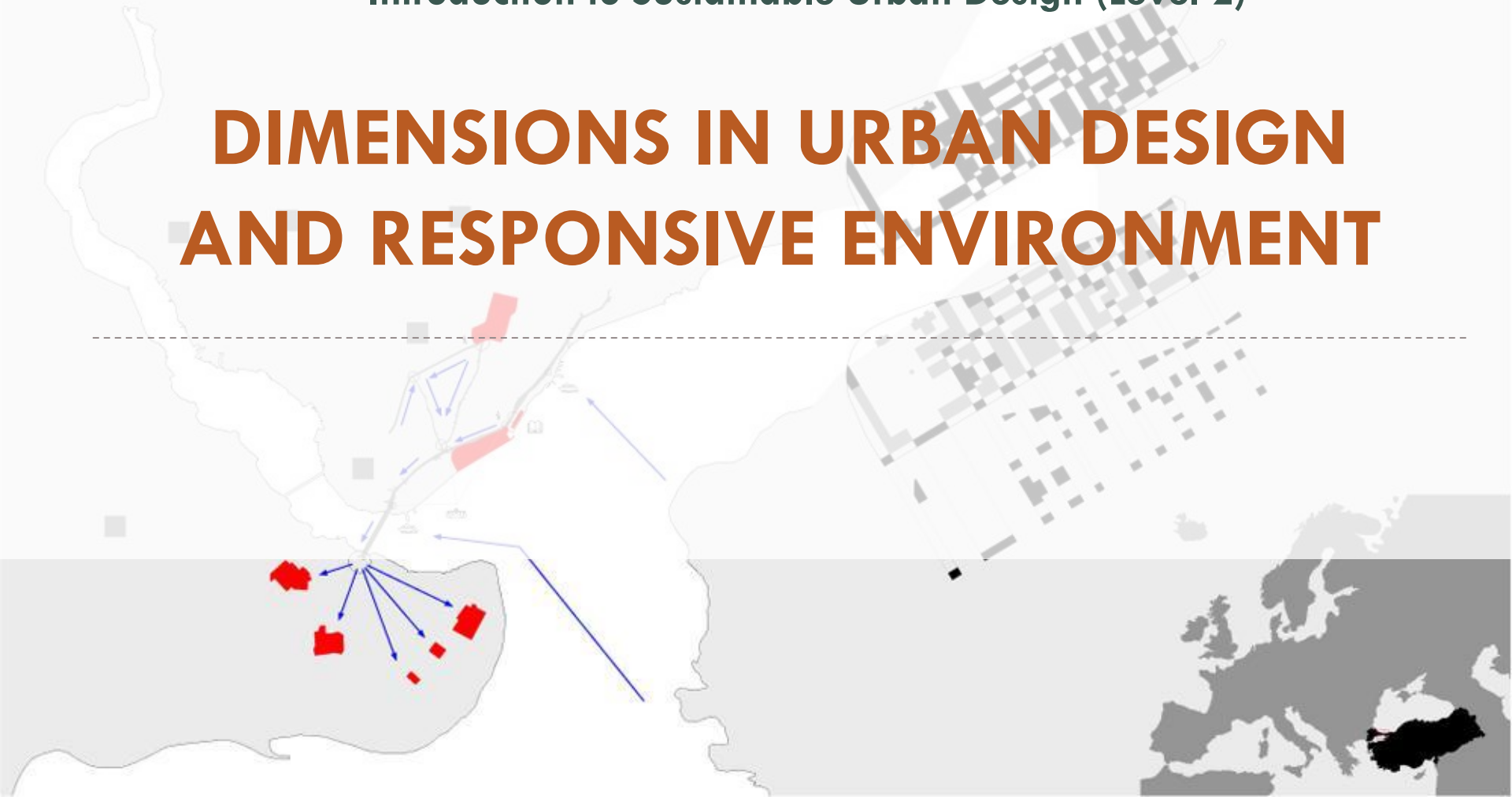
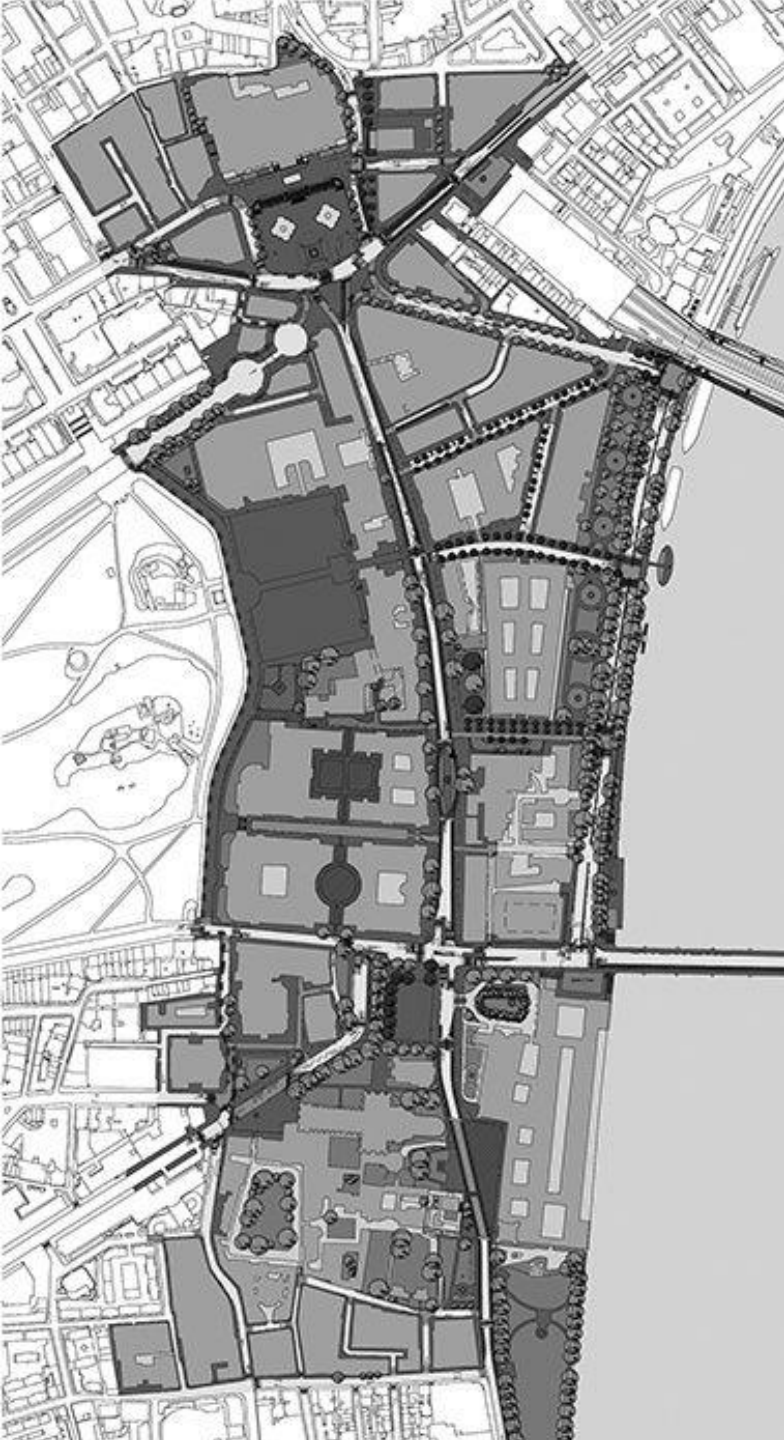




Introduction to Sustainable Urban Design (Level 2)

DIMENSIONS IN URBAN DESIGN AND RESPONSIVE ENVIRONMENT





CONTENTS

1

Urban Design Process

2

Stages in Urban Design

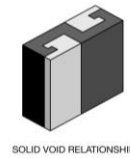
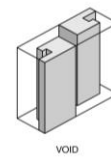
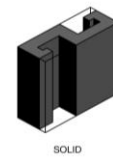
3

Dimension in Urban Design

4

Responsive Environment

1.0 | Urban Design Process



- Not just art type but one of research and decision making to achieve certain objectives based on certain sets of criteria.
- At macro scale, takes place at two forms:

1

Unknowning design:-

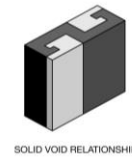
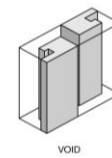
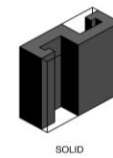
Slow, incremental process, ad-hoc, trial and error process.

2

Knowing design:-

Different concerns are intentionally shaped, balanced and controlled through development and design proposals, plans and policies

2.0 | Stages in Urban Design



1

Setting goals

- economic and political realities, proposed time scale and client and stake holder requirements.

2

Analysis

- gathering and analysing information and ideas that might inform the design solution.

3

Visioning

- generate and develop various possible solutions.

4

Synthesis and predictions

- testing the generated solution to identify workable alternatives.

5

Decision-making

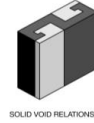
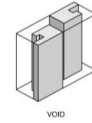
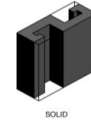
- determining the alternatives to be discarded and those for further refinement or promoting the preferred design solution.

6

Evaluation (appraisal)

- reviewing both the finished product and its success, measured against the identified goals.

