunlight**



### Zoning Regulations :

**Prohibit new buildings from  
blocking sunlight**



**Zoning can ensure  
sunlight access  
in different ways**



## LAND USE

## BULK

- Building form
- Building distances
- Building heights
- Density (FAR)
- Site coverage
- Setbacks
- Sunlight access
- Streetscape
- and more ...

***Zoning can ensure  
sunlight access  
in different ways***

## Prescriptive



NYC 1916 ZR

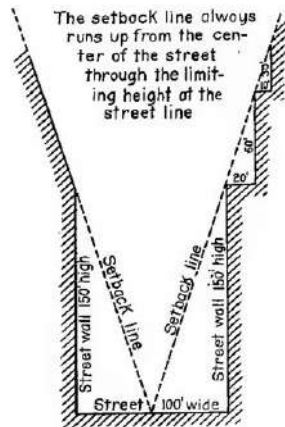
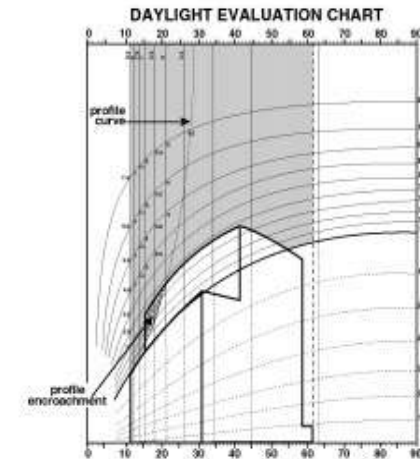


Figure 1

## Performance-based



NYC Midtown Zoning (1982)



***Waldram Analysis*** to ensure views to the sky and  
sunlight access to the street views

***75% rule***

*"the sunlight provision requires that about 75 percent of the sky surrounding any new building remain open. ...*

## LAND USE

## BULK

- Building form
- Building distances
- Building heights
- Density (FAR)
- Site coverage
- Setbacks
- Sunlight access
- Streetscape
- and more ...

## Prescriptive



Zoning Regulations :

**Segregation of uses creating large single use districts**

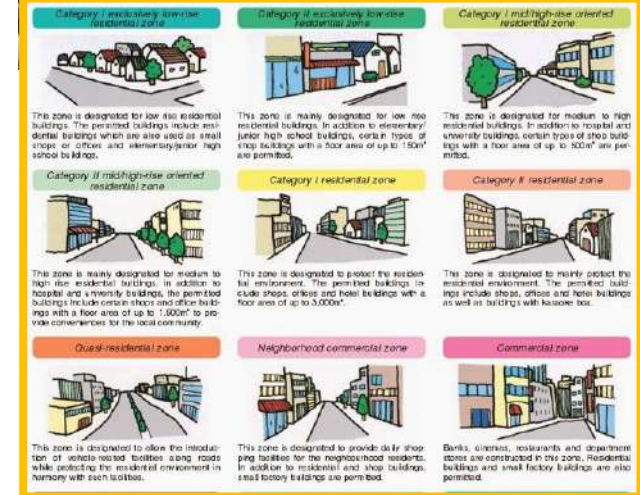


## Performance-based



Zoning Regulations :

**Mix of uses creating variety of neighborhood types**



**Zoning can regulate land uses in different ways**





#### Category I exclusively low-rise residential zone



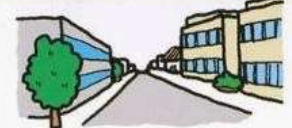
This zone is mainly designated for low rise residential buildings. In addition to elementary/junior high school buildings, certain types of shop buildings with a floor area of up to 150m<sup>2</sup> are permitted.

#### Category II exclusively low-rise residential zone



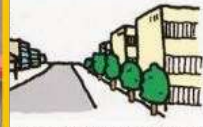
This zone is mainly designated for low rise residential buildings. In addition to elementary/junior high school buildings, certain types of shop buildings with a floor area of up to 150m<sup>2</sup> are permitted.

#### Category I mid/high-rise oriented residential zone



This zone is designated for medium to high residential buildings. In addition to hospital and university buildings, certain types of shop buildings with a floor area of up to 500m<sup>2</sup> are permitted.

#### Category II mid/high-rise oriented residential zone



This zone is mainly designated for medium to high residential buildings. In addition to hospital and university buildings, the permitted buildings include certain shops and office buildings with a floor area of up to 1,500m<sup>2</sup> to provide conveniences for the local community.

#### Category I residential zone



This zone is designated to protect the residential environment. The permitted buildings include shops, offices and hotel buildings with a floor area of up to 3,000m<sup>2</sup>.

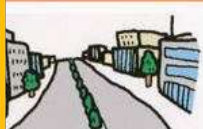
#### Category II residential zone



This zone is designated to mainly protect the residential environment. The permitted buildings include shops, offices and hotel buildings as well as buildings with karaoke box.



#### Category I quasi-residential zone



This zone is designated to allow the introduction of certain facilities along roads in the residential environment in order to provide conveniences for the local community.

#### Neighborhood commercial zone



This zone is designated to provide daily shopping facilities for the neighborhood. In addition to residential buildings, small factory buildings are also permitted.

#### Commercial zone

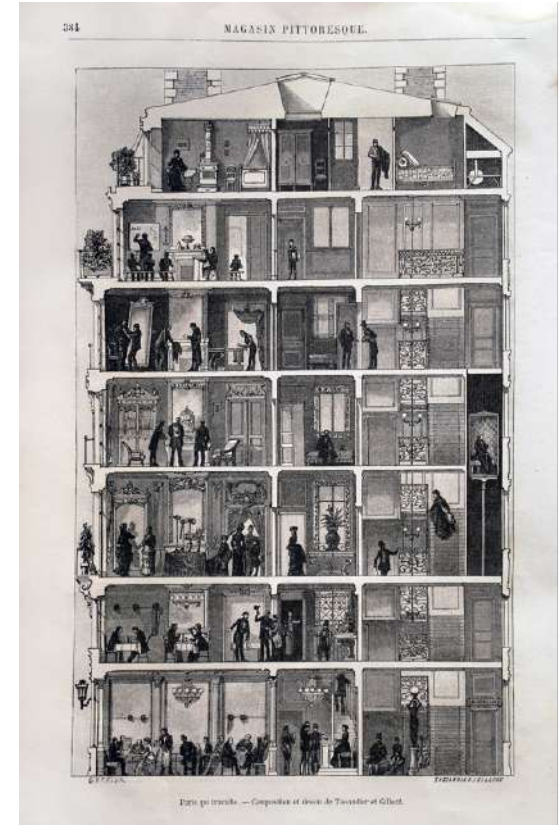


This zone is designated to provide daily shopping facilities for the neighborhood. In addition to residential buildings, small factory buildings are also permitted.

**Performance-based Codes permit mixed-uses in different combinations to foster different types of 'complete' environments**

**LAND USE****BULK**

- Building form
- Building distances
- Building heights
- Density (FAR)
- Site coverage
- Setbacks
- Sunlight access
- Streetscape
- and more ...



***Zoning can control  
the mix of uses  
vertically***

***Zoning Regulations :***

***Allow vertical mix of uses in the buildings***



**LAND USE****BULK**

- Building form
- Building distances
- Building heights
- Density (FAR)
- Site coverage
- Setbacks
- Sunlight access
- Streetscape
- and more ...

**Zoning can control  
the mix of uses  
vertically and  
horizontally**

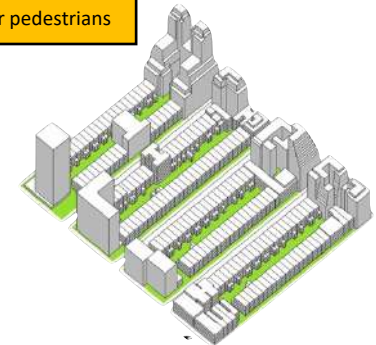
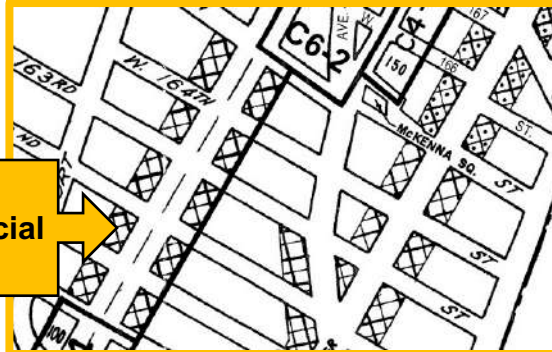


**Zoning Regulations:**

***Often require active uses  
along ground floors  
(Commercial Overlay zones)***

Lots of active ground floor  
uses make sidewalks more  
attractive for pedestrians

**C4-4  
Commercial  
overlay**



## LAND USE

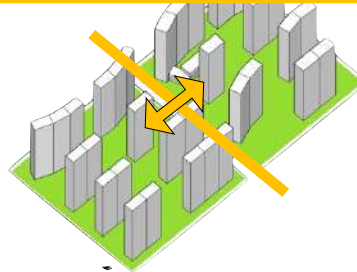
## BULK

- Building form
- Building distances
- Building heights
- Density (FAR)
- Site coverage
- Setbacks
- Sunlight access
- Streetscape
- and more ...

*Zoning can influence what **sidewalks** are like by controlling building **access** from the sidewalk*



*Zoning Regulations:*  
**Prohibit direct access to buildings from public streets**  
*(fostering limited entry gated compounds)*





## LAND USE

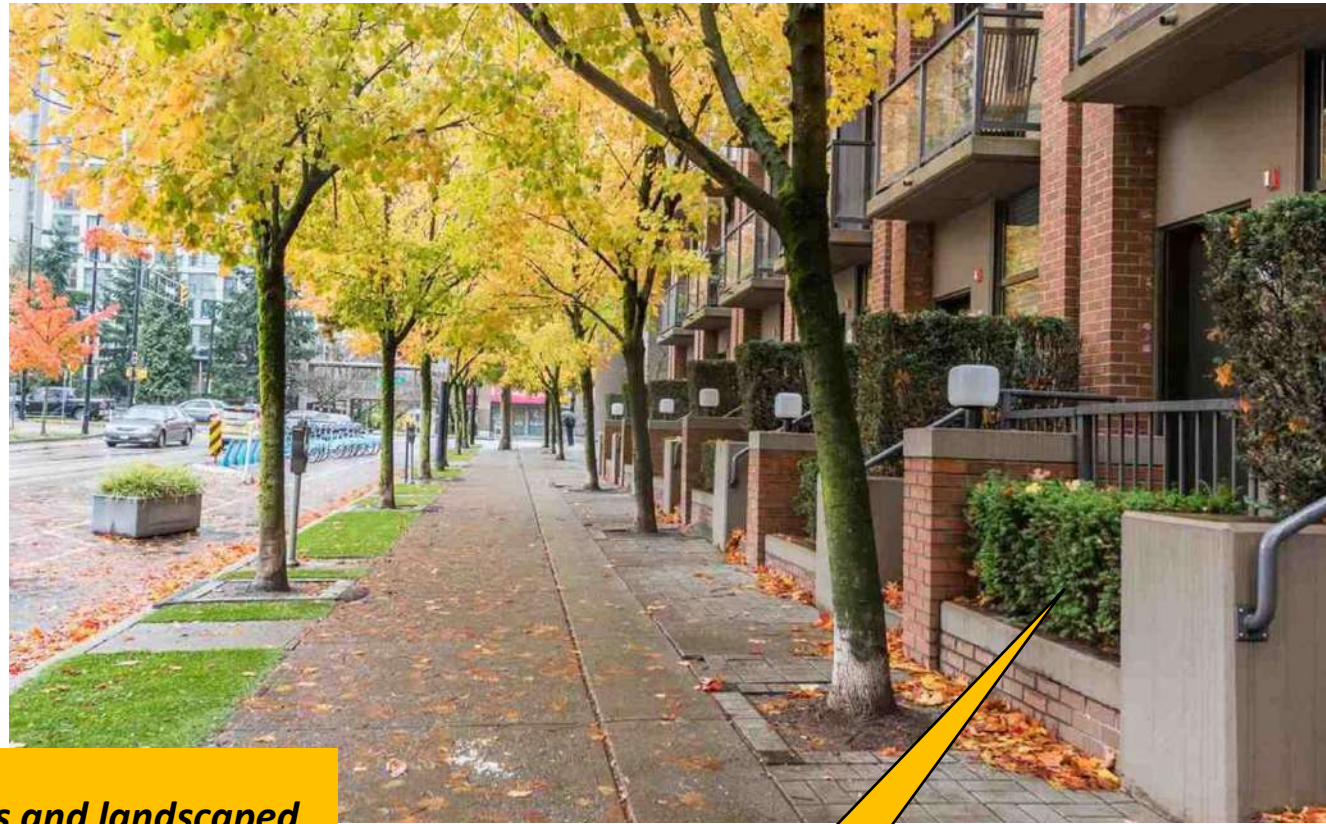
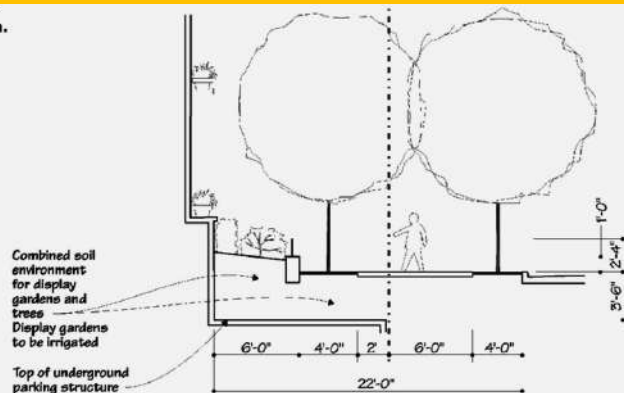
## BULK

