URBS 250 MIDTERM notes

1) Mapping

Definition:

Origin of the word "Map": Latin: *mappa mundi*, 'Sheet of the world'

What are Maps?

- Maps are intended to convey information, as well as abstractions, simplifications, and representations of the reality and environment.
- Maps can show developing space and accessed space.

Dynamic Maps (Zoomed out):

- not detailed map
- small scale
- Ex. Satellite view of North America

Detailed Map (Zoomed In):

- Large scale
- When you zoom in roads are shown first, they are coordinate posts on a map that align together.

Two categories of maps and their characteristics:
Mental & Tangible Maps

Mental Maps: is in your head from memory

- Similar to cognitive, concept, mind maps and bubble diagrams.
- Exist mainly in our minds
- Reflect individuals experience, perception and knowledge of a space. Your understanding might be different from someone else's.
- Highly subjective
- Usually not an accurate representation of real space.
- Mental maps help us:
  to navigate the environment
  to understand the world around us
  to identify important or problematic areas of our community

Tangible Map types:

1. Virtual (you can see it)
2. Reference
3. Thematic: where something is
4. Qualitative: more social
5. Quantitative: how much? (Single variable, multivariable)

- Can be viewed by more then one person
- Presents the same information to each viewer
- Usually accurate representations of real space
- Mostly objective

GIS: Geographic Information Systems

Basic Map Elements:

1. Title & Subtitle
2. Legend
3. Scale
4. North Arrow
5. Date
6. Source
7. Geographic Info.
8. Thematic info.

How to read a map

Elevation:

Building Heights:

Attitude towards height vary from community to community. Local cultural differences influence decisions about appropriate building heights.

Height in relation to Street Width

Building height is roughly equal to the width of the street. When height reaches twice the width of the street, many people classify the building as tall.

Effects of Heights

BUILDING HEIGHT COMPARISONS

Abrupt Change in Scale & Transition of Building Heights

An abrupt change in building scale creates an inharmonious environment that maximizes the negative effects of tall building on adjacent uses, such as loss of sunlight and strengthened wind currents. A transition of building heights from residential neighbourhoods to dense commercial districts minimizes these negative impacts.

SOLAR EXPOSURE

Blocked Solar Exposure & Improved Solar Exposure

When poorly sited, tall buildings can block the sun exposure for sensitive areas, such as parks and neighbourhoods. Problematic shadows can be avoided by using careful massing and step backs in the building profile.

WIND EFFECTS

Wind Downwash & Wind Diffusion

Tall buildings with large, unbroken profiles tend to draw wind down to the ground level. The taller

building, the higher wind pressure, because wind speed normally increases with height.

Lower pressures below cause a descending flow on the building's inward face, called "*downwash*" because wind force increases at a square of its speed, pedestrians can experience an extreme increase in wind force.

Shorter buildings of equal volume, with a stepped profile, will diffuse wind before it reaches the ground.

Scale: a map scale is a mathematical method for expressing how *map distance compares to ground distance*, the distance on the surface of the earth.

Representative Scale:
the scale represents the *ratio of a distance on the map to the actual distance on the ground*.

Scale = (1) Distance on the map / Distance on the Ground (unit)

Concept of scale: the larger the second number the smaller the scale of the map
Ex. 1: 2000 < 1:50

Type of Map	Surface Area	Detail
Large-Scale	Small	Large
Small-Scale	Large	Small

Graphical Scale:
Scale is a qualitative measure of the relative height and massing of buildings and spaces.

Scale is useful when:
- creating economically feasible development plans or urban design frameworks
- developing zoning for a new district or to guide development in a historic downtown
- evaluating shadow, wind, and other potential impacts of a proposal
- Revising proposals for consistency with community goals or compatibility with adjacent buildings or open space.
- It is useful to work at different scales and extract information from plan maps

Context
Why is Context important?

It is about understanding the position of development and how to position a development. The approach has to be cohesive and inclusive. ex. You have to consider the community, who will be effected?