3.0 | Dimension in Urban Design



3.1 | Morphological

3.2 | Perceptual

3.3 | Social

3.4 | Visual

3.5 | Functional

3.6 | Temporal

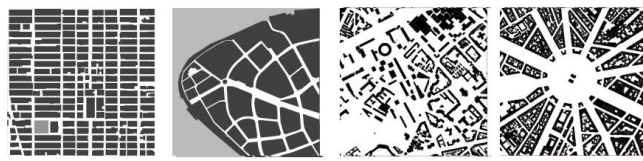


3.1 | Morphological

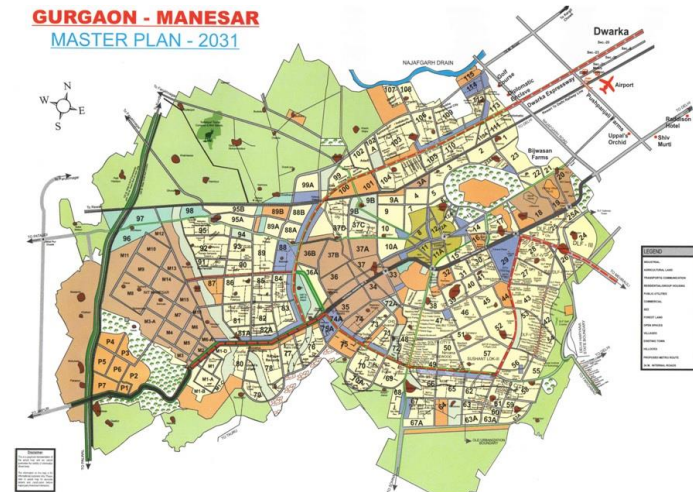
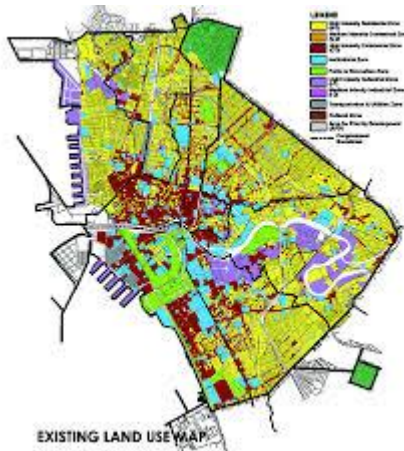


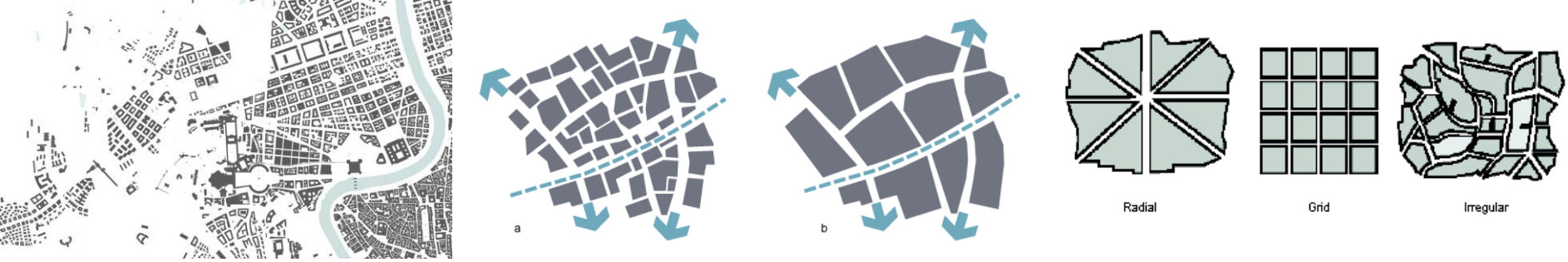


- **MORPHOLOGY** is the **study of form and shape of settlements.**
- Appreciation of morphology helps urban designers to be **aware of local patterns of development and process of change.** Analyse changes in the evolution of urban spaces and patterns generated.
- Key elements of morphology are **land use, building structure, plot pattern and street pattern.**



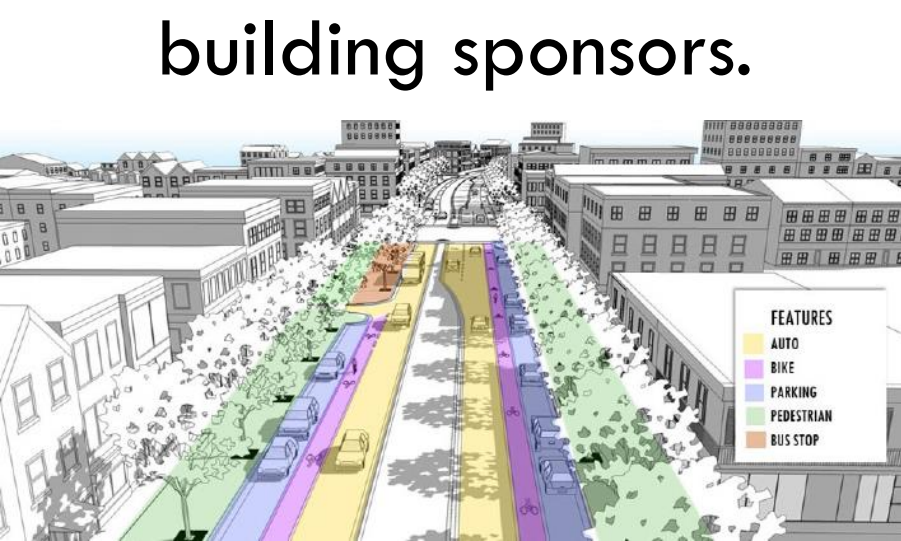
- **Land use** temporary but influence building structure. Plots influence shape of buildings. Plots can be subdivided or amalgamated that influence the shape of buildings. Building that endure over time often accommodate various uses and intensities of uses.





- **Street pattern** is the **layout of urban blocks and between them is the public space.**
- **Ground plan of cities** is a **series of overlays from different times – like a foot print.** New development that override the old pattern can fragment townscapes.
- **Important urban design quality** is **permeability**, extent to which **environment provide choices either physical or visual.** Also influence accessibility. Small scale street blocks have fine urban grain while patterns with fewer larger blocks have coarse grain.
- Two (2) distinctive patterns: **regular or ideal grids** and **organic or deformed (irregular) patterns**

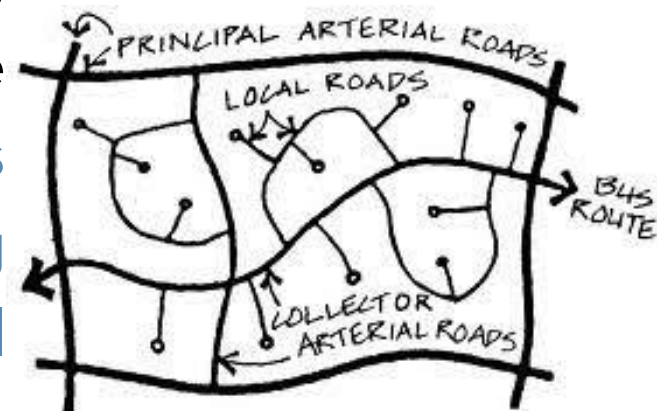
- **Transportation mode** will influence street pattern. **Changes in transportation mode** from walking and horse carriage to automobiles **significantly alter urban pattern to facilitate movement** with vehicles.
- Changing trend from buildings defining space to building as pavilion in space as a result of commercial interests of development industry and building sponsors.



- Introduction of hierarchical street system also affect morphology where some streets are wider, others are smaller and limited access such as cul de sacs. Also the concept of precinct where a superblock design of buildings.



- **POD developments where inward focused complexes of buildings referred to as pods** eg. shopping mall, fast food outlet, apartments etc. where traffic would be excluded. **The idea is to separate – to the point of walling off – land uses into distinctive social and functional worlds.**



