

City vs Architecture: Challenges & Opportunities

City

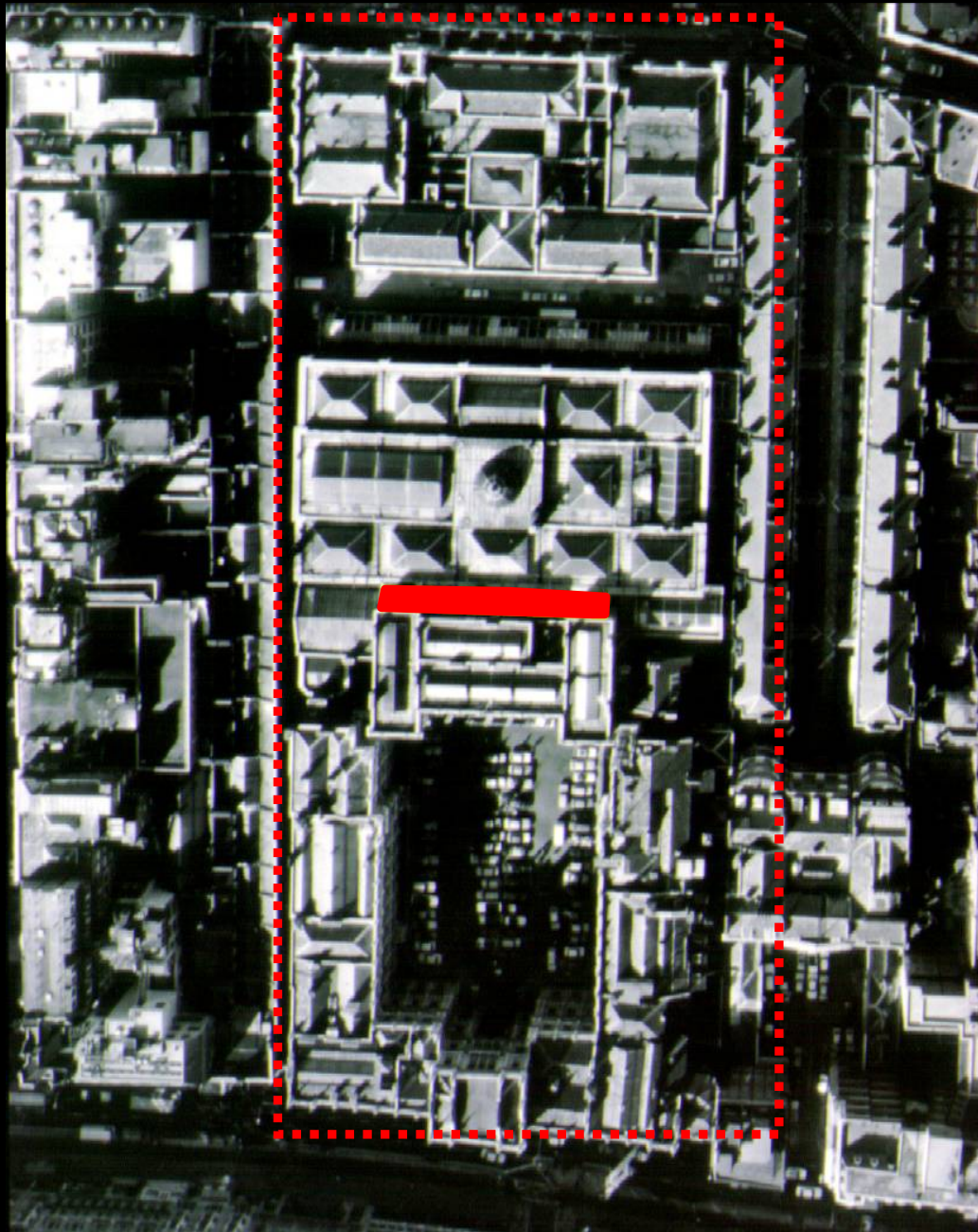
VS

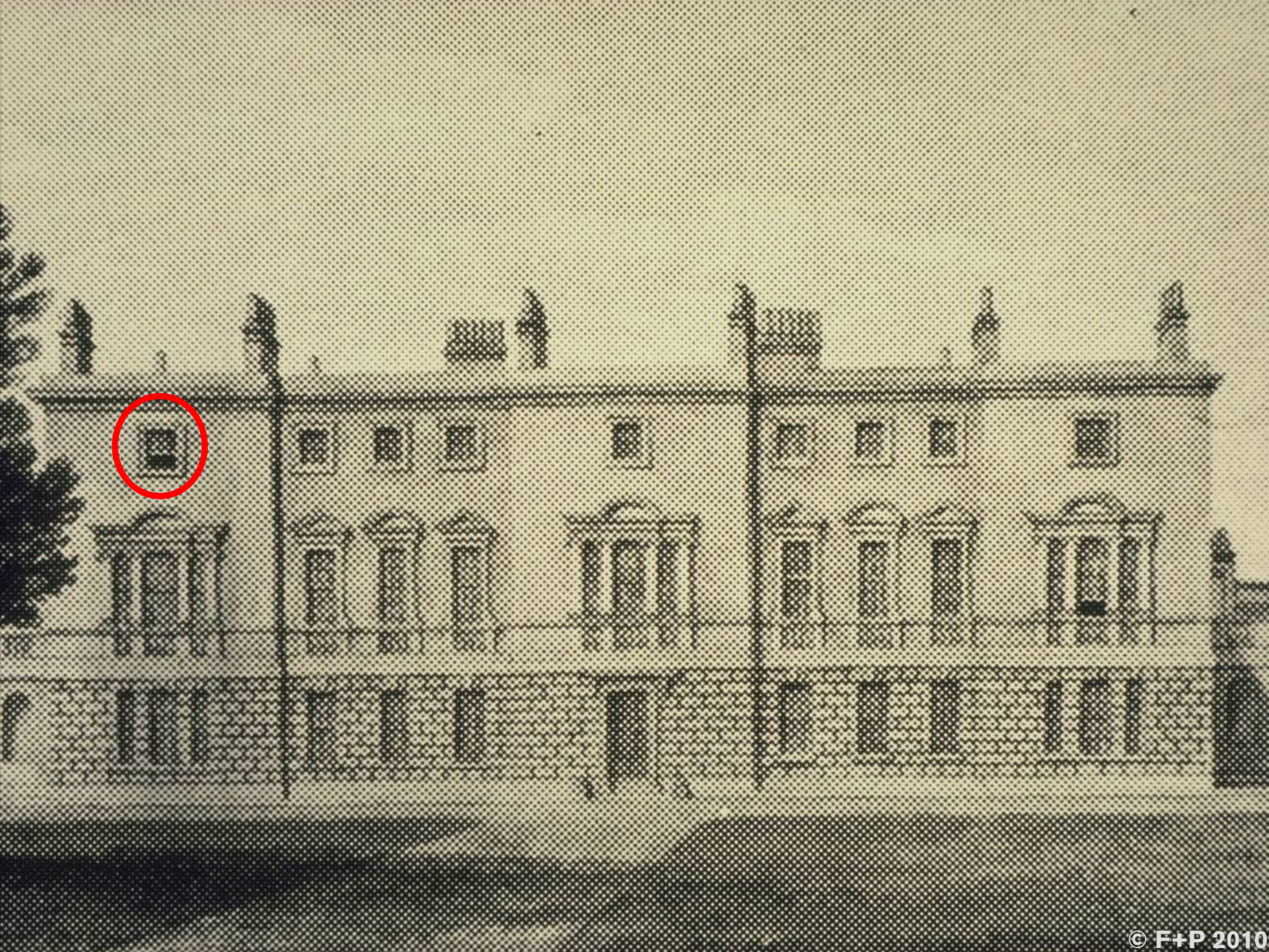
Architecture