Designers need to take account of the following priorities:
- Strengthening local communities
- Creating places of distinction
- Harnessing intrinsic site assets and resources
- Integrating with surroundings
- Ensuring feasibility
- Providing vision

Class example of **context**:
Transit, Shopping, walking

Different **themes** to map out **scale**:
ex. Montreal, Neighbourhood, & Concordia

How to layout a map
6 Main Elements Required:
1. Title
2. Subtitle
3. Mapped image
4. Legend
5. North Arrow
6. Scale

Information: Student/class information on bottom left corner

When creating a new or updating an existing cadastral map, assemble all the relevant information first. The IAAO (International Association of Assessing Officers) recommends some information.
Balance and Hierarchy:
Hierarchy of Map Elements:
1) Title, Map image
2) White Space, Legend
3) Everything else

2) Concept Mapping

Definition:
Graphical tools for organizing and representing knowledge.

The Components:
Lines:
Shows the relationship between the two concepts
"Verb" in Concept mapping semiology

Concepts:

Illustrates key ideas
"Noun" in Concept mapping semiology

Prepositions:
Meaningful statement communicating the link between two or more concepts
"Preposition" in Concept mapping semiology

Modifiers:

- Size: big or small
- Proximity: how closely they are linked

Why we use Concept Maps?

- To generate ideas (Brainstorming)
- To design complex structures (Community Design, Spatial Relationships, Access to Public Institutions)
- To communicate complex ideas (Legibility, Ease of Movement)
- To aid learning by explicitly integrating new and old knowledge
- To assess understanding or diagnose misunderstanding or issue

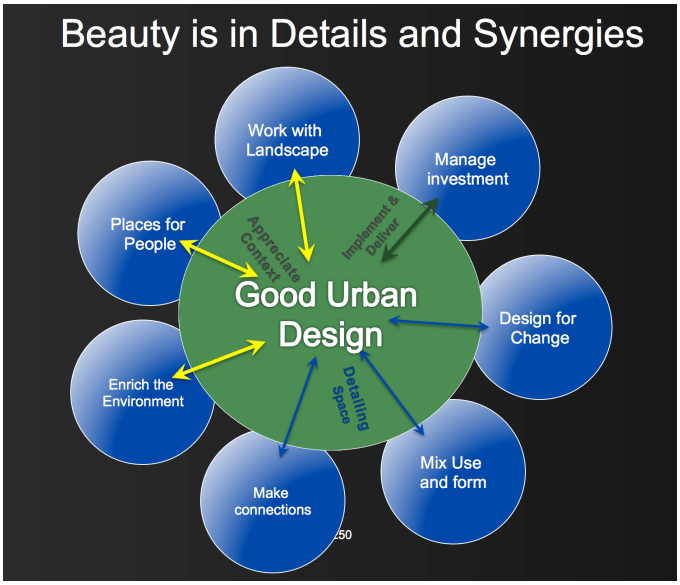
Example of a Good Urban Design Concept Map:

Advantages	Disadvantages:
• Development of a holistic understanding	• Oversimplifications
• Quick communication of key themes	• Communicates only general ideas and relationships
• Simplification of complex ideas	• If not well developed they may be misleading
• Helps to formulate and create a better understanding of subject matter	

Application examples:

- Creativity
- System Design
- Communication
- Learning
- Assessment
- Simplification

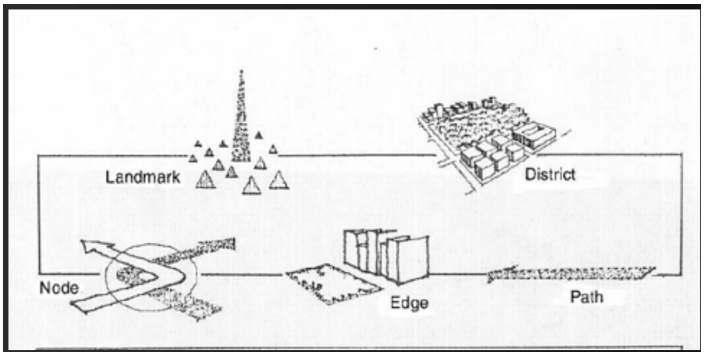
The 7 Flower Petals



Lynchian Analysis
Lynch's 5 imageability elements:
how to define them?