Morphological Development of Malaysian Cities

MELAKA



1515



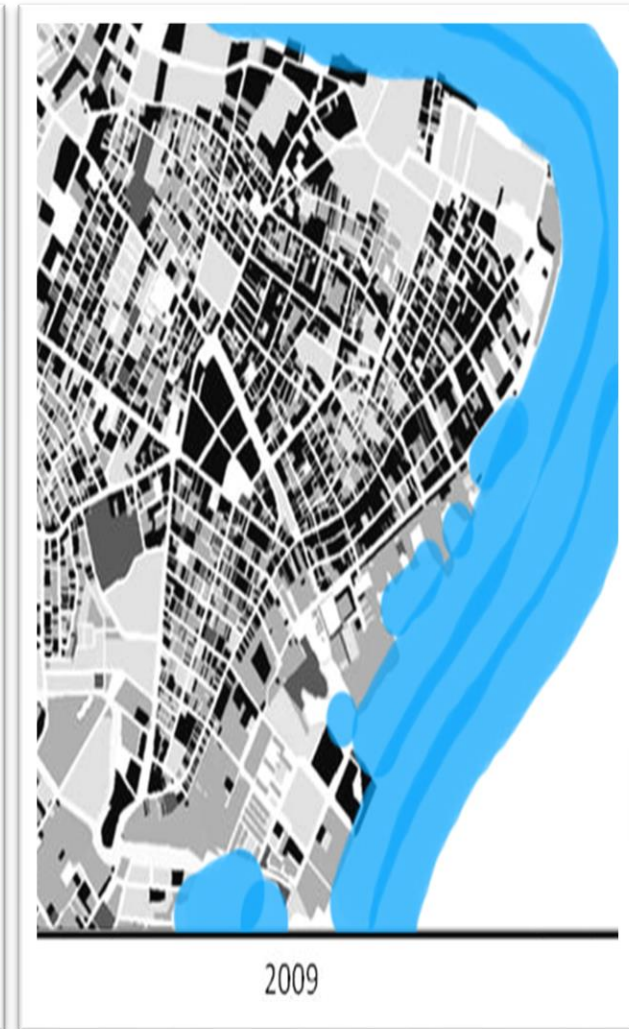
1900-1910



2009

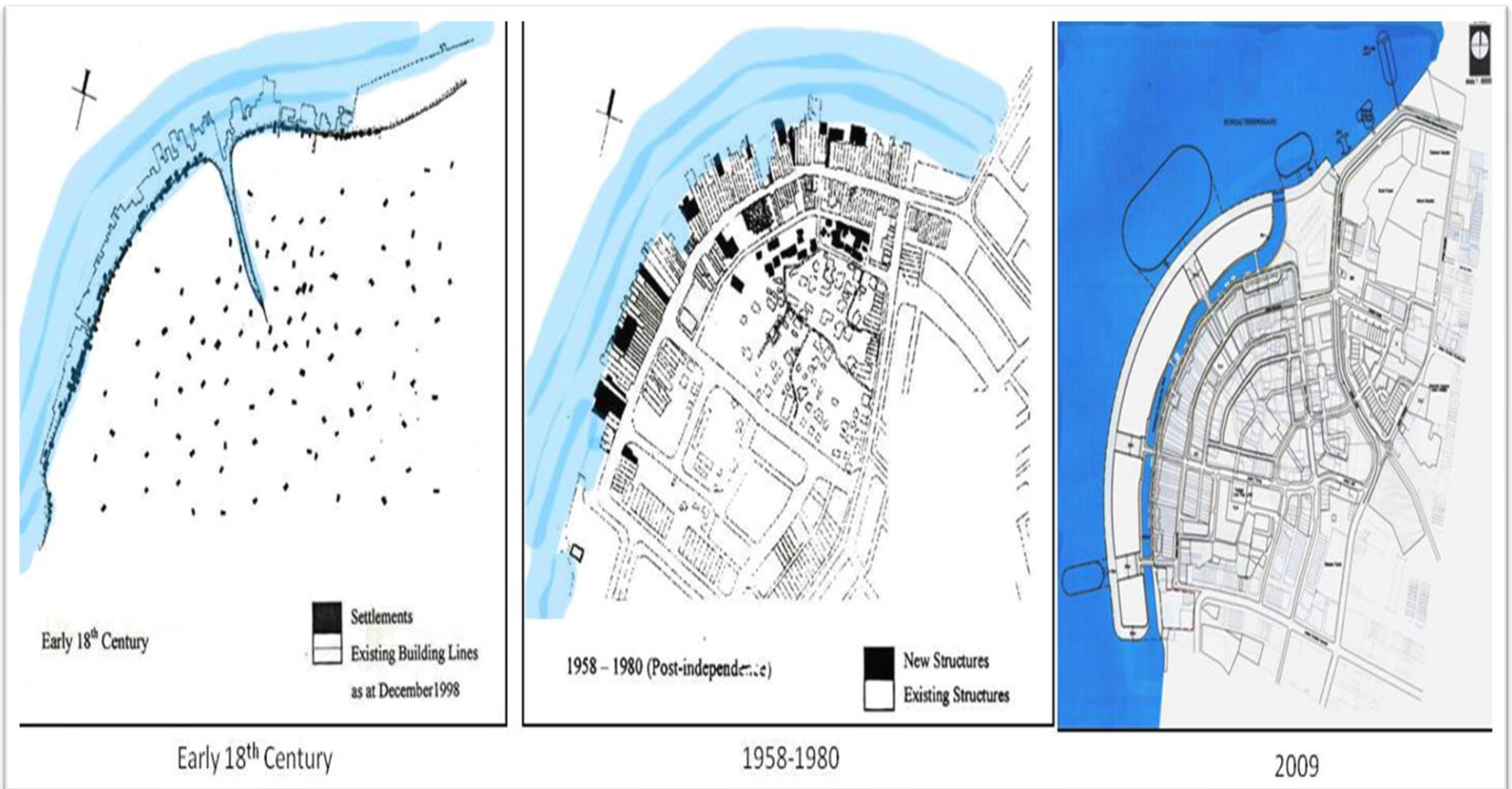
Morphological Development of Malaysian Cities

GEORGE TOWN, PENANG



Morphological Development of Malaysian Cities

KUALA TERENGGANU



Morphological Development of Malaysian Cities

JOHOR BHARU



1930-1940



1970-1980

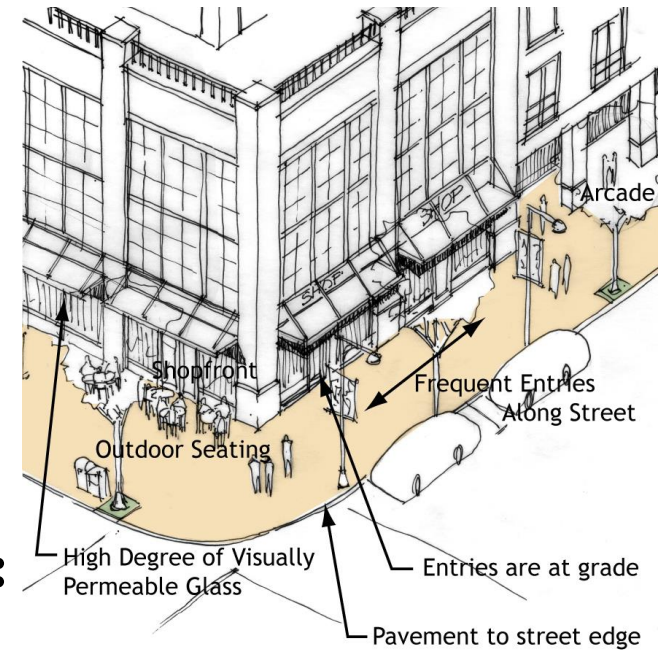


2009

3.2 | Perceptual



- Involve looking at **how people are affected by environment and how environment affect people.**
- Sensory quality of environment:



vision

hearing

smell

touch



For environmental design to work, need 3 attributes:

A. Identity

- distinctiveness as separate entity.
Quality of sameness in physical character

B. Structure

- spatial relation to observer and other objects.

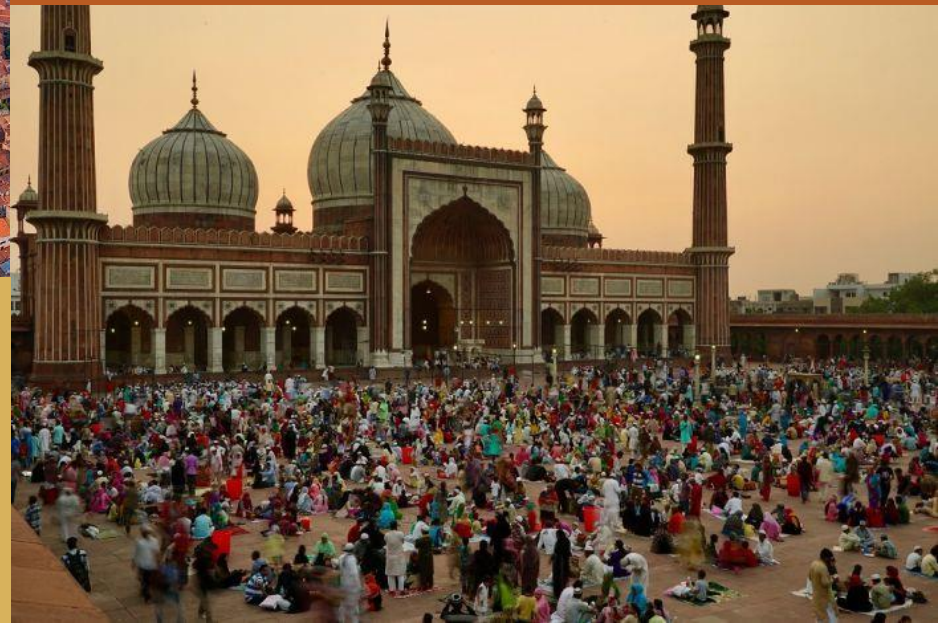
C. Meanings

- socio cultural response to physical environment

IDENTITY

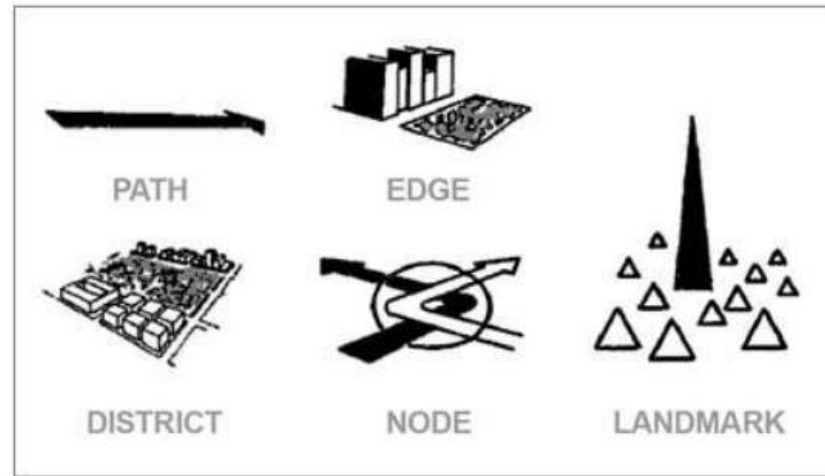


STRUCTURE



MEANING

Elements that influence structure of cities:



1. Paths

- channels of movement

2. Nodes

- strategic spots of concentration of thematic character

3. Districts

- medium to large sections of city having own identity or thematic character (physical or social)

4. Landmarks

- vertical element visible from far.

5. Edges

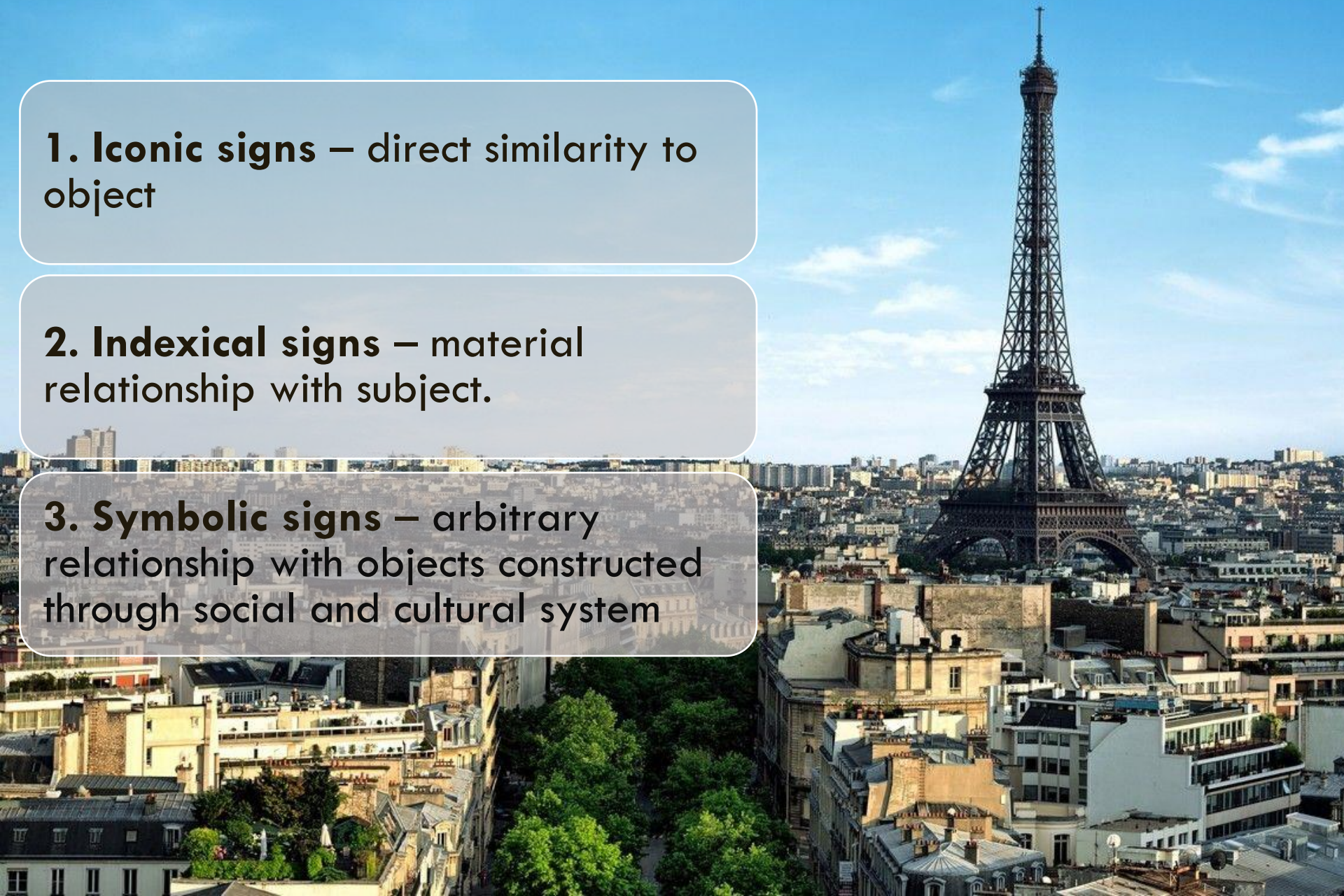
- linear element that breaks continuity or joining two phases.