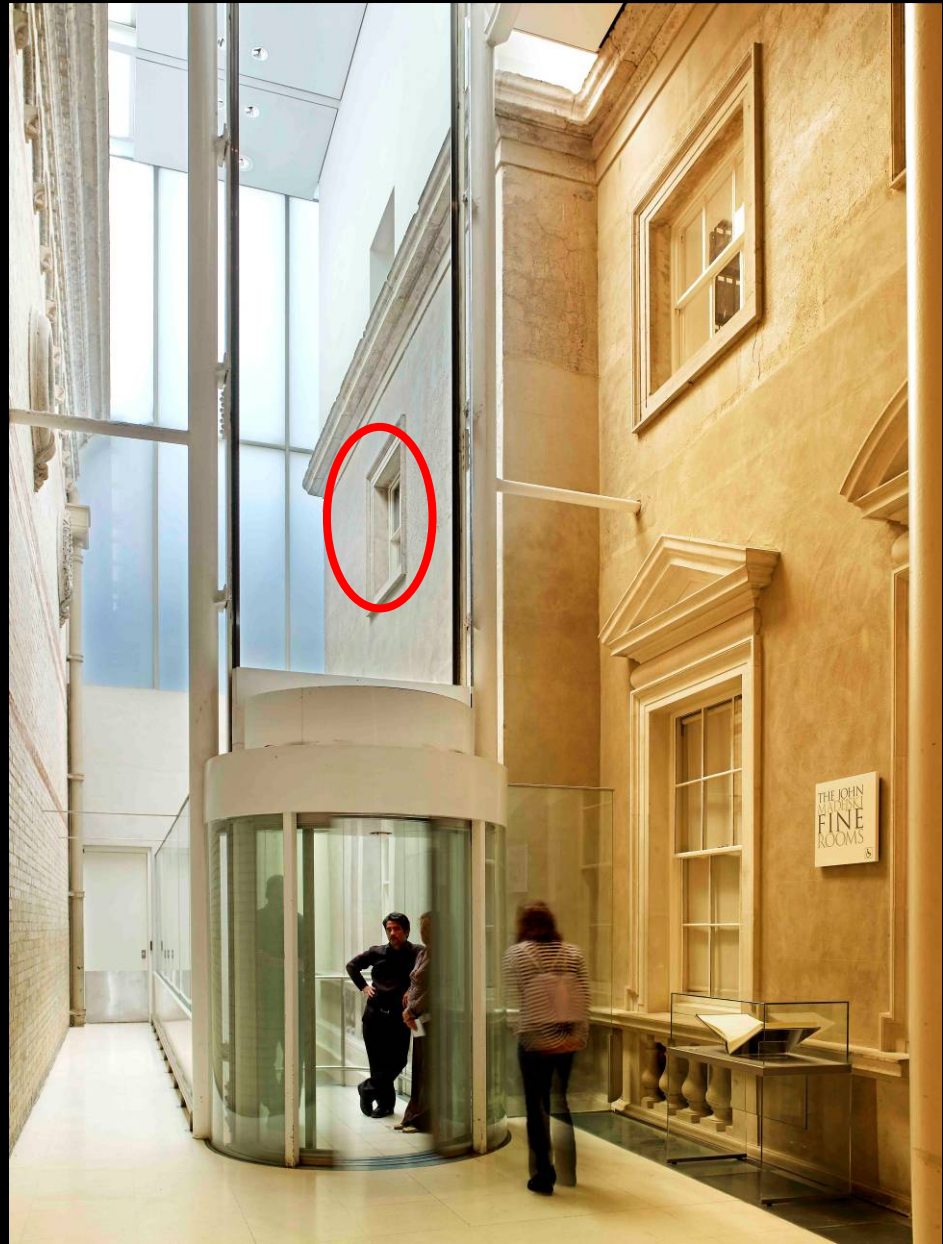
Challenges & Opportunities