1. Landmarks: Reference points, odd spaces, something easily recognizable
2. Districts: outline district space (community, neigbourhood, green space…)
3. Paths: superblock, can be big or small, one way path.
4. Nodes: Turning point, intersection, place for meeting people
5. Edges: Impasses (deadlock, dead end, cul-de-sac), Non-spaces, spaces we won't engage in.

5 Elements of Space



3) Walking, Cycling and Transport - Streets

How to design with cycling in mind?

- make it easier and safer for bicyclists on the road.
- have separate bicycle lanes that don't intervene with other automobiles, if they do have intersections have a proper signage system that can be read from everyone on the road.
- Have proper and safe bike stations and locks for bikes where you can easily retrieve your bike from.

What makes Houten, NL different from traditional cities?

In Houten, they have many path lanes that are dedicated towards biking only. They have indoor bike/train transfer stations that can hold up to 3,000 bicycles.

Hierarchy of streets and Roads:

- **Principal Arterials / Primary Distributors**

Principle arterials provide long-distance "trunk-line" continuous routes within and between urban areas. They carry high volumes of traffic at high speeds. Freeways, including interstates, are principle arterials.

- **Minor Arterials / District Distributors**

Minor Arterials are continuous routes through urban areas, they are designated as touring routes. Accounting for only 10% of street mileage, they carry more than half of all vehicle miles of travel. They may be state, county, or city streets.
Most trips include arterial streets. They contain most of the city's commercial and institutional uses. They are challenged by their attractiveness as business addresses, fostered by traffic function of the street itself.

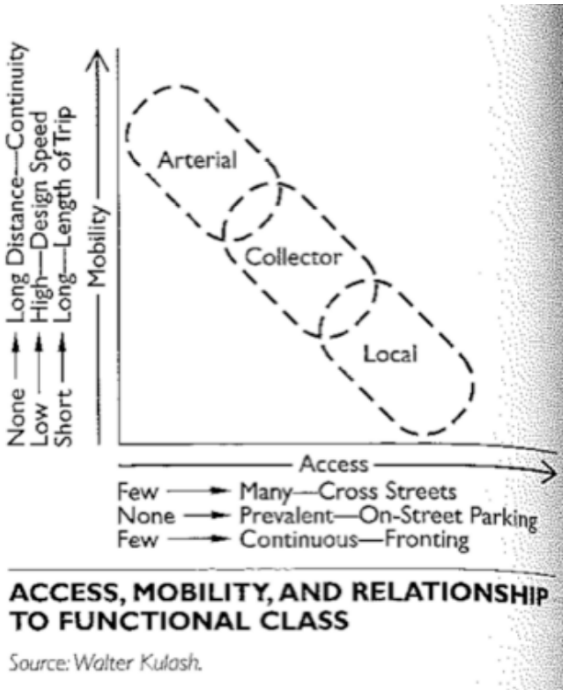
- **Collector Streets / Local Distributor**

Collector streets are minor tributaries, gathering traffic from numerous smaller (local) streets and delivering it to and from minor arterials

- **Local Streets / Access roads or Cul-de-Sac**

Local streets include all streets not on a "higher" system. They comprise 90% of street mileage but carry less than 10% of the total vehicle miles of travel. They may be short or frequently interrupted by traffic control signals. Travel distance is short to the nearest collector street. Speeds are low: 20 to 30 mph. Have numerous driveways, as they are addresses to most homes, as well as nonresidential uses.

Street types that combine capacity and character	
Conventional capacity-based terminology	Streets that combine capacity and character
Primary Distributer	**Main Road** Routes providing connections across the city
District Distributer	**Avenue or Boulevard** Formal, generous landscaping
Local Distributer	**High Street** Mixed uses, active frontages
Access road	**Street or Square** Mainly residential, building lines encouraging calming
Cul-de-sac	**Mews / Courtyard** Shared space for parking and other uses

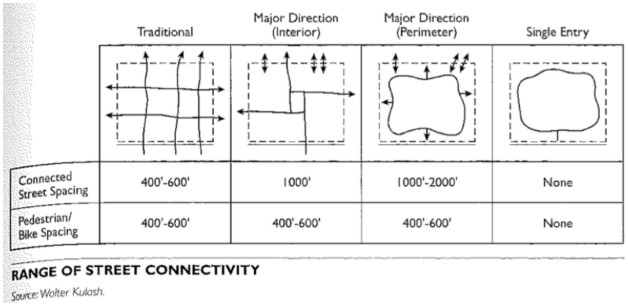


ACCESS, MOBILITY, AND RELATIONSHIP TO FUNCTIONAL CLASS

Source: Walter Kulash.