- Building form
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- Streetscape

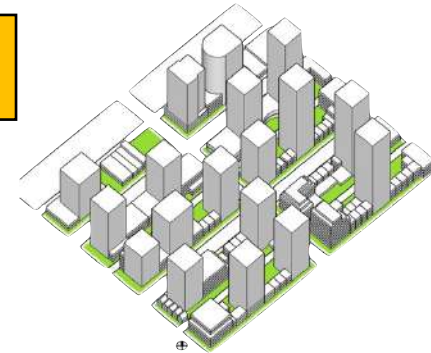
## Zoning Regulations:

**Require double row of trees and landscaped buffer zones**

Dimensions in  
New Yaletown.



Landscaped sidewalks with  
buffer zones to protect  
privacy of residents

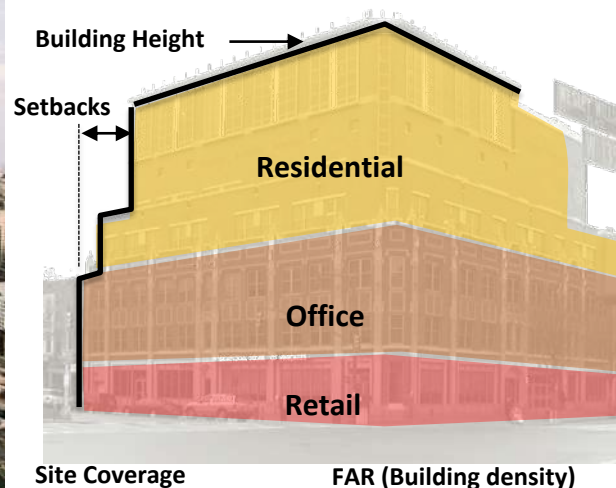


## **2] Zoning in NYC**





Zoning establishes what can be built ...  
*“as-of-right”*



Zoning codes regulate:

- **Land Use** – types of functions
- **Bulk** – size of building and relationship to public realm
- And much more ...

Nearly all development in NYC is built by following the city's Zoning Resolution  
*Therefore, zoning matters a lot !*



**Before zoning ...**

**1876**



**1916 Zoning Resolution**

**1932**



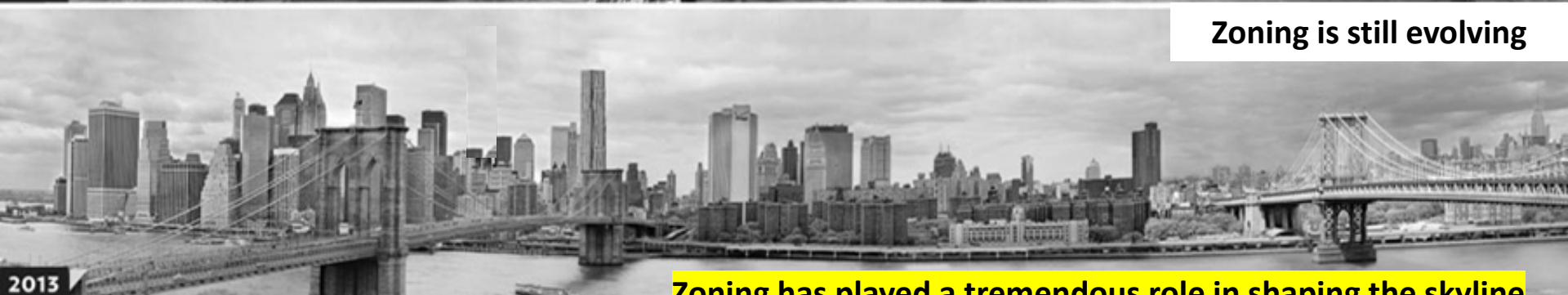
**1961 Zoning Resolution**

**1988**



**Zoning is still evolving**

**2013**



**Zoning has played a tremendous role in shaping the skyline**



## 1873 VIEW



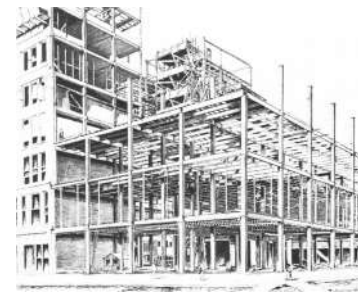


BEFORE ZONING ...

## Early 1900s - Development boom



Fig. 1.—THE OTIS ELEVATOR PASSENGER CAR.



MOSES KING & CO.  
PUBLISHERS - NEW YORK

Robert Rowland  
COPYRIGHT 1911

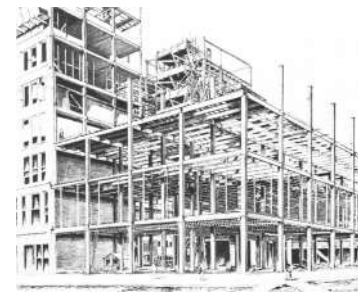


BEFORE ZONING ...

## Early 1900s - Development boom



Fig. 1.—THE OTIS ELEVATOR PASSENGER CAR.





## Early 1900s - Development boom – *Skyscraper race*

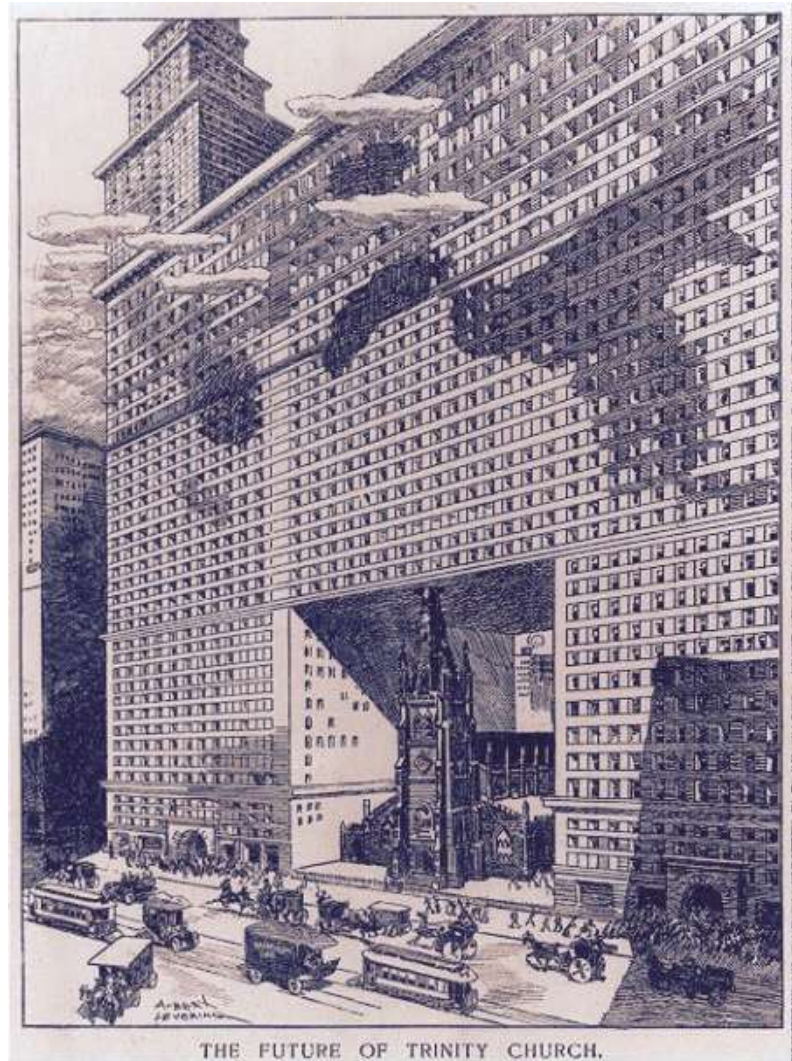
### *Excitement ...*



Moses King, 1908

### *Concern ...*

*Skyscraper race sparks immediate outrage and leads to sensationalist speculations on the future of Manhattan*



Puck illustration from 1907, by Albert Levering.



## Call for 'bulk' regulations

### Equitable Building , 1915

- Rose 42 stories and 538' tall with no setbacks
- With effective FAR of 30, becomes largest (not tallest) office building in the world
- Cast a shadow 7 blocks long



## Call for 'use' regulations

Fifth Avenue high-end shopping establishments wanted to **preserve their exclusivity and prevent the 'encroachment'** of undesirable commercial activities



B. Altman's

Luxury department stores were considered acceptable commercial uses in the area.