1874 – Rear galleries – Sydney Smirke







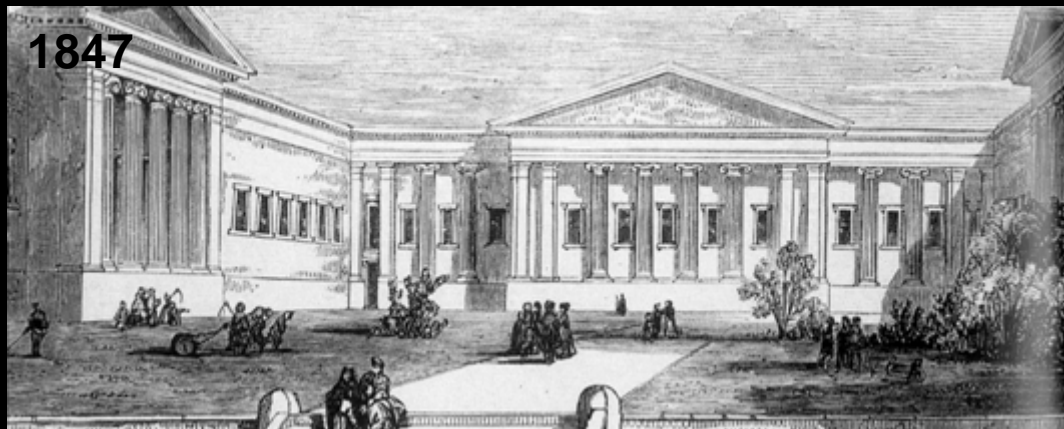