Environmental meanings and symbolism:

1. Iconic signs – direct similarity to object

2. Indexical signs – material relationship with subject.

3. Symbolic signs – arbitrary relationship with objects constructed through social and cultural system



Construction of place:

Sense of place

- a place being different from others

Territoriality and Personalisation

- putting personal mark into the environment

Placelessness

- absence or loss of meanings due to globalisation, mass culture and loss of territory.

Invented place

- superficial and lacking authenticity.



3.3 | Social Dimension

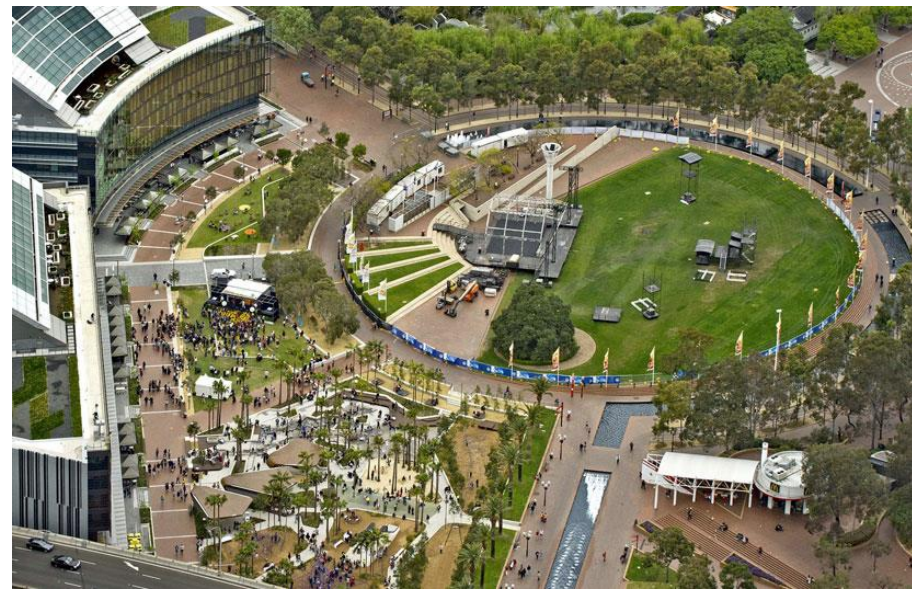




1

Public realm – concept of public spaces and public life which is now declining.

Potential environment – range of environmental opportunities and resultant or effective environments created by what people actually do within that setting.



5 stage hierarchy of basic needs :



Physiological needs: for warmth and comfort


Safety and security

Affiliation : need to belong to a community

Esteem needs: to feel valued by others

Self actualisation needs: for artistic expression and fulfillment



The background of the slide is a collage of three images. The top image shows a modern glass skyscraper with a curved facade. The middle image shows a busy city street with a tram and pedestrians. The bottom image shows a rooftop garden with people sitting on the grass and concrete steps.

Public realm: being neutral ground, individuals can come in and go, highly inclusive, accessible and without formal membership, low profile and taken for granted, open during and outside office hours, playful mood, psychological comfort and support and sustaining activities.



2

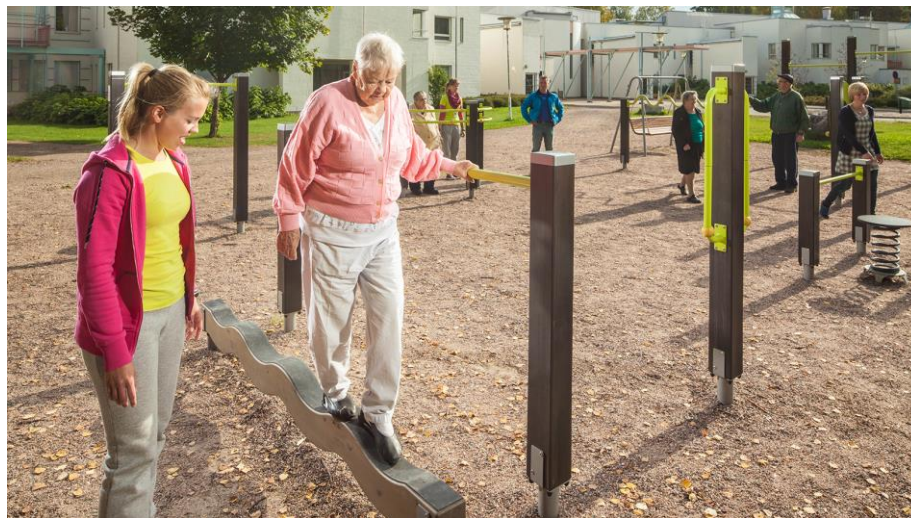
Neighbourhood -
provide identity and
enhance sense of place.
Manageable size (within
walking distance), clear
boundaries, self sufficient,
social mix and balanced
communities and more
sustainable rather than
more functional. Areas of
greater social interaction





3

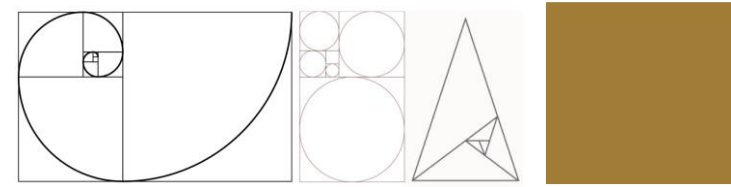
Safety and security – accessibility and exclusion – disabled needs. Social segregation and fragmentation.





3.4 | Visual Dimension

Aesthetic preference – pattern and aesthetic order:



- **Sense of rhythm and pattern** – similarity in the elements that make sense to the mind
- **Appreciation of rhythm** – grouping of elements to create emphasis, interval, accent and/or direction etc.
- **Recognition of balance** – a form of order
- **Sensitivity to harmonic relationship** – relationship between different parts.



Kinesthetic experience – dynamic movement through the environment





Urban space – positive and negative space.
Elements creating space are: surrounding structures,
the floor and the sky overhead.

3.5 | Functional Dimension





How places work and used:

1. Comfort

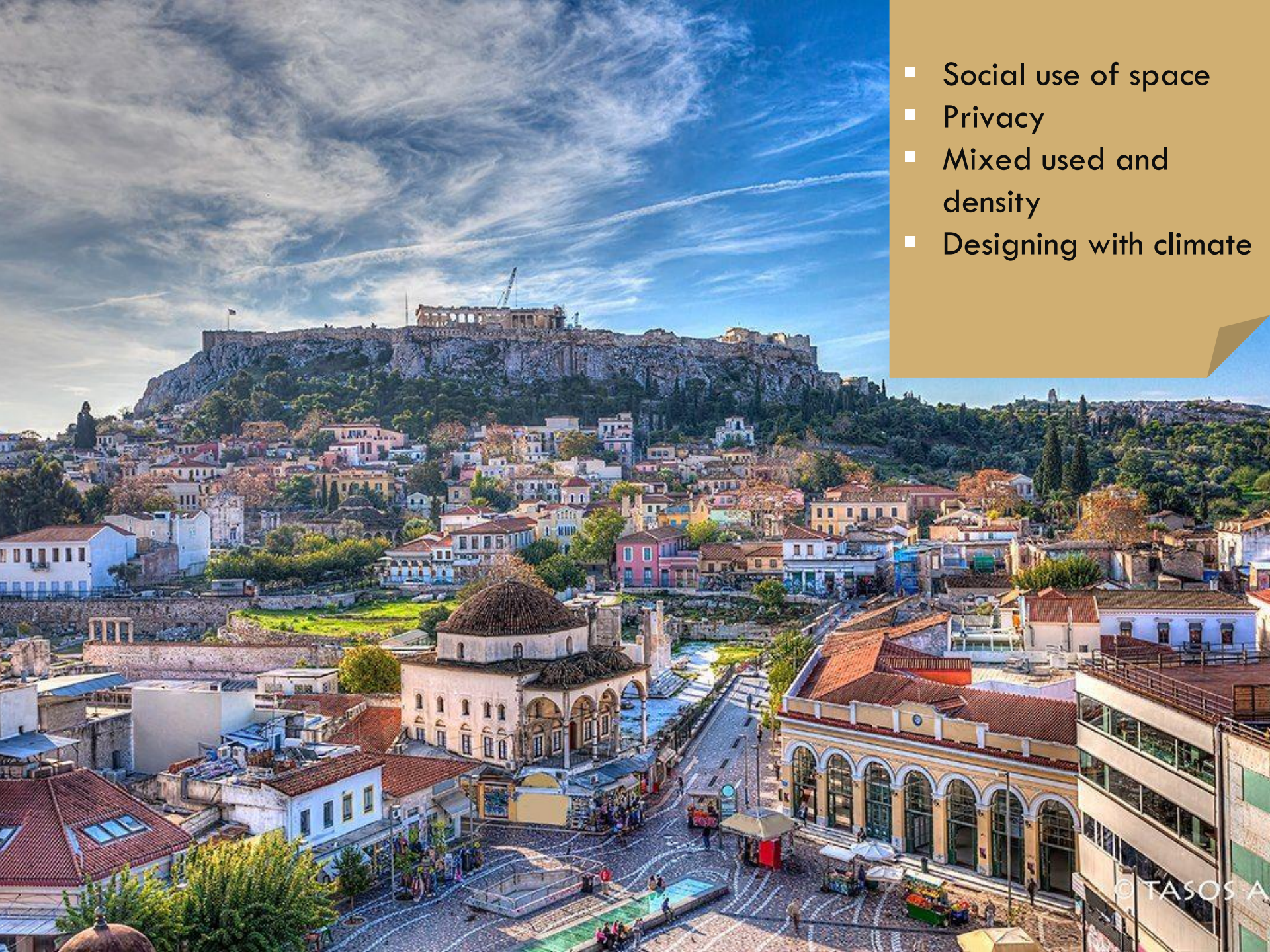
2. Relaxation- psychological comfort

3. Passive engagement – leisurely oriented

4. Active engagement – direct experience

5. Discovery – variety and change

- Social use of space
- Privacy
- Mixed used and density
- Designing with climate