Immigrant workers in the rag trade

However, commercial uses that employed low wage, immigrant workers were not considered acceptable



# 1916 Zoning Resolution

### 3 District types

## 1] Use Districts

Separated uses  
(residential, retail, business, unrestricted)



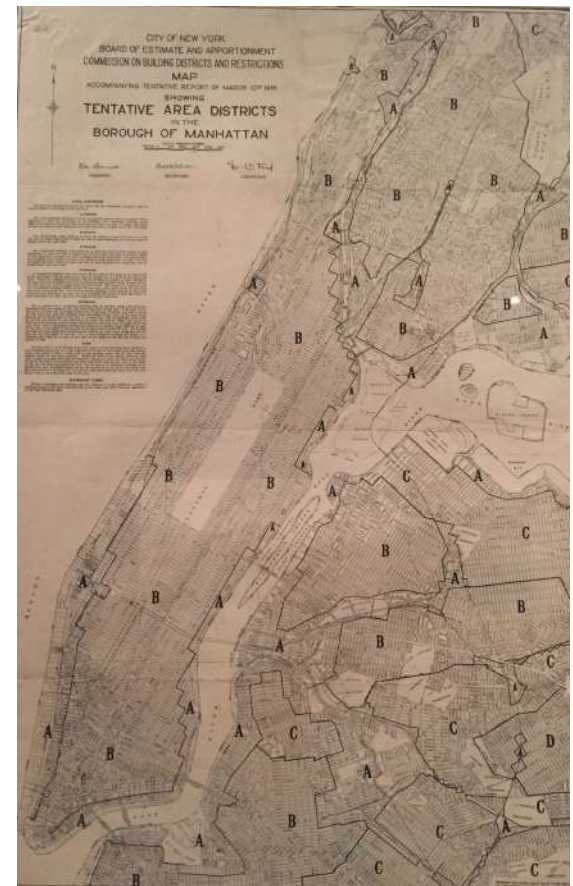
## 2] Height Districts

Related building size to width of streets;  
introduced sky exposure planes



### 3] Area Districts

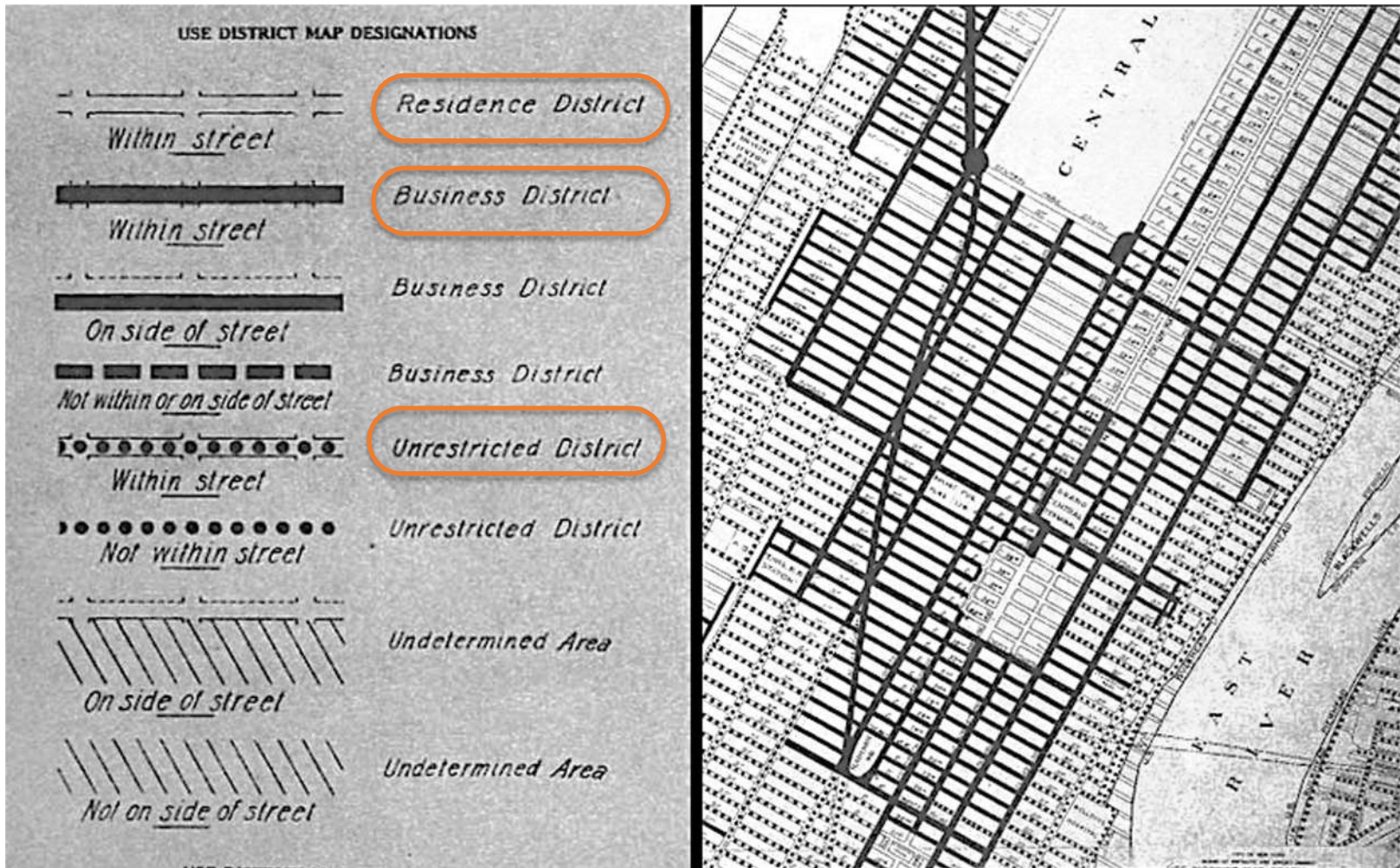
Specified yards, courts, types & size of residences





## [1] Use Districts

Separated uses into residential, business, and unrestricted districts





## [2] Height Districts

*Sky Exposure Plane* relating building height to width of street



**1½ x  
Street  
width**

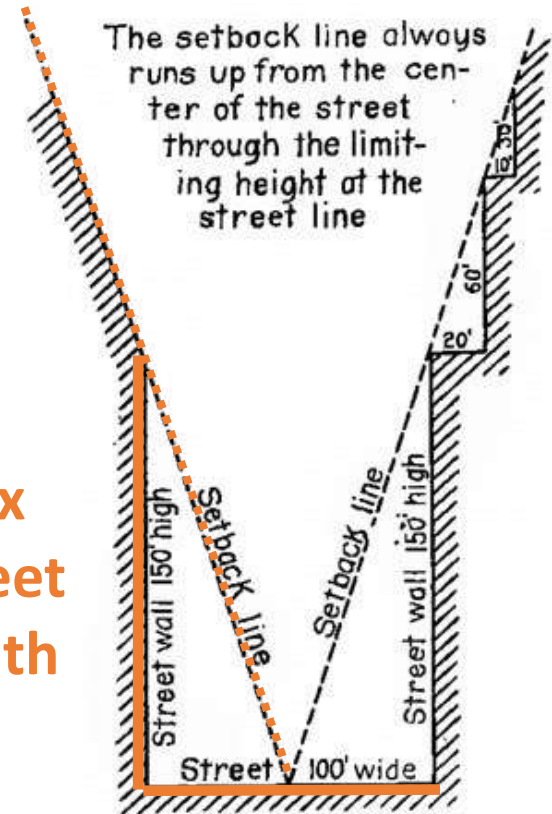


Figure 1

SETBACK PRINCIPLE

*Typical example in a 1½ times district, for streets 50' to 100' wide*

## [2] Height Districts

*Sky Exposure Plane* relating building height to width of street



120 Wall Street, 1930



Look building, 1950

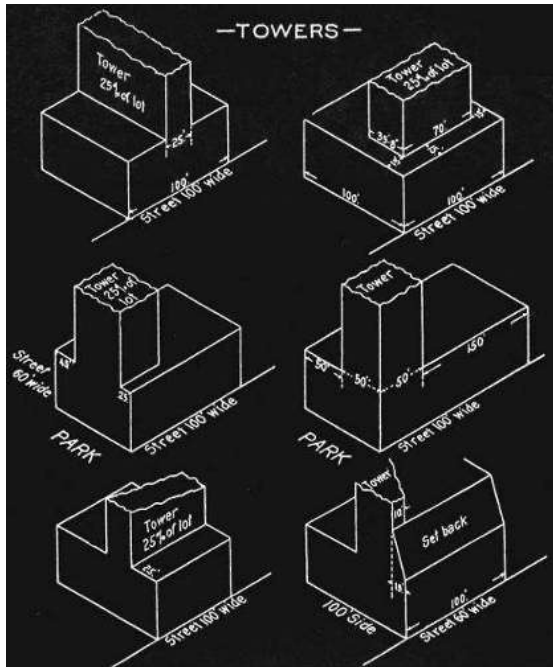
Sky exposure plane regulations  
created “wedding-cake” buildings





## [2] Height Districts

***Tower Regulations*** permitting 25% of lot area to penetrate the Sky Exposure Plane



Woolworth Building, 1913

## [3] Area Districts

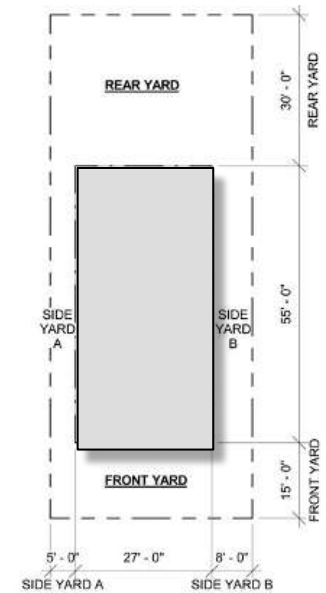
### *Open Space Regulations:*

*5 classes (A-E) defining different types of open space requirements*



**Specified size of open space areas:**

- front, rear and side yards,
- inner & outer court yards,
- and other types open spaces





# 1916 Zoning Resolution

## Sky Exposure plane + Tower Regulations

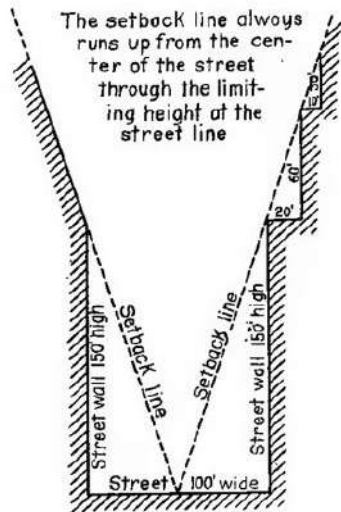
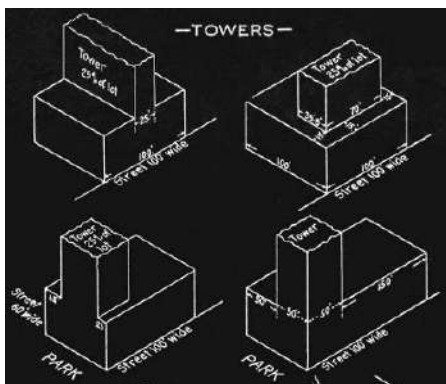


Figure 1





## 1916 Zoning Resolution

### Sky Exposure plane + Tower Regulations

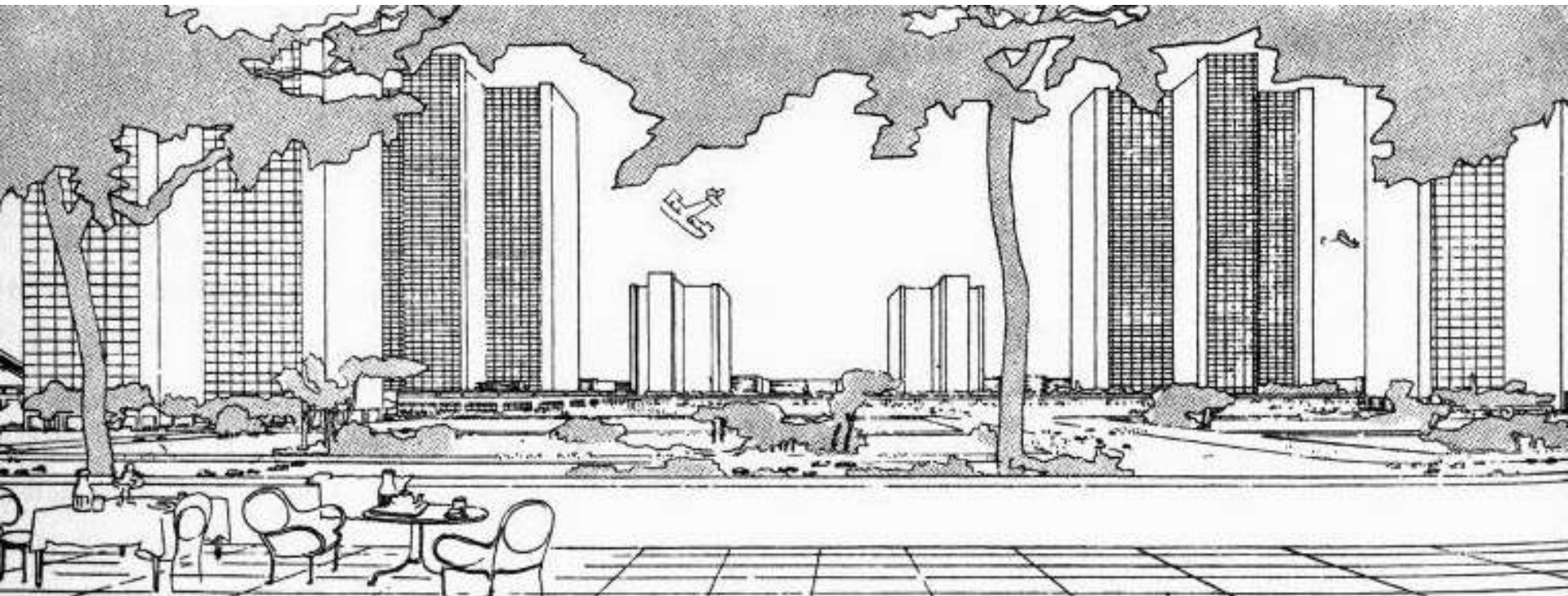


Manhattan midtown ~ 1935



## New architectural preferences

Growing popularity of the '*International Style*' and '*Tower-in-the-park*' developments