2



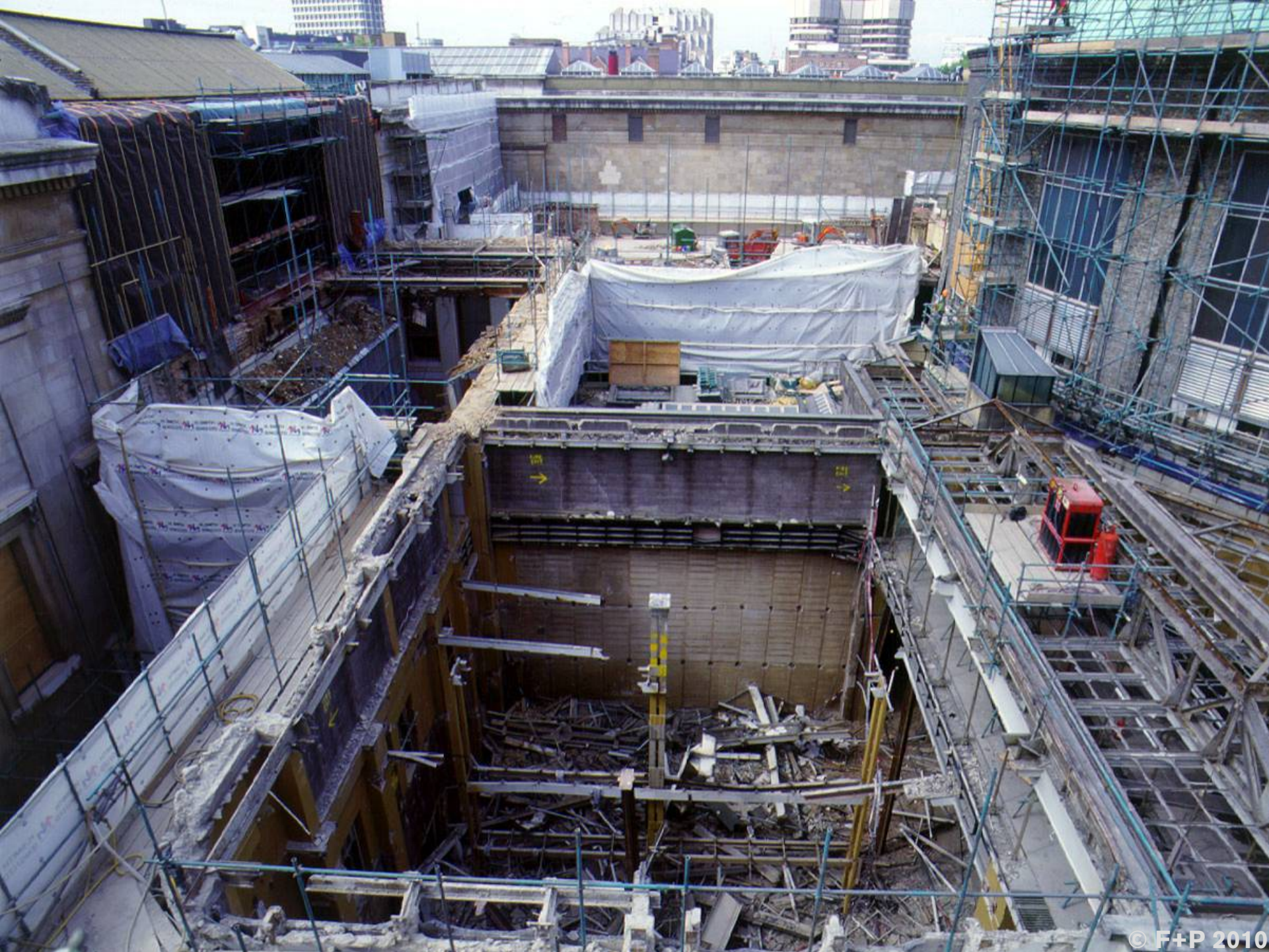
1823 - 1856