Street Network:
Different types/Styles of street networks:

- Grid
- Grid and Squares
- Web
- Radial
- Curvilinear
- Irregular



RANGE OF STREET CONNECTIVITY
Source: Walter Kulash

Street Connectivity & Measures
Street Connectivity can be defined as the quantity and quality of connections in the street network. The purpose of the street network is to connect one place to another. The design of the street network determines how direct or indirect the connections are and plays an important role in travel choices and emergency access.

- Commercial spacing vs. Pedestrian spacing
- Calculating the links / nodes of a site: 2.5 is the average

Pedestrian-Friendly Streets

- Walkable neighbourhood
- Reduce accident severity, frequency, environmental impact by limiting vehicular speeds to 30km per hour (20 mph)
- Woonerf "street for living" or HomeZone

Traffic Calming and Pedestrian Crossings
How much traffic can the street take?

- Traffic effects pedestrians ability to cross

500 cars per hour = provide many opportunities to cross

500-1000 = require designed crossing

> 1000 = requires pedestrians to wait at signalled crossings

- Wide Crossings on Main Roads
- Slow traffic down

4) Plans

What it is and why we use them:

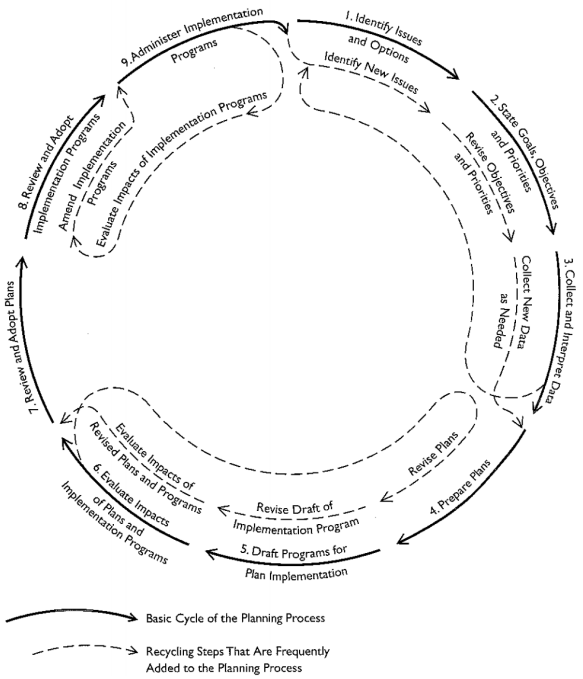
- Statement of adopted policy
- Guide public and private actions
- Inform decision makers about long range community goals

Reasons for preparing a plan:

- Forging Visions
- Public Support
- Devising Strategies
- Creating Good Locations
- Marketing Sites or Areas
- Forming "Treaties"

Two main types of plans:
Comprehensive Plan **&** Strategic Plan

The Planning Process -> *(look at circle in book)*
Should be viewed as a continuous cycle. There are interrelationships among the phases of the planning process. Information gained at a later phase can inform the outcome of an earlier phase. It is important to recognize the iterative nature of planning and to allow for continue cycling to occur



Details about the three urban plans discussed in class:

Montreal's Master Plan (MMP)

Purpose of Plan: Vision of the future

1. The Master Plan is now the reference guide for all planning and development issues for the City and its private, public and community partners.
2. This Plan represents both an instrument we will use to improve the quality of life of Montrealers and a social contract bringing citizens together around common goals for their future.

Objectives

1. High-quality, diversified and complete living environments
2. Structuring, efficient transportation networks fully integrated into the urban fabric
3. A prestigious, convivial and inhabited Centre
4. Dynamic, accessible and diversified employment areas
5. High-quality architecture and urban landscapes
6. An enhanced built, archaeological and natural heritage
7. A healthy environment

Time Frame: 10 years

Toronto's Official Plan (TOP)

Purpose of TOP: Making Choices

1. This Official Plan is about making the right choices and shaping Toronto's collective future.
2. The Plan is about getting the fundamentals right.
3. It is about having a clear vision for the City - grounded in durable principles that assure a successful future.