Le Corbusier's "Ville Contemporaine" 1922

## 1961 Zoning Resolution

### New Bulk Regulations

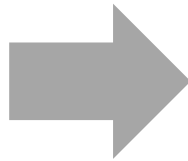




## New architectural preferences

### Office Towers

*moving away from 'wedding cake' forms*



1952 Lever House by SOM



1958 Seagram Building by Mies van der Rohe

## New architectural preferences

### Residential

#### “Tower-in-the-park”

- **Housing Cooperatives:** led by trade unions like the Amalgamated Clothing Workers of America.
- **Large scale, occupying numerous blocks**
- **Replicable campus layout**
- **Emphasis on open space, light and air**

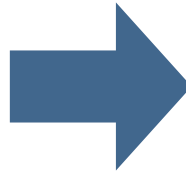


Parkchester, BX – 1939 - 1942



Traditional NYC tenements

moving away  
from  
'tenements'



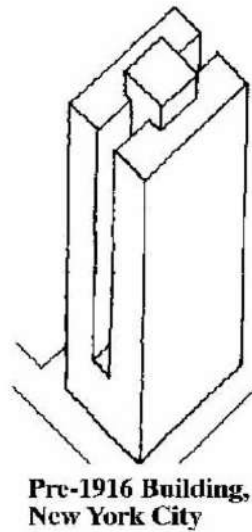
Hillman Houses, LES – 1947



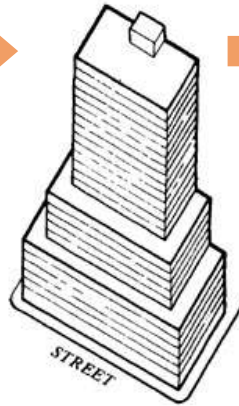
## 1961 Zoning Resolution

### New Bulk Regulations

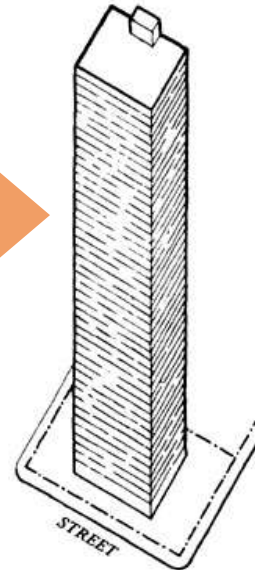
**pre-zoning**  
*'box'*



**1916 Zoning**  
*'wedding cake'*



**1961 Zoning**  
*'Tower-in-the-park'*



*Desire for Modernism  
and Open Space:  
Extruded towers with  
plazas and Tower-in-  
the-park residential*

## 1961 ZONING RESOLUTION





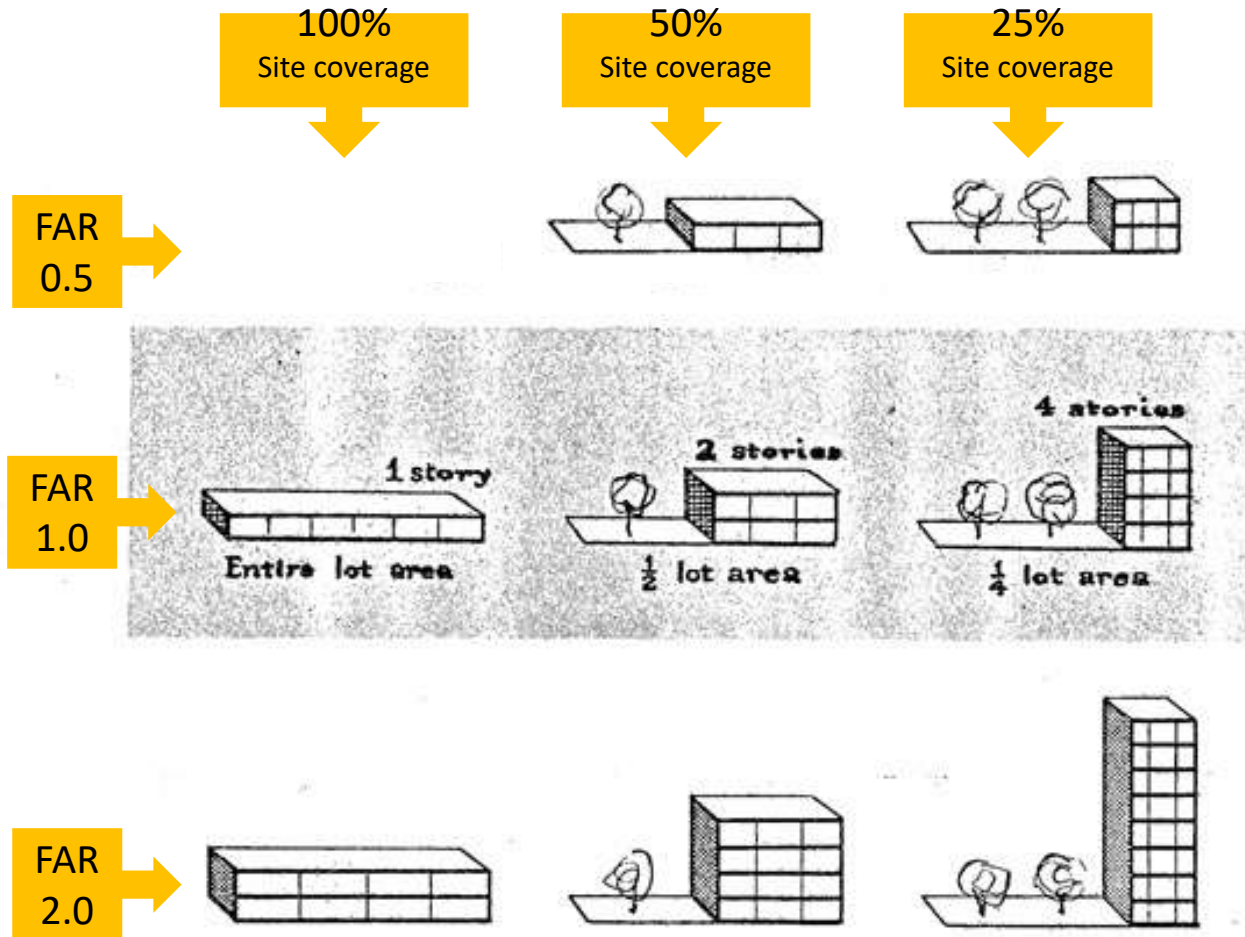
## 1961 ZR introduced some new zoning tools

1. Floor Area Ratio (FAR)
2. Plaza bonus
3. Height Factor
4. Contextual Zoning
5. Transfer Development Rights



## [1] Floor Area Ratio (FAR)

### FAR and Site Coverage

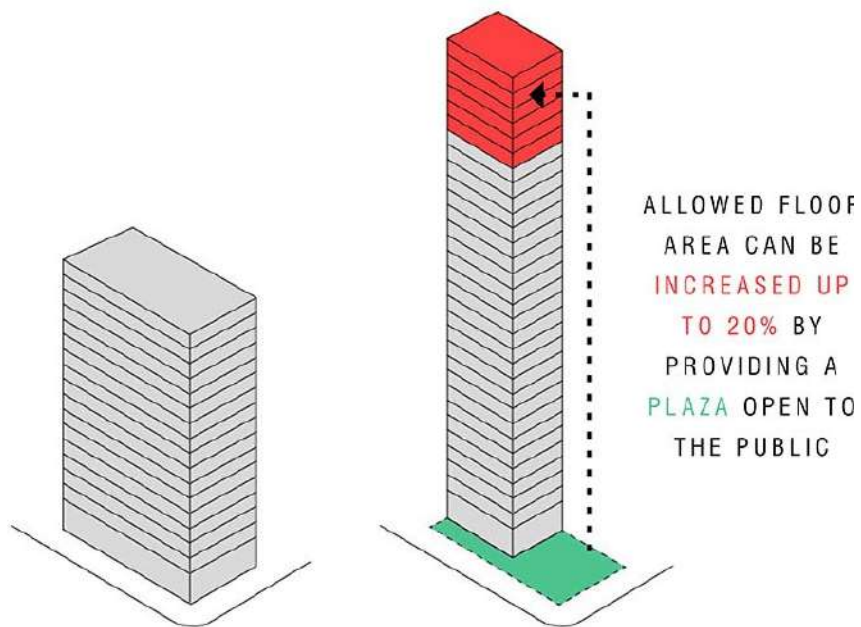




## [2] FAR Bonus

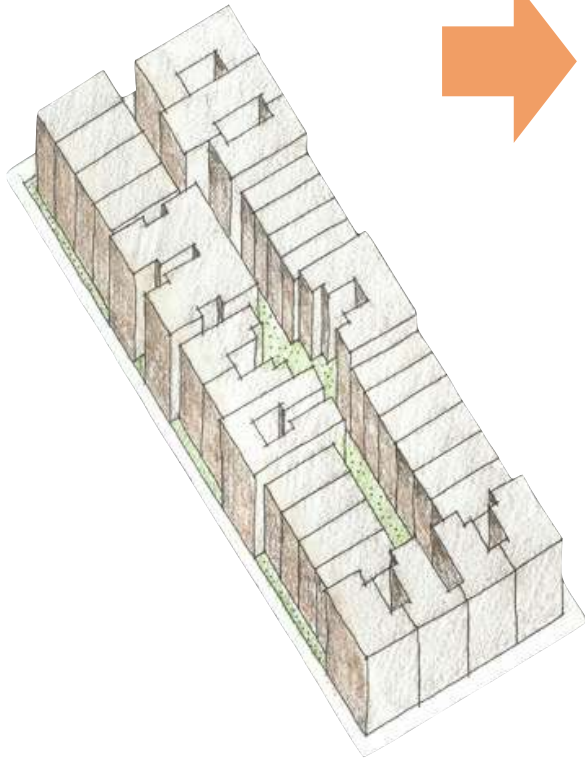
Zoning incentives to create:

- More public space
- More public amenities
- Community Facilities

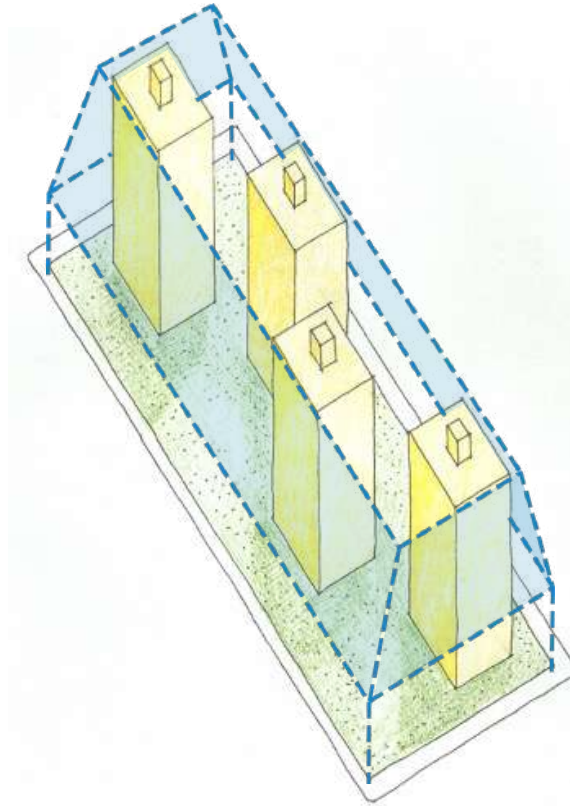


### [3] 'Height Factor' Zoning (residential districts)

Pre-existing bulk configuration



*Towers in-the-park* concept





### [3] 'Height Factor' Zoning (residential districts)

... problems ...