1

Social use of space

- Spaces that can be used by public for interaction and leisure

2

Privacy

- The need to control access to interaction for city residents

3

Mixed use and density

- Mixing of use can create diversity and life to the city.
- Optimize density to prevent urban sprawl and create compact city for ease of movement.

4

Designing with climate

- Encourage passive design cities that provide shades and shelter from the elements due to tropical weather.



**Modify microclimate to make
urban spaces more comfortable**

Modify microclimate to make urban spaces more comfortable:



Site configuration and buildings juxtaposition in relation to other buildings.

Positioning of access roads, trees, walls and other obstructions.

Orientation of internal and external façade and spaces with respect to direction of sunlight and shade.

Massing, grouping and space between buildings



Wind environment

Positioning of main
entrances and other
openings

Landscape, planting
and pools/ fountains
to enhance natural
cooling

Environmental noise
and pollution

3.6 | Temporal Dimension



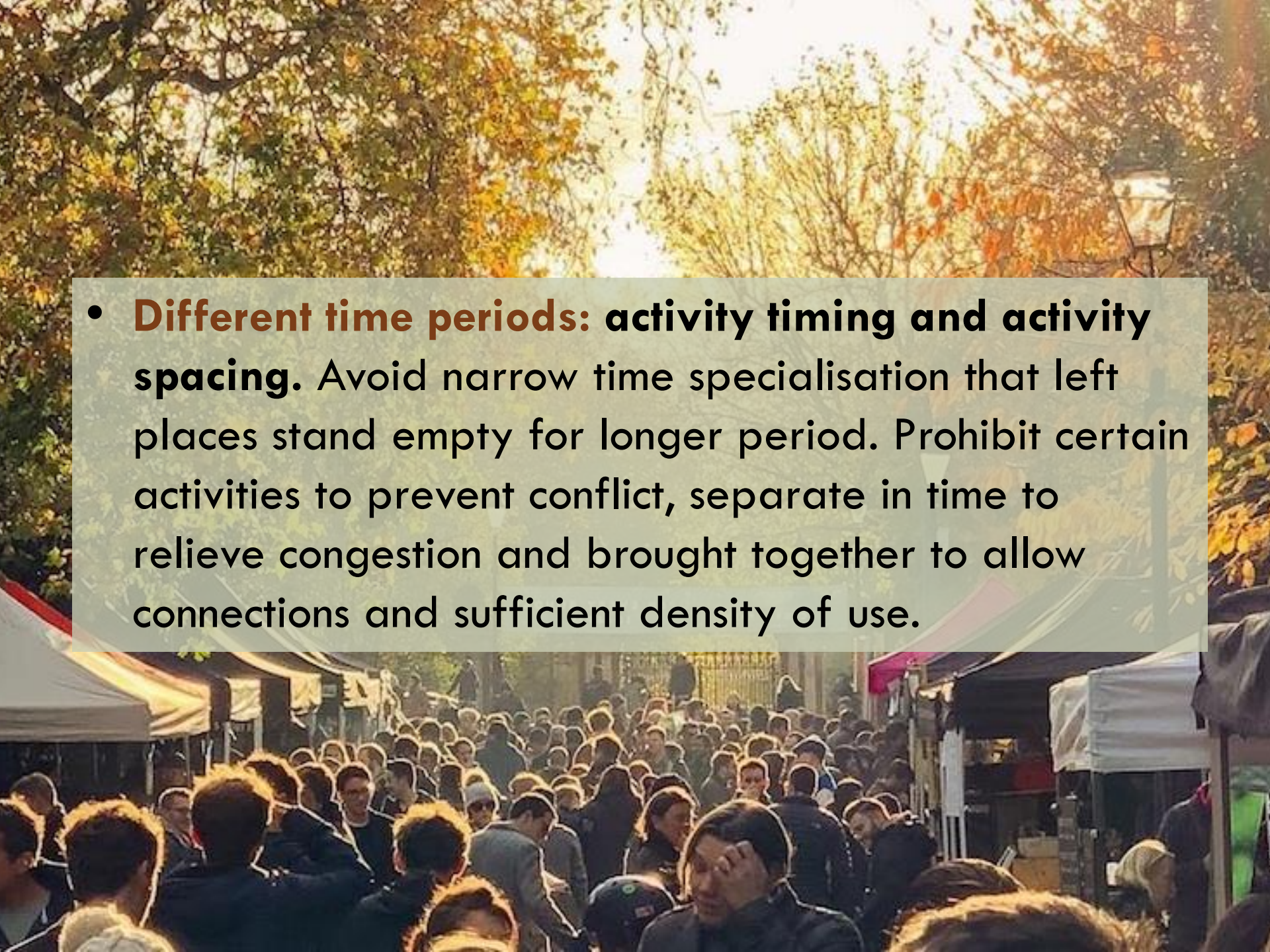


- Effect of time on place and the changing fabric of the city.
- Concern about **changing time and changing environment** and its effect on the quality of place.



- **Conservation of places for the sense of continuity and historic value.**
- **The time management of public space: urban designers need to understand activity patterns and to encourage activities through**



- 
- The background image shows a busy outdoor market. In the foreground, a dense crowd of people is walking along a street. On either side of the street are market stalls with white and yellow awnings. The background is filled with trees with vibrant autumn foliage in shades of yellow, orange, and red. A street lamp is visible on the right side. A semi-transparent grey box with a diagonal line is overlaid on the image, containing the text.
- **Different time periods: activity timing and activity spacing.** Avoid narrow time specialisation that left places stand empty for longer period. Prohibit certain activities to prevent conflict, separate in time to relieve congestion and brought together to allow connections and sufficient density of use.

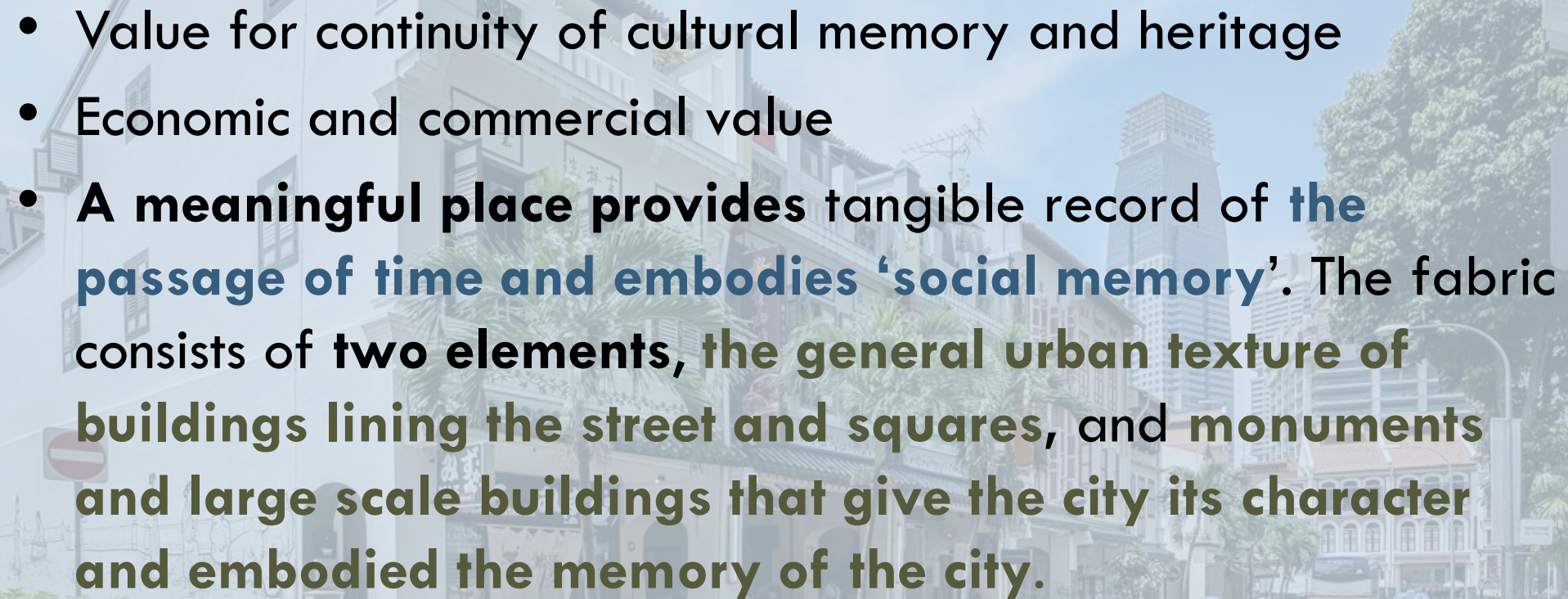
- For public realm to be successful in terms of use, must offer what the public want and must be able to do so in an attractive, comfort, safe and convenient time.