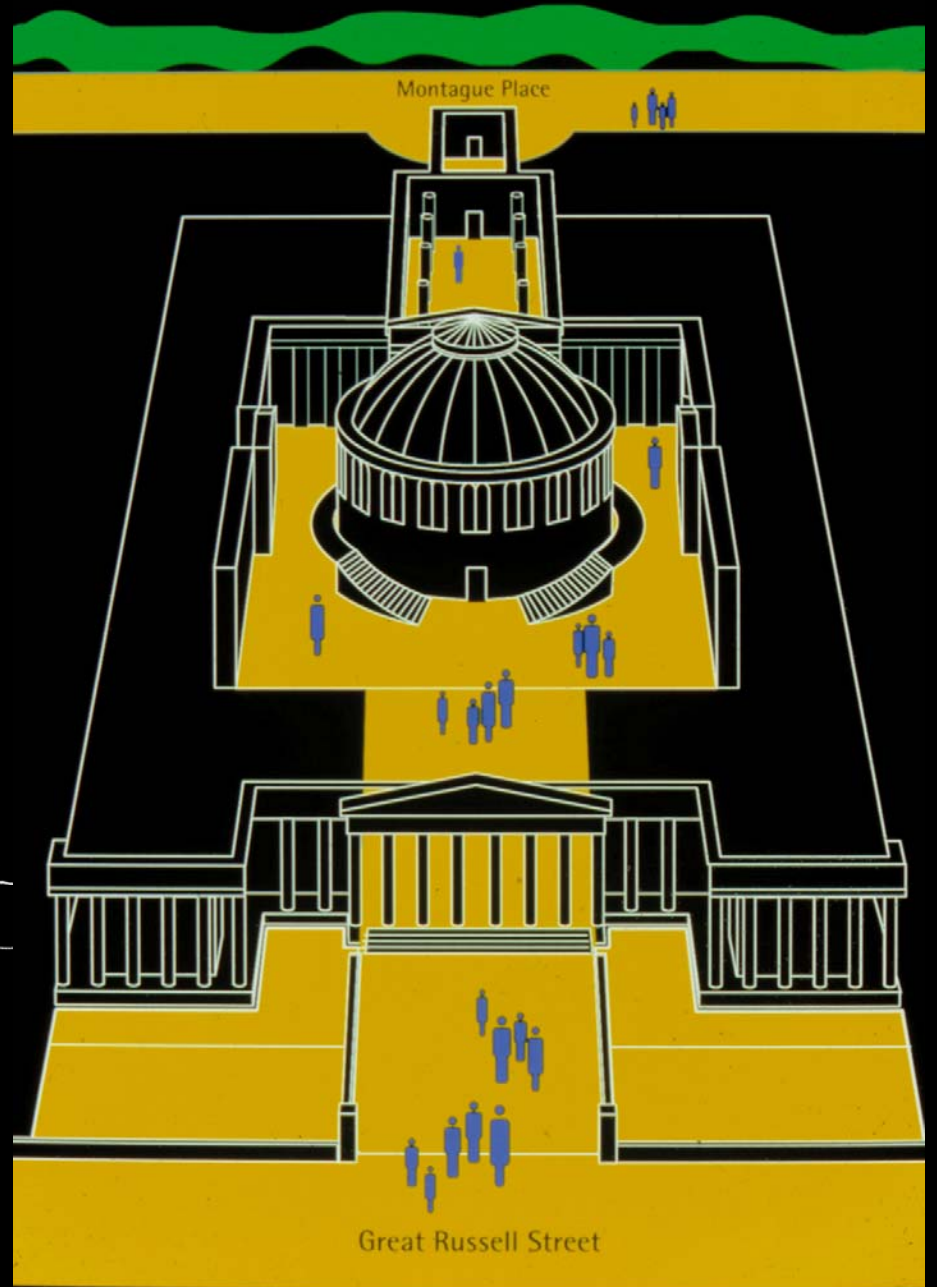
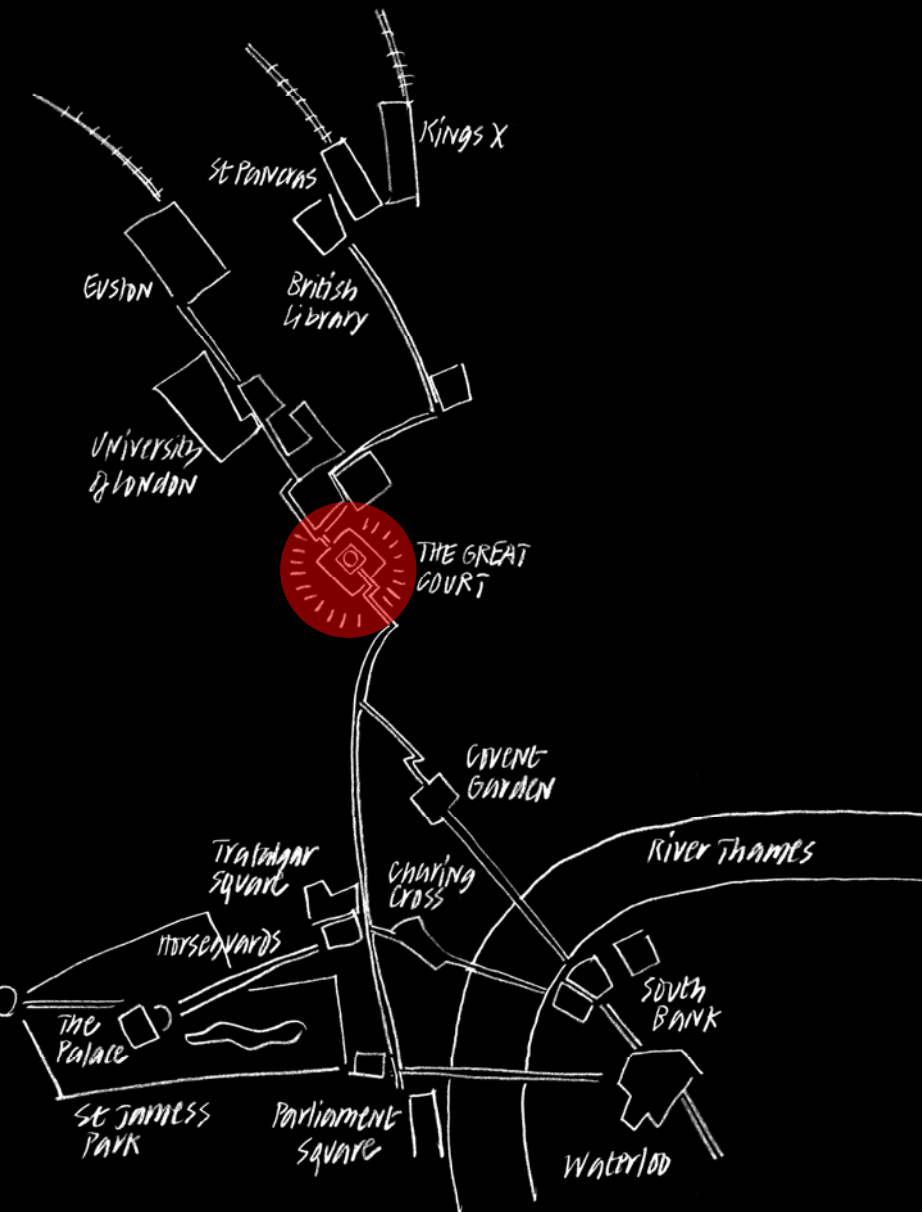