Open space requirements combined with parking requirements often created *'tower-in-the-parking lots'*

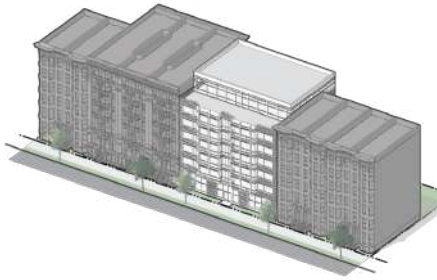


Open Space requirements on infill sites destroying neighborhood context



## [4] Contextual Zoning

### Quality Housing Option



Preserving street wall & neighborhood scale

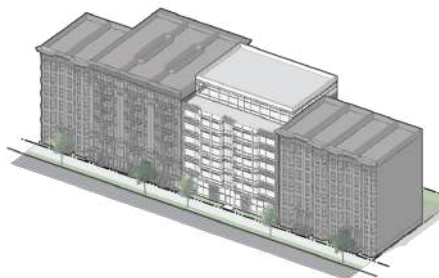
### Height Factor Zoning



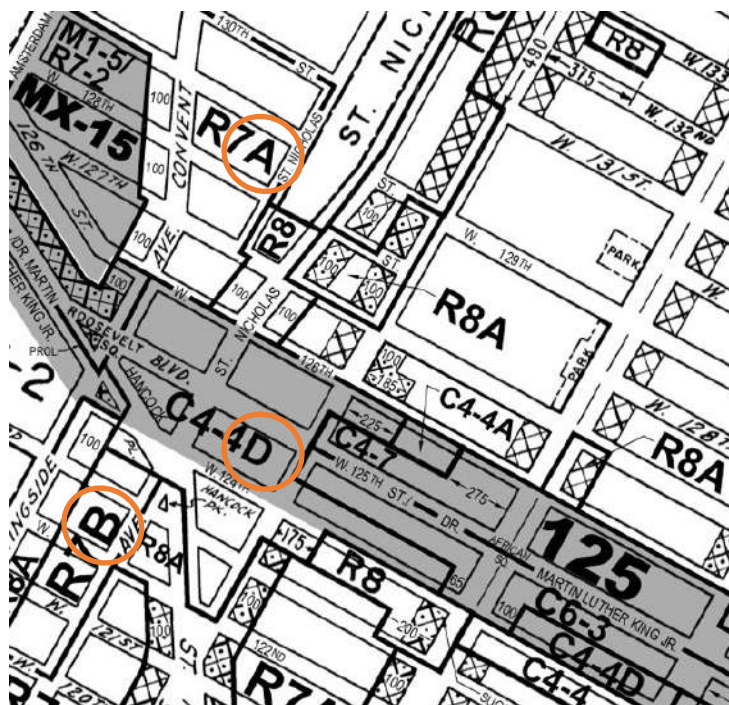


## [4] Contextual Zoning

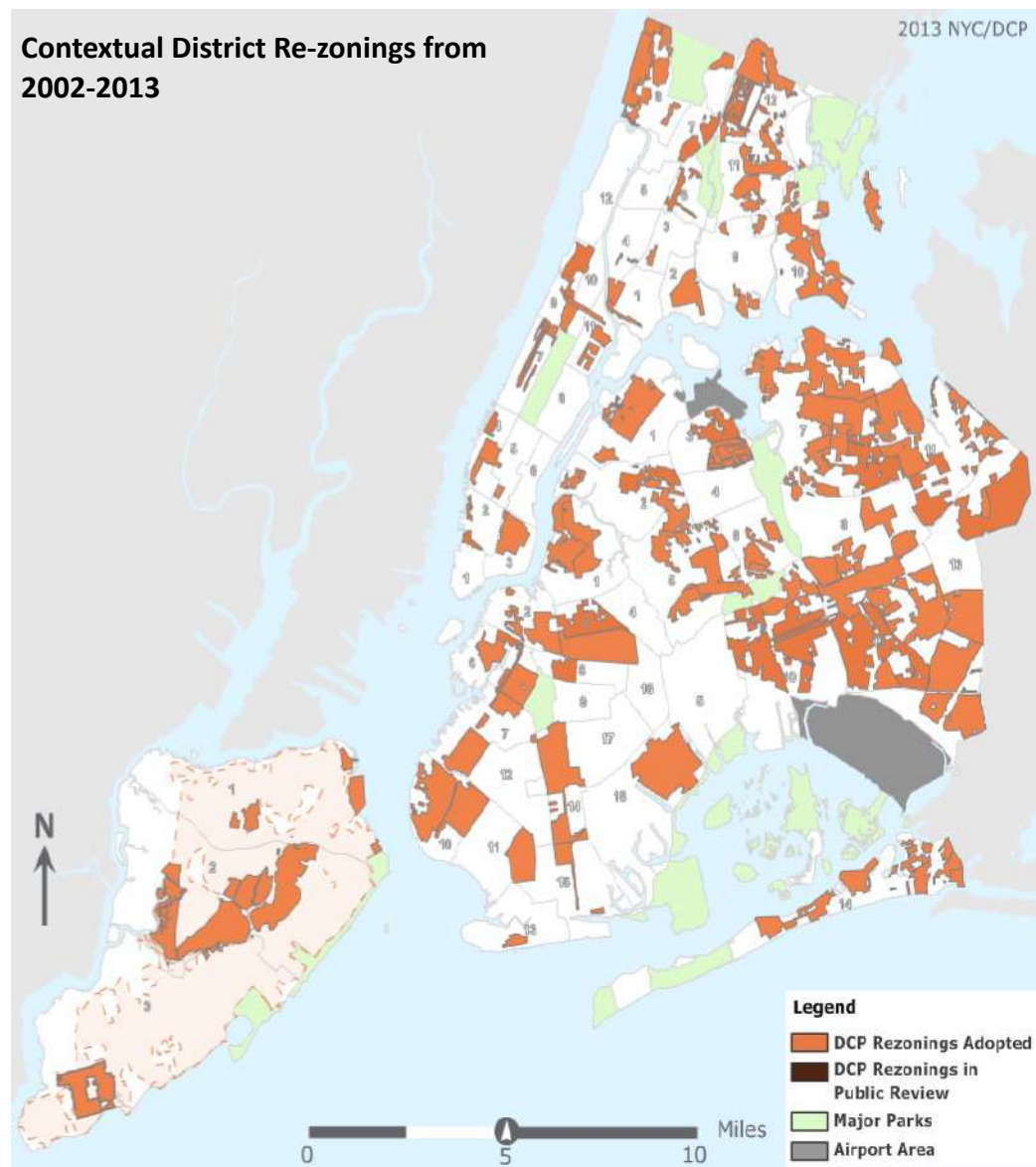
### Quality Housing Option



Contextual Districts end in letter suffixes: A, B, D or X

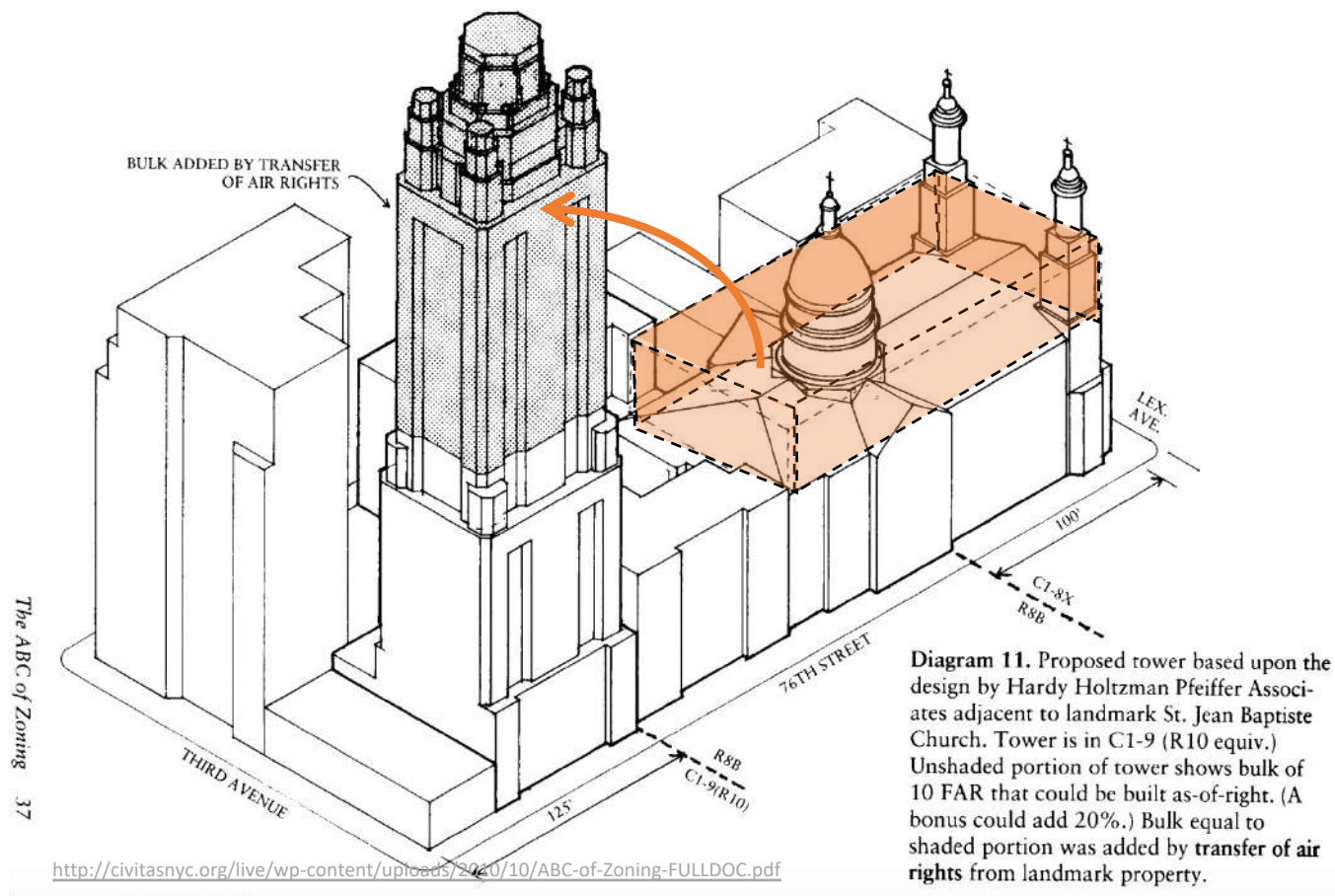


Contextual District Re-zonings from 2002-2013



## [5] Transfer of Development Rights (TDRs)

Initial intent was to preserve architecturally significant buildings

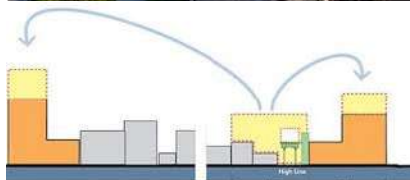


<http://civitasnyc.org/live/wp-content/uploads/2020/10/ABC-of-Zoning-FULLDOC.pdf>