Reasons for **conservation in urban design** is to **retain the genius loci and spirit of place in time:**

- Aesthetic value
- Value for architectural and environmental diversity and contrast as a result of juxtaposition of many buildings of different ages.
- Value for functional diversity
- Resource value



- 
- A photograph of a street in Singapore. On the left, there are traditional shophouses with light-colored facades and tiled roofs. A modern skyscraper is visible in the background. The street is paved with asphalt and has a white arrow pointing right. There are orange traffic cones on the right side of the road. A red sign with '\$2' is visible on the right. The sky is blue with some clouds.
- Value for continuity of cultural memory and heritage
 - Economic and commercial value
 - **A meaningful place provides tangible record of the passage of time and embodies 'social memory'.** The fabric consists of **two elements, the general urban texture of buildings lining the street and squares, and monuments and large scale buildings that give the city its character and embodied the memory of the city.**

Levels of intervention to historic buildings :

Preservation: maintenance in its current physical condition

Restoration: returning it to its previous conditions

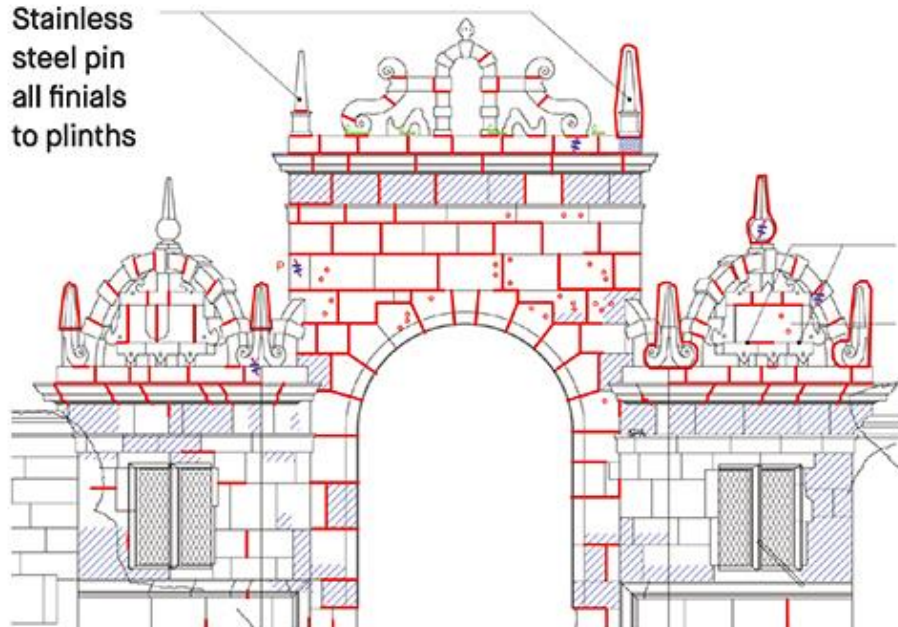
Refurbishment: physical intervention to ensure its continued performance.

Reconstitution: piece by piece assembly of a building

Conversion: adaptive reuse to a new use

Carry out conservation repairs to the sundial on south wall of archway above roof by carefully consolidating and grouting loose/hollow laminations

Stainless steel pin all finials to plinths



Grout, pin and weather

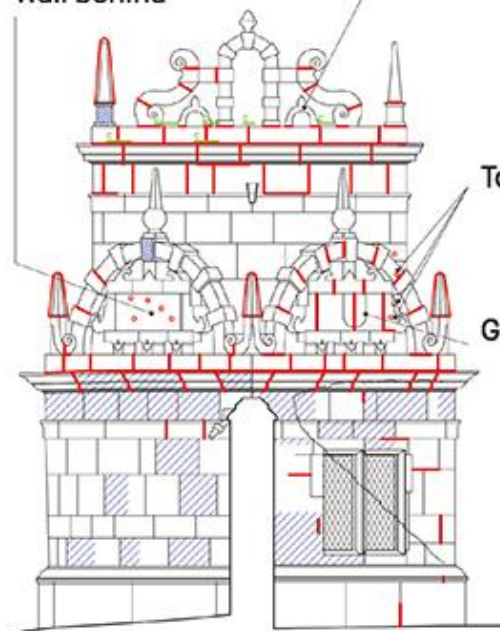
Secure loose finial by wedging and point base

Grout and stainless steel pin ashlar to main wall behind

Consolidation

To wall behind

Grout edges



Key



Cut out and piece in/replace with new stone and stainless steel pin



Descale masonry faces and carry out mortar repairs



Replace loose masonry details, replace using stainless steel dowels and repoint



Stainless steel pin fractures and point



Rake out loose mortar from open joints and repoint



Replace cast iron cramps with stainless steel and repoint



Grout and stainless steel pin laminating stone

Reconstruction: recreation of vanished building on their original site

Replication : construction of exact copy of an existing building

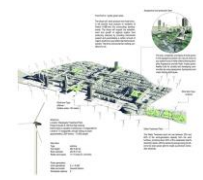
Facadism : preservation of the façade of historic building with a new building behind it.

Demolition and redevelopment: demolition and clearance with new development on site.

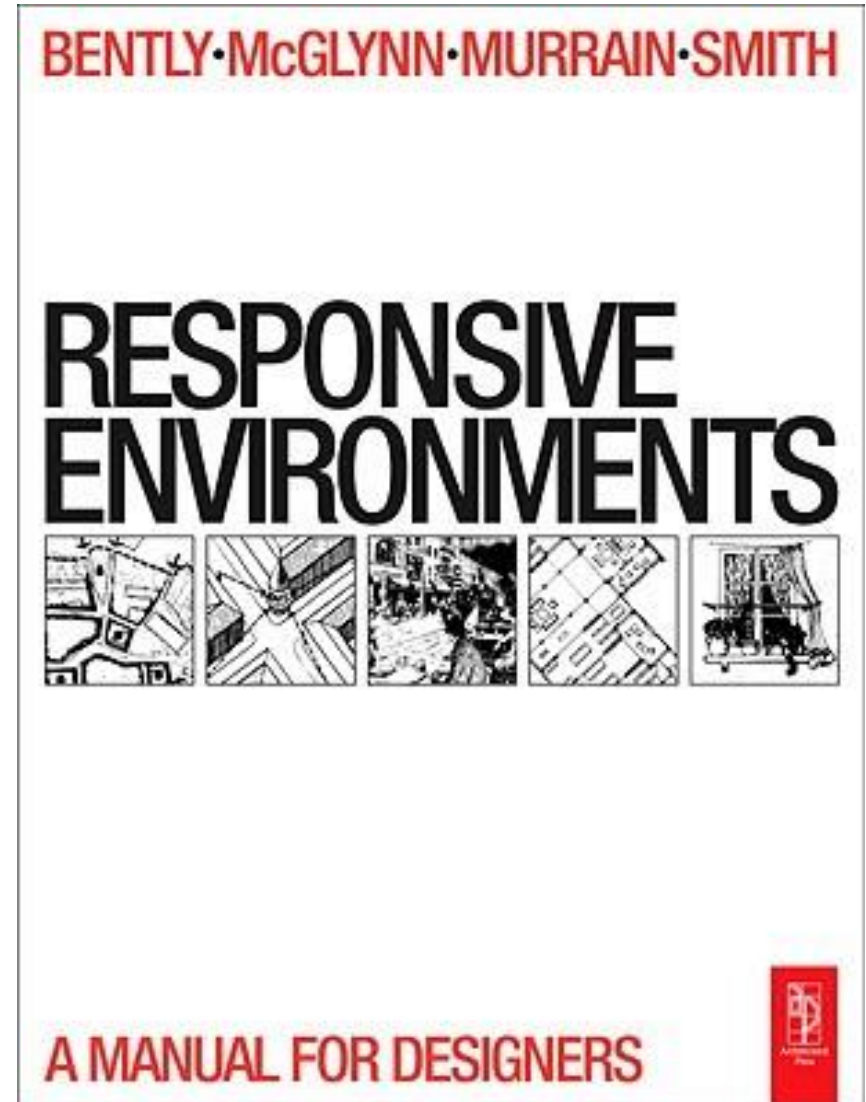




4.0 | Responsive Environment



Ian Bentley and others **developed a manual that emphasize more democratic, enriching environments that maximize degree of choice:**



Where they could go
or could not go

Range of use
available

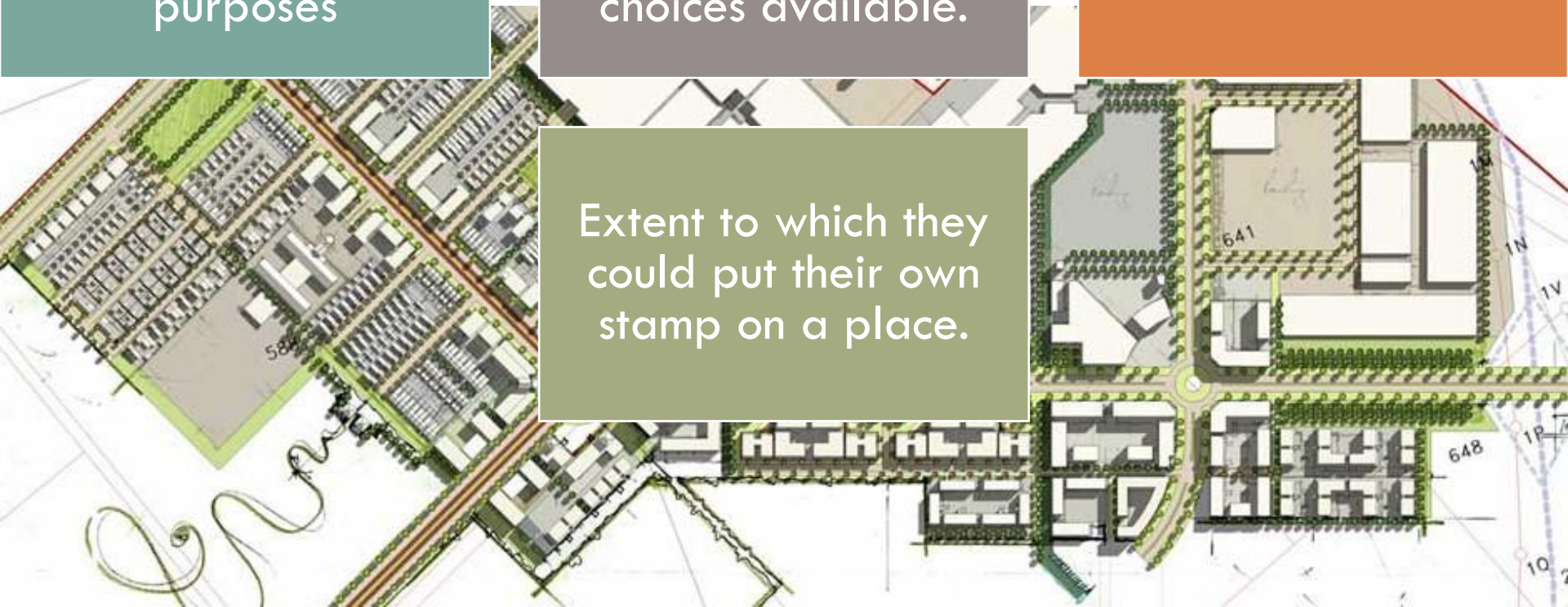
How they could
understand what
opportunities offered.