Time Frame: 30 years

Vancouver's Action Plan (VAP)

Purpose of VAP: A Bright Green Future

1. Road map for the next stage of a journey that will challenge all of us—citizens, businesses, and governments—to demonstrate our commitment to making the planet a better place for our children and grandchildren.
2. Sets out the broad long-term vision as well as ten specific goals that we need to achieve by 2020 in order to become the global leader in progress toward an environmentally sustainable future.

GOALS:

1. Green Economy
2. Climate Leadership
3. Green Buildings
4. Green Transportation
5. Zero Waste
6. Access to Nature
7. Lighter Footprint
8. Clean Water
9. Clean Air
10. Local Food

Time Frame: 10 years

Typical Data Needs: *Maps, Table, Graphs, & Images*

Maps

- Natural Environment
- Existing Land Uses
- Housing Density and Intensification
- Transportation Modes
- Housing
- Public Utilities

Table and Graphs

- Local Economy Distribution
- Sectors of Significant Carbon emission

Images

Basic Plan Structure

The Plan Core (ie. themes)

- State Authority of Plan
- Background Data
- Stakeholder Identification and Process
- Statement of Goals, Objectives and Assumptions

The Plan Elements (ie. Areas of intervention)

-Findings from New Analysis
-Intervention, Phasing and Policy
-Recommendations

Goals vs Objectives

Goals: General statement about desired future.

- Ie. Increase public transit use

Objectives: Measurable advancement of Goals.

- Ie. Increase public transit use by 10% over the next year.

Basic Document Structure
- Name
- Table of Context
- Key Themes or Areas of Intervention
- Time Frame
- Acknowledgements
- Glossary/Terminology Key

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5) Building Types:

Style
Style refers to the architectural design of the dwelling per unit. It is a subjective and qualitative attribute.
Examples of styles: Contemporary, Colonial, and Prairie

Density: (more in Chapter 6 Density)
Density refers to the number of housing units per area of land.
Dwelling units per acre (du/ac)

Low-Density: *4 Units on 1 Acre*
the further one moves from the city center

Medium-Density: *16 Units on 1 Acre*

High-Density: *48 Units on 1 Acre*
Buildings with large number of floors like apartment, office buildings.

Project Size:
How much land is the project going to take up?
Land area of the project.

Location:
Location refers to the context of the project. This can range from rural Greenfield sites to projects in established suburbs. It can also include urban brownfield sites, projects in well-established transit-based communities, and urban high rises in a city center.

Different Expressions:
- Latitude and Longitude
- Address & Cadastral
- Neighbourhood
- Borough

Building Types
Building type refers to the arrangement of individual dwelling units and their placement next to, above, or below each other.

What building types are there?
Residential, Commercial, Business (office)

Residential Types (in detail in book)
- Single-family Detached: dwelling units are physically separated from the units immediately adjacent to them.
- Single-family Attached: share common walls with units laterally adjacent to them.
- Multifamily Low-rise: share common walls with the units that are laterally and vertically adjacent. 2-4 floors in height, and multiple service cores and structured or service parking.
- Multifamily Mid-rise: share common walls with the units that are laterally and vertically adjacent. 5-12 floors. Sometimes include structured parking.
- Multifamily High-rise: share common walls with the units that are laterally and vertically adjacent.12-50 > floors or more. With common core, and structured parking.

Office Building types
Office Low-Rise:
- 1-3 levels
- for large flat sites, low development density
- used for research, development, industrial applications
- purpose built for end user
- Large floor-plates and roof area = good skylights, rainwater capture

Office Mid-Rise:
- 4-12 levels
- found in Urban / Suburban
- most prevalent of office building types
- adaptable to sizes
- typically served by structures parking

Office High-Rise:
- 13-50 > levels/floors
- found in dense urban conditions
- due to economic constraints, they are rarely exclusive for office uses

Aspects of Site Planning:
- Zoning
- Infrastructure Design
- Open Space
- Setbacks
- Allowed Density
- Parking

- Restrictions

Zoning, Setbacks, FAR, Height Restrictions, Coverage

Lot Size: *The surveyed measurements of a lot*

Zoning: typically determines the density of residential development. In addition to density, zoning may also dictate height limits, required planted area, massing criteria, and allowable ancillary uses. Planners must know the zoning under which a plan is to be evaluated or created and the relevant zoning constraints.