## [5] Transfer of Development Rights (TDRs)

Some successful uses of TDR: Highline, Times Square theater district



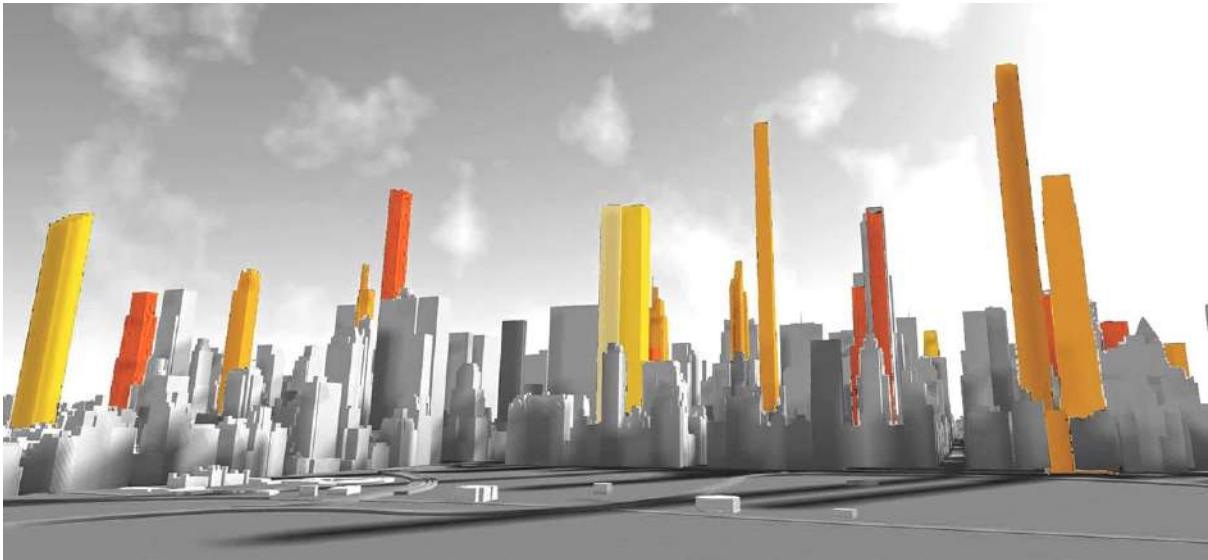
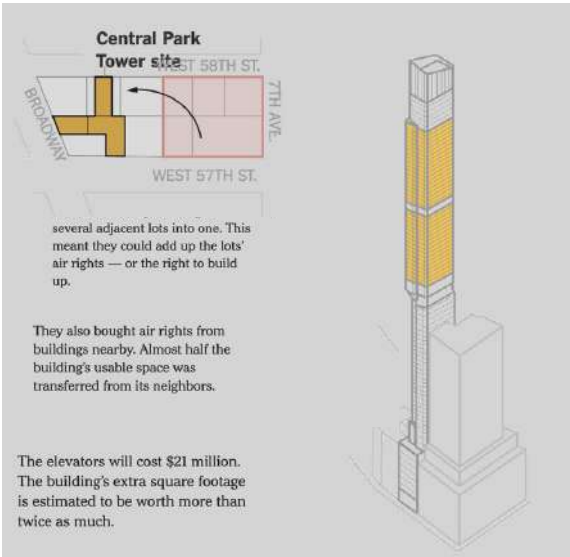
The High Line



TRANSFER OF REMAINING DEVELOPMENT RIGHTS

[5] Transfer of Development Rights (TDRs)

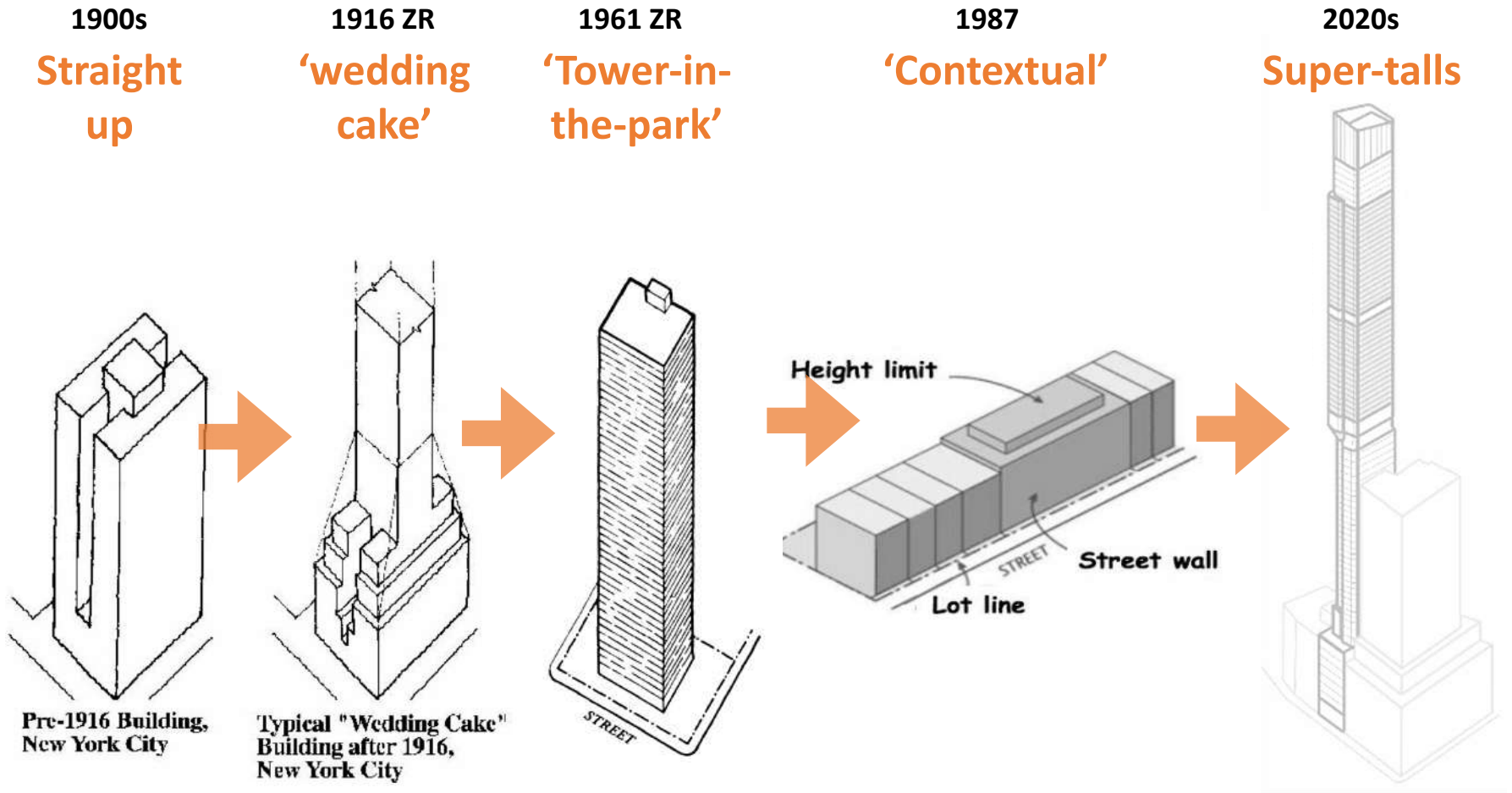
Some controversial uses of TDR: ‘Super Talls’ permitted ‘as-of-right’



**Figure 36:** Aerial image showing proposed tower at 200 Amsterdam Avenue and zoning lot in red



## Evolution of building forms established by zoning



# Evolution of mapping systems established by zoning

## 1916 ZR

3 maps for entire city



Use Districts



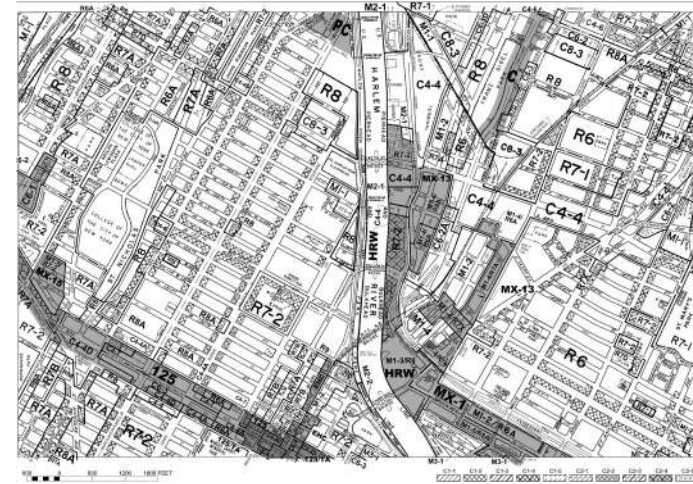
Height Districts



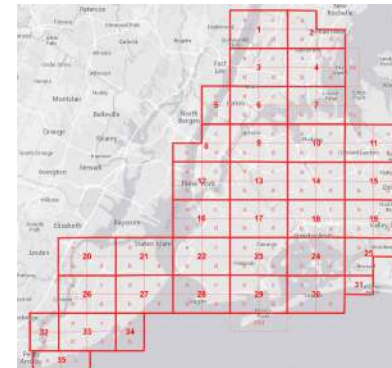
Area Districts

## 1961 ZR

1 map for every section



Each area of the city divided into sections, subdivided into an a, b, c, d zoning map