Degree to which they
could use a given
place for different
purposes

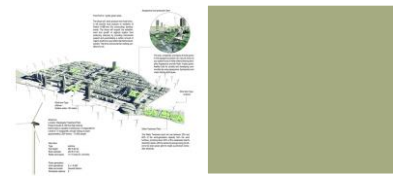
Where detailed
appearance of place
made them aware of
choices available.

Choice of sensory
experience

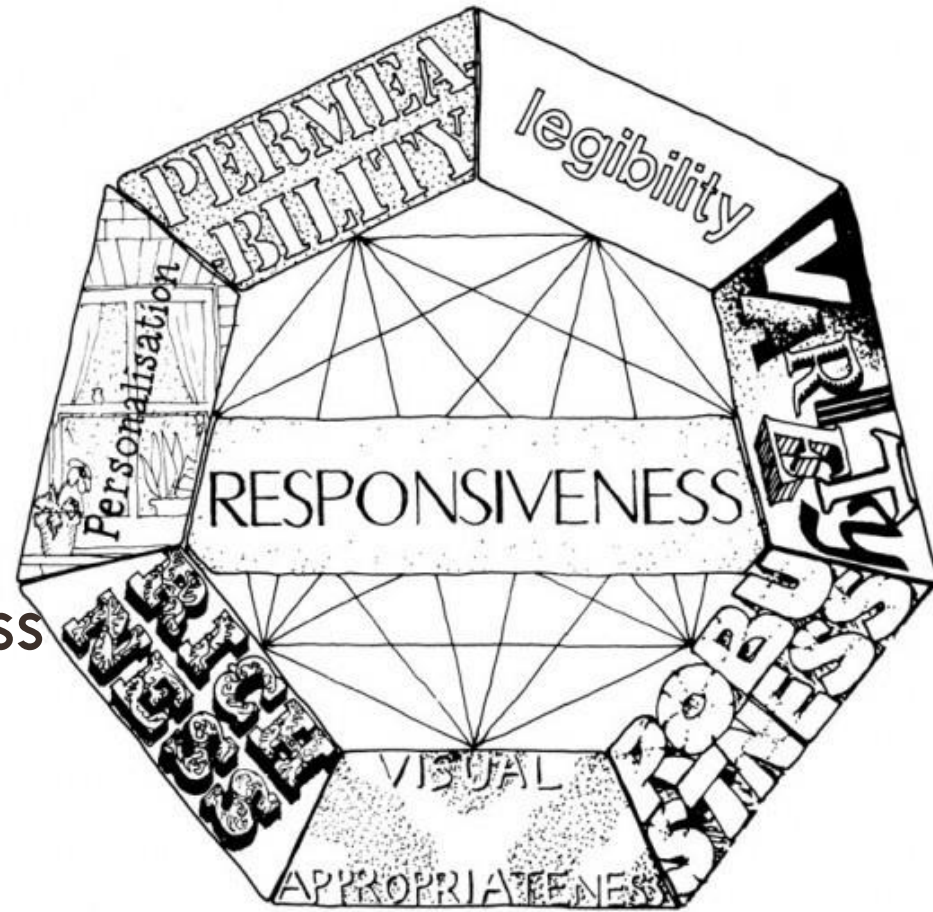
Extent to which they
could put their own
stamp on a place.



Seven (7) key issues focused:



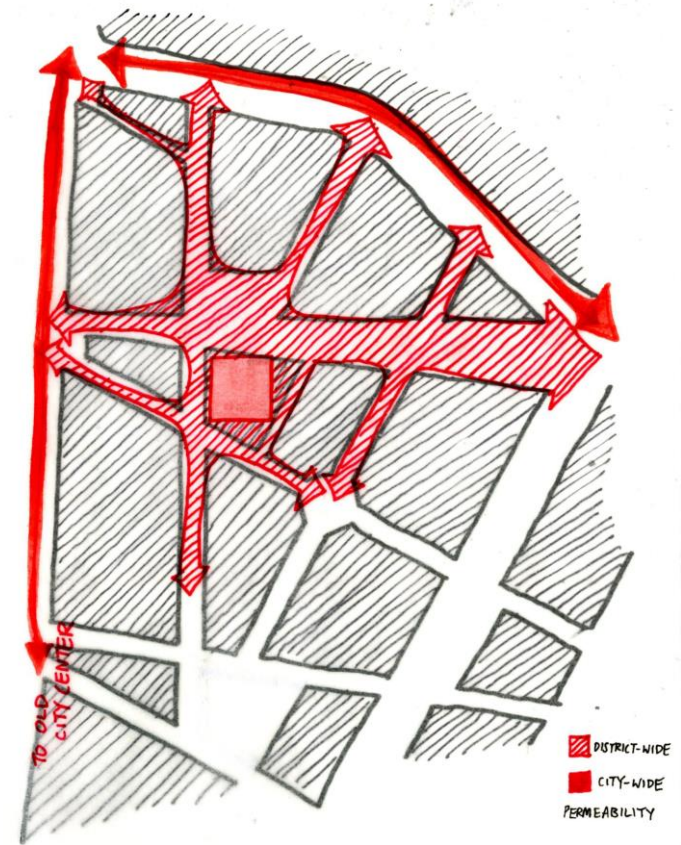
- 1 Permeability
- 2 Variety
- 3 Legibility
- 4 Robustness
- 5 Visual Appropriateness
- 6 Richness
- 7 Personalization



Reference: Responsive Environment
by Ian Bentley et. al

1. Permeability

- **Choice of access to places public and private.** They are complementary and people need access across the interface between them. **Depends on alternative routes, network of public spaces that divide spaces into blocks, small blocks more permeable.** Affected by increasing scale of development, use of hierarchical layouts and pedestrian/vehicle segregation.



- **Visual permeability** enrich public domain and **physical permeability** between public and private spaces occurs at entrances to buildings, gardens and courtyards.





- To achieve design perimeter blocks where fronts face **public space** ie street , square , park close enough to enjoy liveliness, back facing inwards or centre of blocks, link to the surrounding areas, increase intensity of use along the routes.

2. Variety

- **Purpose is to increase choice.** Variety of experience places with varied forms, uses and meanings.
- **Variety of uses :** has varied building types of varied forms, attract varied people at varied times for varied reasons.
- Different activities, forms and people provide a rich perceptual mix, different users interpret place in different ways and takes on varied meanings.



Look for demand of activities, feasibility, system of mutual support, temporal dimension, interaction between activities, recycling of old buildings. Balance of age and condition and design of buildings will generate variety of rent supporting variety of uses.

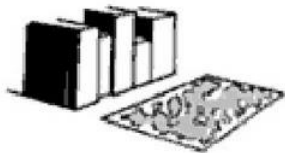


3. Legibility

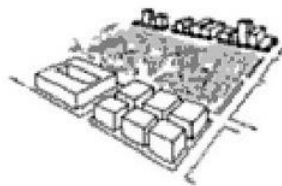
- Legibility: *how easily people can understand* what opportunities it offers.
- **Different levels:** physical form and activity pattern. Lynch five (5) elements that structure the city. ie. paths, districts, edges, landmarks and nodes.