Setbacks: *Distance between building & property line. ex: Front Setback, Side Setbacks, Back Setback*

Often contained within the zoning code, and closely linked to density and massing considerations, setbacks include front, rear, and side-yard setbacks. When density is higher, setbacks are typically smaller. Urban conditions may not require setbacks.

FAR = Floor Area Ratio:
Total GFA allowed to be built / Lot Area
or (Built space / Lot size)
FAR is the ratio of the gross building floor area : net lot area of the building site

GFA = Gross Building Floor Area

Height Restrictions (Envelopes): *The regulated min. and max. height for building on lot.*

Coverage: Footprint of building / Area of Lot

Building Considerations:
- Orientation
- Entry
- Massing
- Design Guidelines

Best Practise Principles:
1. Regional Vernacular
2. Mixed-Use
3. Transit-Oriented Development
4. Conservation of Ecological Sensitive Areas
5. Open Space Design
6. Stormwater Management
7. Green Buildings

Role foncier/ Property Evaluation:

Urban Structure - Movement and Mixing Uses

What is the walkability from an 8-80 perspective?
8-80:
A safe city for 8 years old and 80 years old
Sustainable urbanization of cities can create space for engaging all community members aged from 8 years through to 80 years.

Urban Structure:
Integration: Connection and overlap with surrounding areas
Functional efficiency: So that individual elements (buildings, streets, open space, etc…) work together as part of an efficient whole.
Environmental harmony: Creating development forms that are energy efficient and ecologically sensitive.
A sense of place: Creating somewhere that is recognizably distinct but simultaneously strengthens local identity.
Commercial viability: Responding to the influence on development mix and delivery.

Urban Structure with movement in mind
• Provides many choices for how to make journeys in the area
• Accounts for movements that each development will generate
• Has clear connections to routes and facilities of the area
• Because every site is different there can be no standard formula.
Movement Assessment:
• Alternative modes of transports should be as easy and attractive as the car
- What kinds of movements and movement qualities could we study?

Grids and other urban layout:
Street Network
- Creating a permeable network and not a superblock
- Promote direct connections to main streets
- Maximize the potential for mixed use

80-100m provides for both vehicular and pedestrian access needs

50-70m provides optimum access for pedestrian activity needs

However, these are not always true depending on the context
Ex. Portland USA, Philadelphia USA, London West End

Mixed Uses: Mixed-use development includes a variety of uses within a project, such as neighbourhood commercial retail in portions of a residential project. Mixed-use development also helps provide basic services (e.g. dry cleaners, food store, drug store) to residents, increases design options, and creates opportunities for pedestrian-oriented design.

Walkable Neighbourhood
• Designed for ease of walking
250m to post office
400m to convenience stores
800m to local shops, bus stops, health clinic, primary school
• A widely used benchmark is for mixed development neighbourhoods is:
400m radius …or
~ five minutes walk
~ 50 hectares area
• Ensure the mixture is well mixed, avoid clustering too many of the same use in enclaves.

Character: Creating a sense of place to strengthen the character of the neighbourhood.

Centers:
• Intensify around public transit nodes
• Inject housing into the mix
• Emphasize the civic
Edges:
• Absorb the "big box" into the mix
• Warp and cap the big boxes
• Bring dead edges to life
Transition:
• A rich mix in Transition – Inner city
• Often in between higher density residential to local core

Benefits of Mixed uses are:
• More convenient access to facilities
• Travel-to-work congestion is minimized
• Greater opportunities for social interaction
• Socially diverse communities
• Visual stimulation and delight of different buildings within
• Close proximity
• A greater feeling of safety, with 'eyes on streets'
• Greater energy efficiency and more efficient use of space and buildings
• More consumer choice of lifestyle, location and building type
• Urban vitality and street life
• Increased viability of urban facilities and support for small business (such as corner shops)

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6) Density

Definitions of Density and Measures:
Use of each type and what it tells us about space

Density: anything/ per square kilometer (people/km^2)
Density is a quantitative measure of the number of units on a particular area of land, often expressed as the number of people, number of housing units, or amount of square fleets of development per land area, typically expressed in acres or square miles.