zoning regulations can be changed  
*... but not easily*

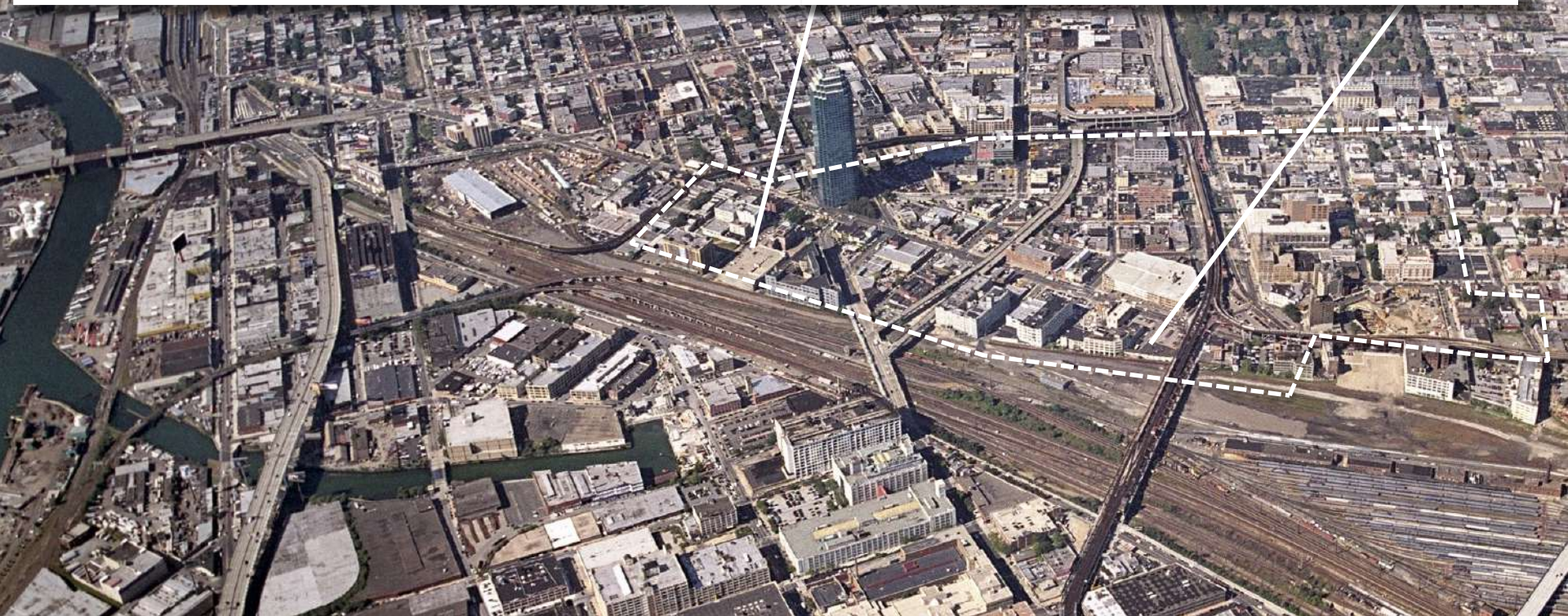
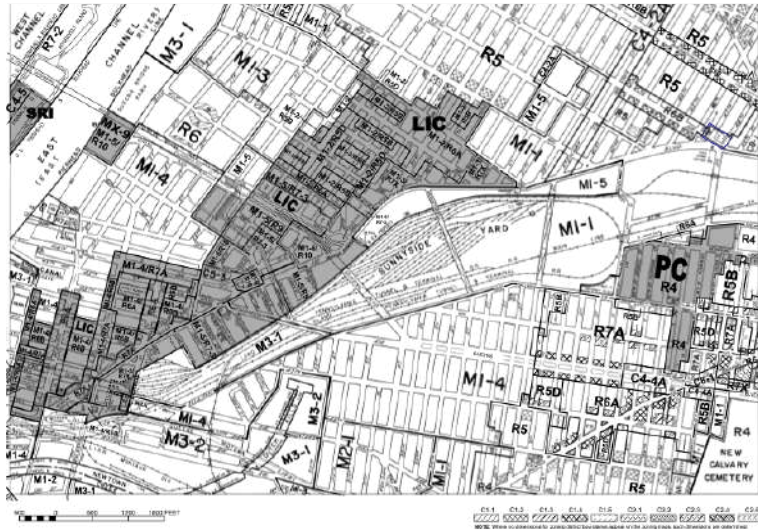


## Uniform Land Use Review Procedure - ULURP





# LIC Mixed-use Rezoning took more than 5 years to develop and get approved (from Manufacturing District to a Mixed-use Special District)





## 2] Zoning in NYC

1] Brief history of NYC's zoning

**2] How NYC's zoning works**



## NYC Zoning Maps

are the key to understanding what you can build in New York  
providing both land use and bulk information



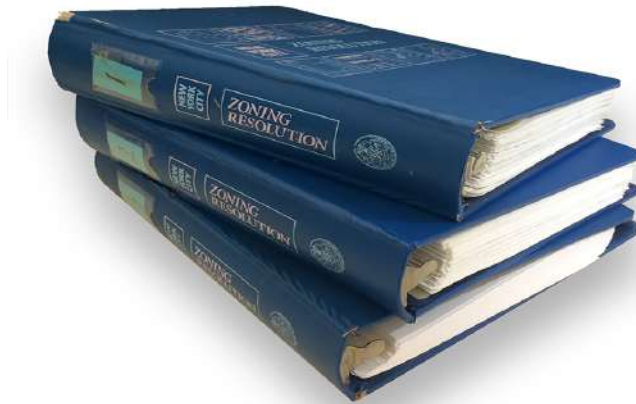


***are the key to understanding what you can build in New York  
providing both land use and bulk information***

### Commercial Overlay

C1-1	C1-2	C1-3	C1-4	C1-5
C2-1	C2-2	C2-3	C2-4	C2-5

New York's  
zoning regulations are  
recorded in the  
Zoning Resolution (NYC ZR)



The Zoning Resolution has 3 volumes:

**Volume I: Text**

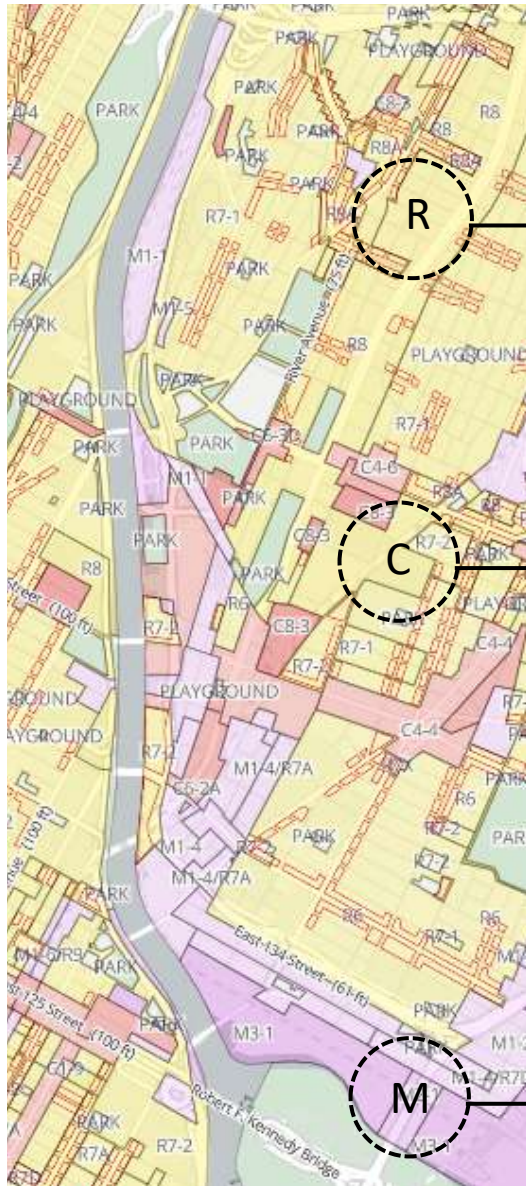
**Volume II: Special Districts**

**Volume III: Zoning Maps**



## NYC Zoning Resolution:

Use Categories >> Zoning Districts >> Regulations



- Residential (R)



- Commercial (C)



- Manufacturing (M)



# NYC Zoning Resolution:

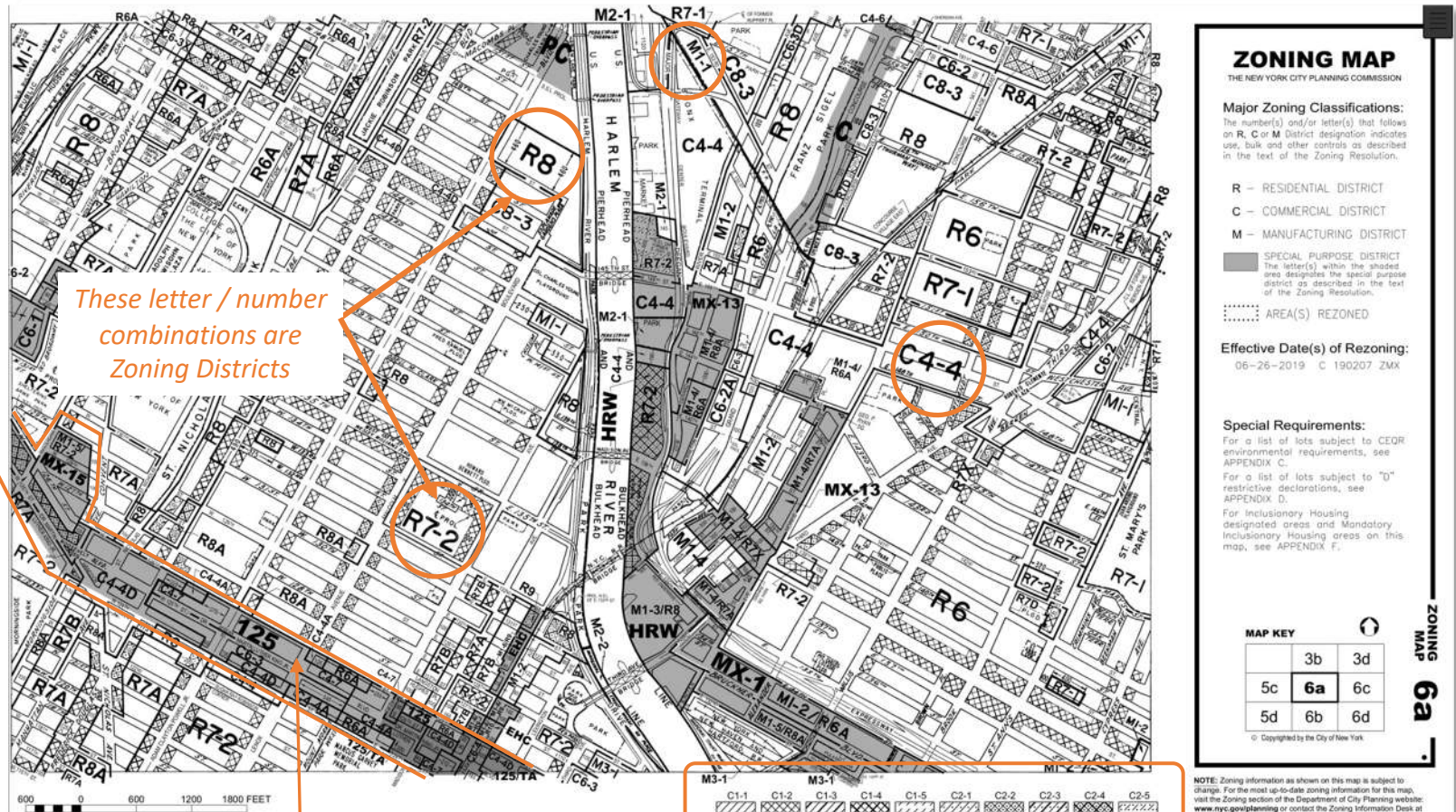
## Use Categories >> Zoning Districts >> Regulations

- Residential (R)
- Commercial (C)
- Manufacturing (M)

• **R1-R10**  
Residence Districts

• **C1-C8**  
Commercial Districts

• **M1-M3**  
Manufacturing Districts



Special Districts

Commercial Overlays

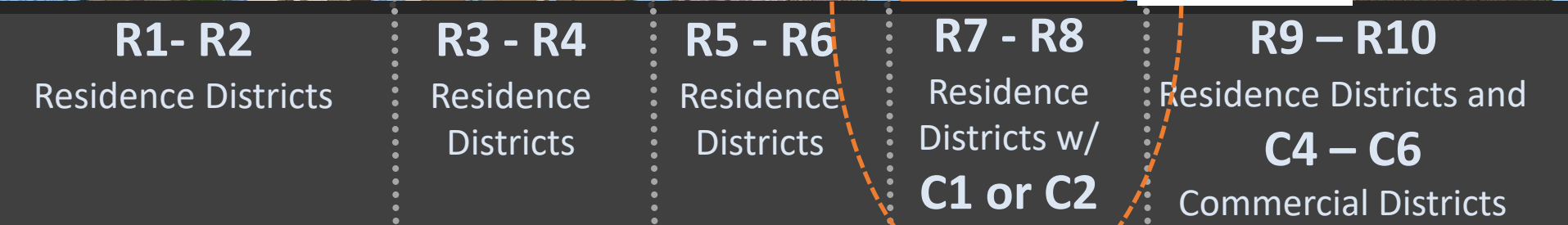


## NYC Zoning Resolution:

## Use Categories >> Zoning Districts >> Regulations

- **R1-R10**  
Residence Districts
- **C1-C8**  
Commercial Districts
- **M1-M3**  
Manufacturing Districts

- Bulk + Density
- Use Groups
- Parking
- Signage
- and more ...