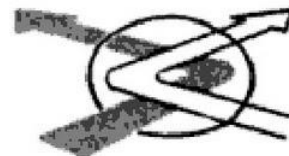
PATHS



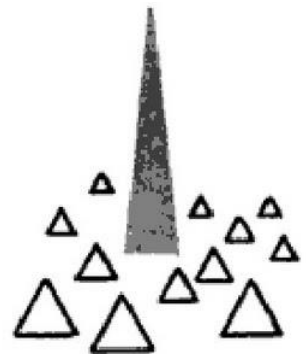
EDGES



DISTRICTS



NODES



LANDMARKS

THE ELEMENTS OF A CITY



PATH



NODE



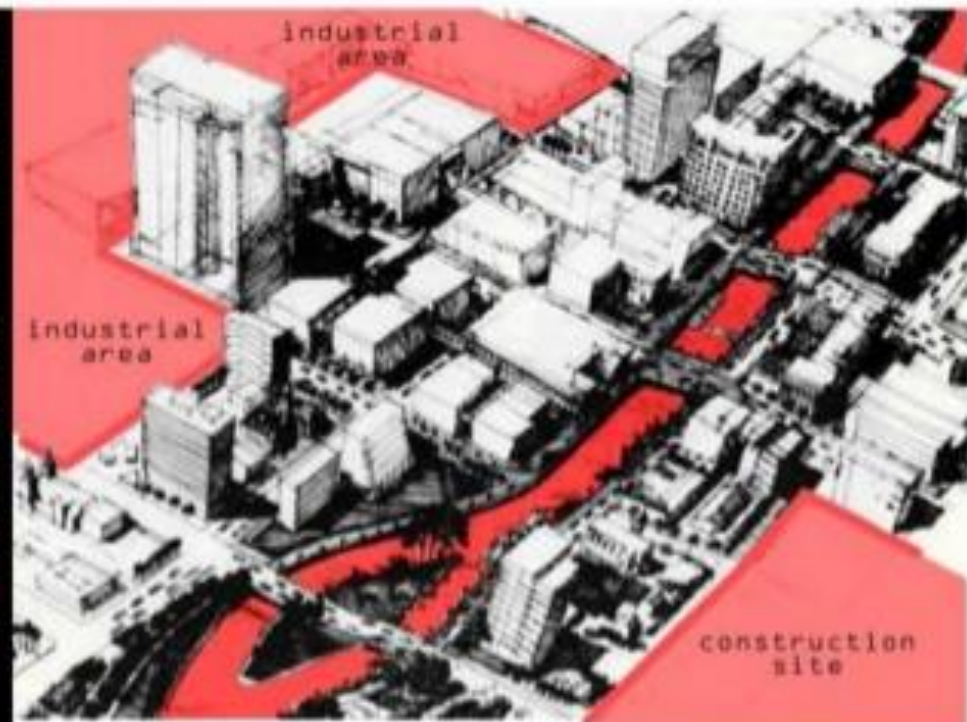
LANDMARK



EDGE



DISTRICT



Paths



Edges

THE ELEMENTS OF A CITY



PATH



NODE



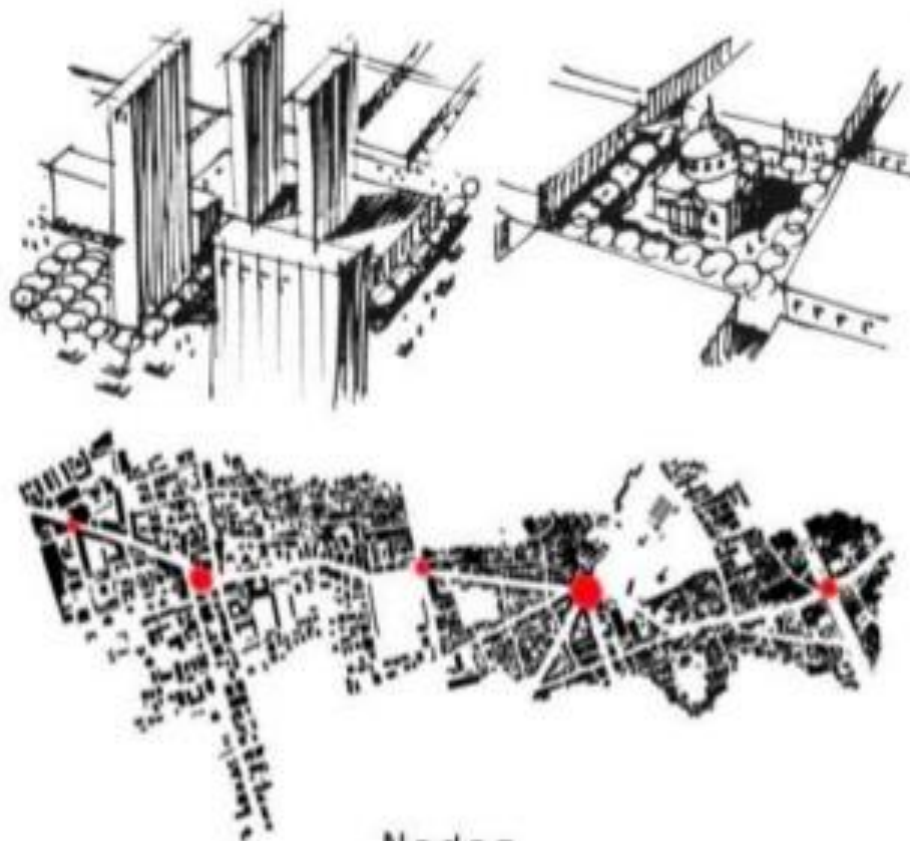
LANDMARK



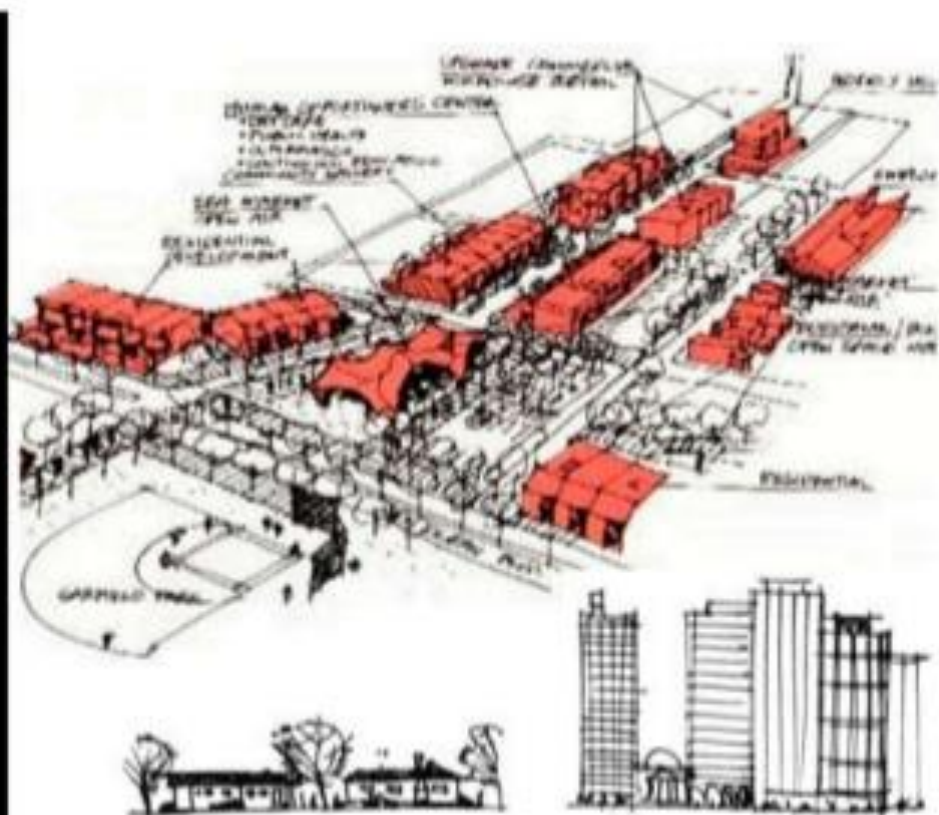
EDGE



DISTRICT



Nodes



Districts

THE ELEMENTS OF A CITY



PATH



NODE



LANDMARK



EDGE



DISTRICT



Landmarks



4. Robustness

Robustness: the degree to which people can use a given place for **different** purposes.



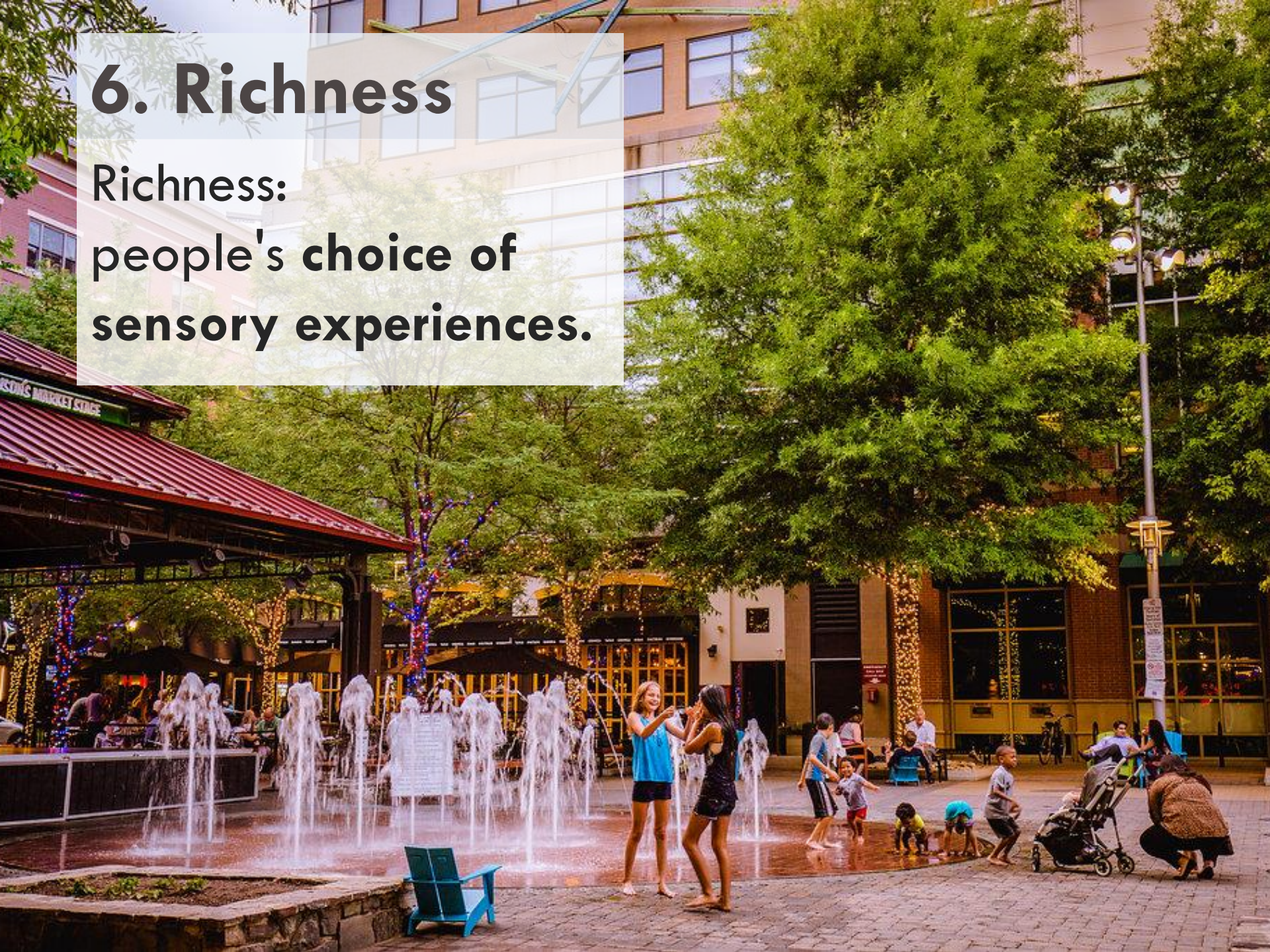


5. Visual Appropriateness

Visual appropriateness: the detailed **appearance** of the place make people **aware** of the choices available.

6. Richness

Richness:
people's choice of
sensory experiences.





7. Personalisation

Personalisation: the extent to which people can put **their own stamp** on a place.

THANK YOU