Buildable Density
• Floor Area Ratio (Built space/Lot size)
• Used in maps to show buildable/non-buildable blocks, buildings
• It shows us how much a district, town, or block is built.

Livable Density
• Dwellings per hectare (dph)
• Bedrooms or Habitable Rooms per hectare (Br or Hr/h)
• Ex. Hong Kong apartment buildings are tall but small in width that means a lot of people are living in a tiny space.

Population Density
• Person/Hectare (pph)
• used to tell the population of a city to compare with other cities.
• Shows which city has the largest population in the world. (Mumbai, India) and you can compare it to the land area for example:

Mumbai has **Population**: 14,350,000
with **Land area**: 484km^2
Density (people per km^2) is: 29,650km^2
That shows how many people are living there per square kilometre.

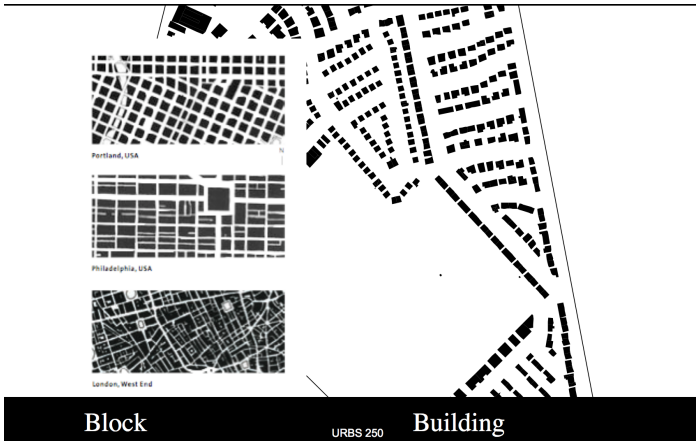
Gross vs. Net Density:
Gross Density: includes infrastructure, such as streets and parks, in the overall density measurement.
Number of residential units / total project acreage

Net Density: excludes these features and includes just the area devoted specifically to the structure, including all private land areas and ancillary structures.
Number of residential units / net developable area

Gross is usually more then net because net includes only specify areas and buildings where as gross includes streets and parks.

Urban Structures II & Surrounding Environment

Block and Building Figure-grounds:
The figure ground plan shows how streets and blocks are proposed that take account of these constraints (buildings)



Walkability: A walkable community is ultimately a place in which residents of all ages and abilities feel that it is safe, comfortable, convenient, efficient, and welcoming to walk, not only for recreation but also for utility and transportation.

- the average adult walks 3-4 feet per second
- The speed at which people walk is the critical measure that helps define the size of a walkable community or neighbourhood.
- an average size person requires 1.5 to 2.0 feet of width while standing
- walking space for two people: 5-6 feet width
- when a sidewalk is adjacent to a wall, building, or fence, an additional 1-2 feet of "shy" distance should be provided.

Connectivity: walkable communities require multiple route connections so that pedestrians do not have to take lengthy detours to reach their destinations.

Most pedestrians will not walk more than 150-200 feet out of their way to cross the street at an intersection.

As a result, in areas with high volume of pedestrians, blocks that are longer Han 400 feet should provide carefully designated mid block crossings with curb extensions, median refuges, and other features to ensure pedestrian safety.

A road network of high connectivity also helps to prevent funnelling large volumes of motor vehicle traffic onto high-speed, high capacity arterials.

Street Permeability:

Parcel and Plot:

Zoning Concepts & Calculations

Example:
Site Description and Zoning:

Lot: 20m x 40m
FAR: 4
Coverage: 50%
Min Height: 3m

What is the max number of floors?

What is the largest footprint you can build?

What is the Max total GFA?

Axonometric, Plan and Section View

Definitions
Axonometric: To show the reality of the building
Isometric, Dimetric, Trimetric

Reasons for use:
To see how a building would look in reality and if the scales are same you can compare one building to another.