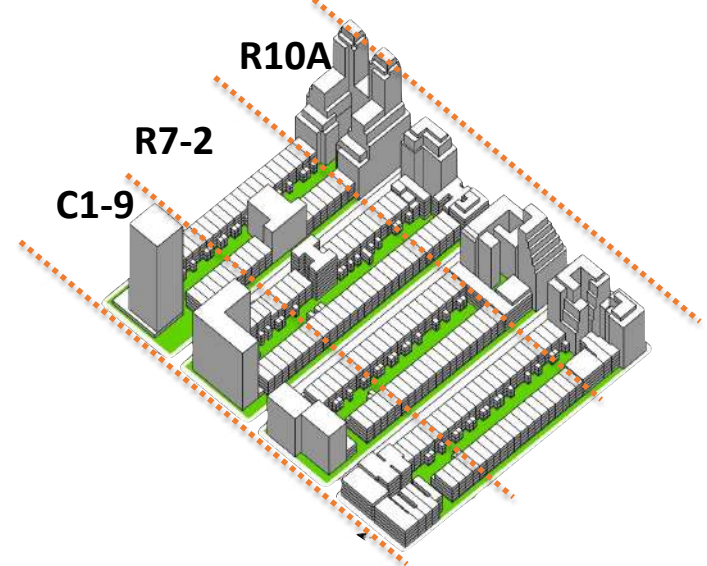
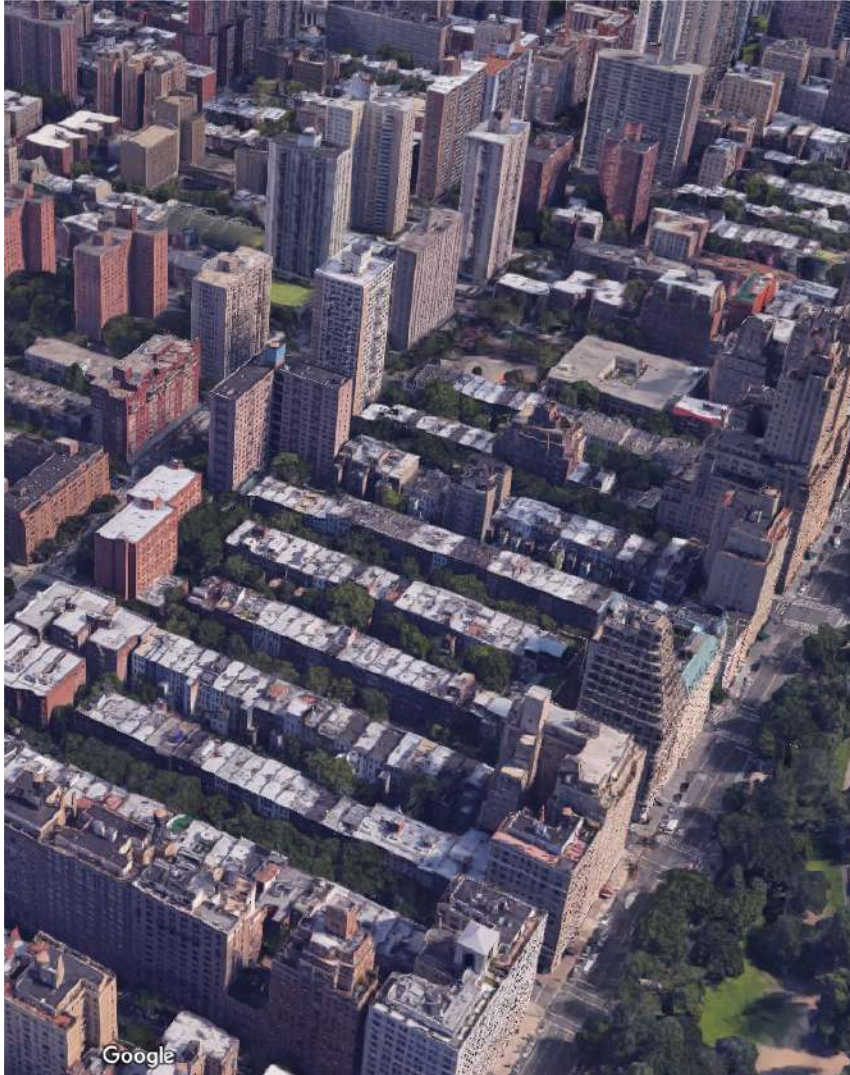


### **3] What if's**



# The impact of zoning on the built environment

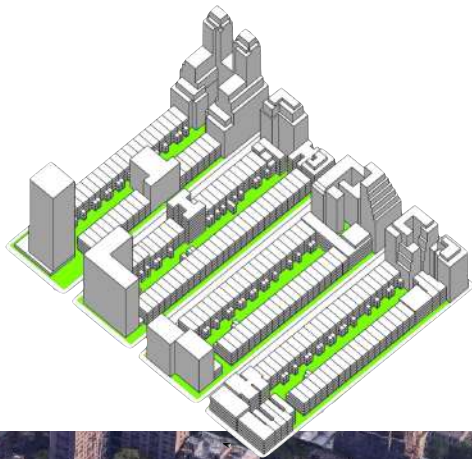
New York City



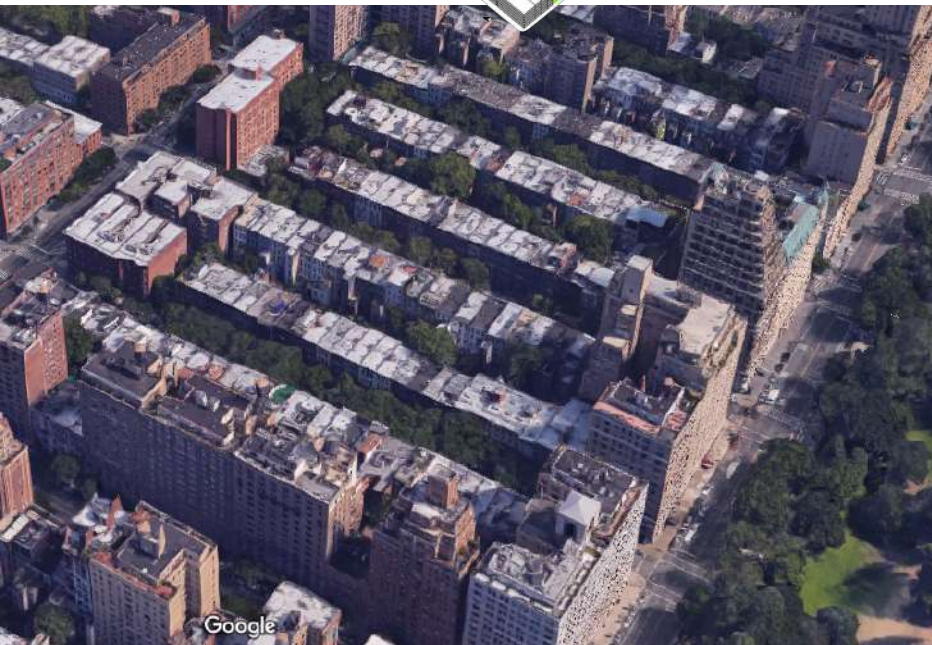
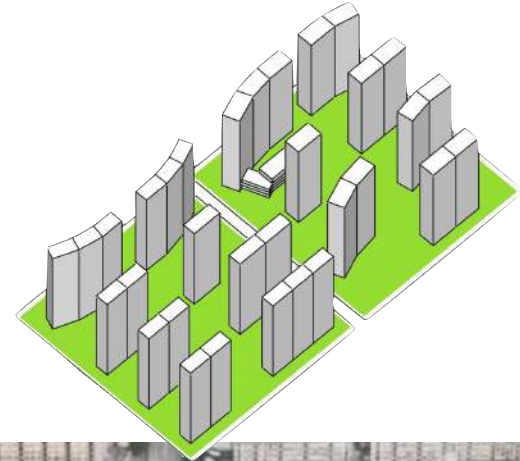


## *Different zoning systems create different built environments*

New York City



Any city in China





# *Different zoning systems create different built environments*

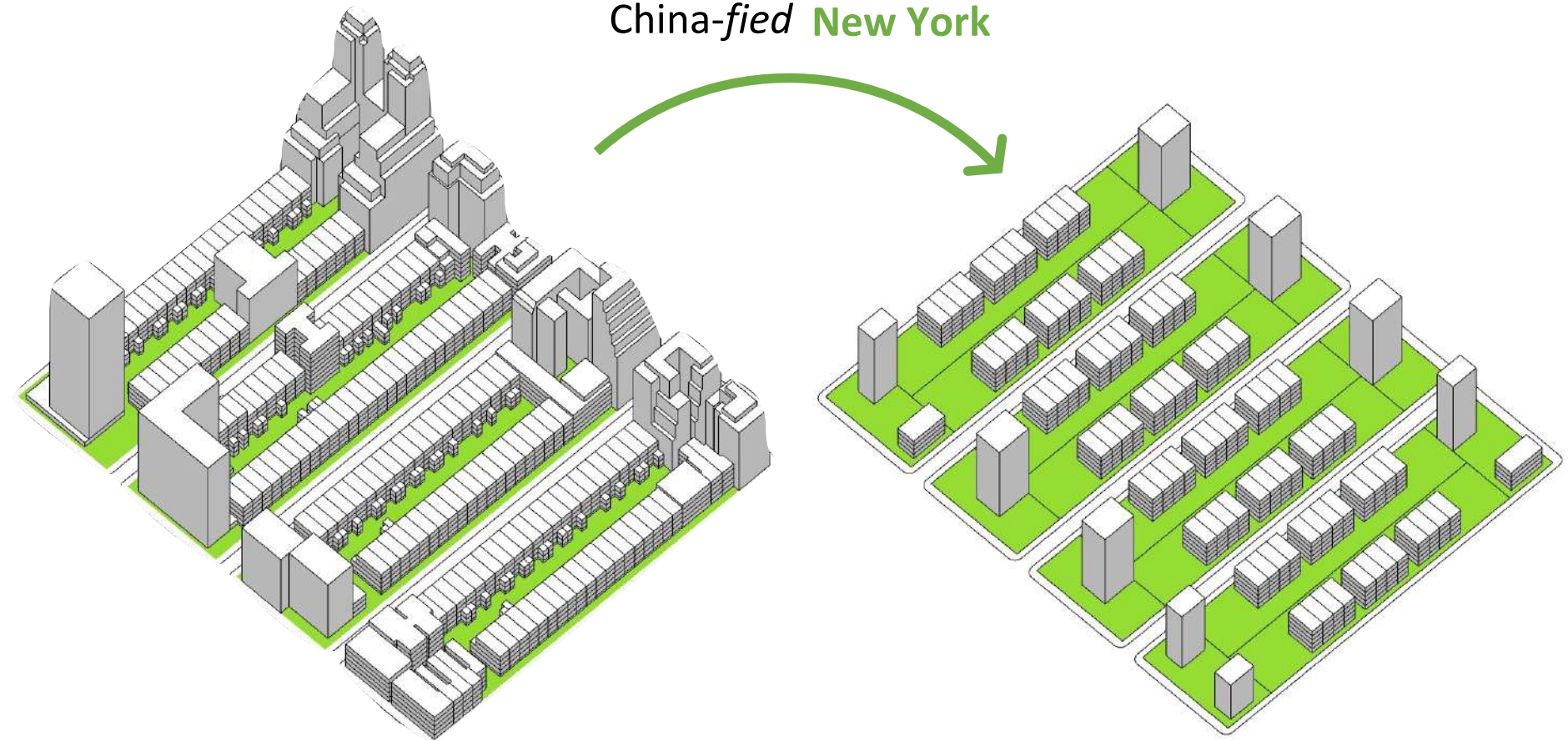


**What if we mixed  
them up ?**





## China-fied New York







Thank you