THE COURT CELESTIAL

THE COURT CELESTIAL
BY THE ARCHITECTS
F+P



Is this a building?

Or a piece of a city?

Or a covered city street?

Or all of these....



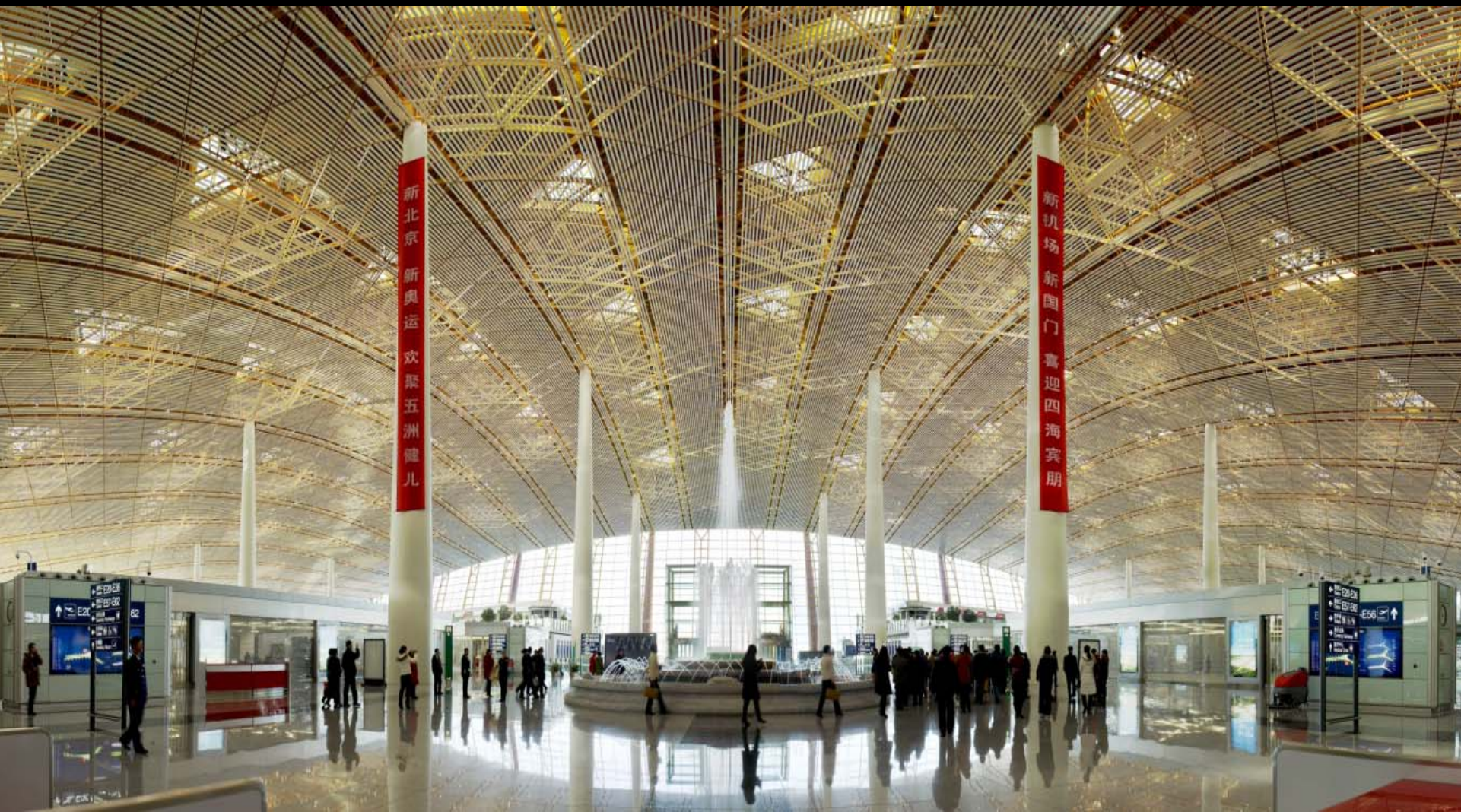
3.2 km long, 0.8 km wide, 1.32 million sqm

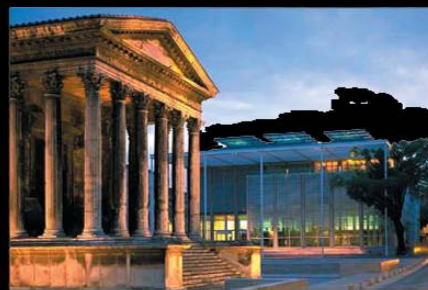
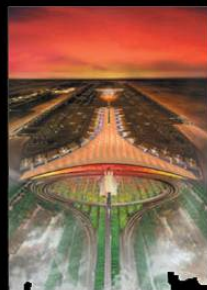


KNOWLES
BUILDING
HKU









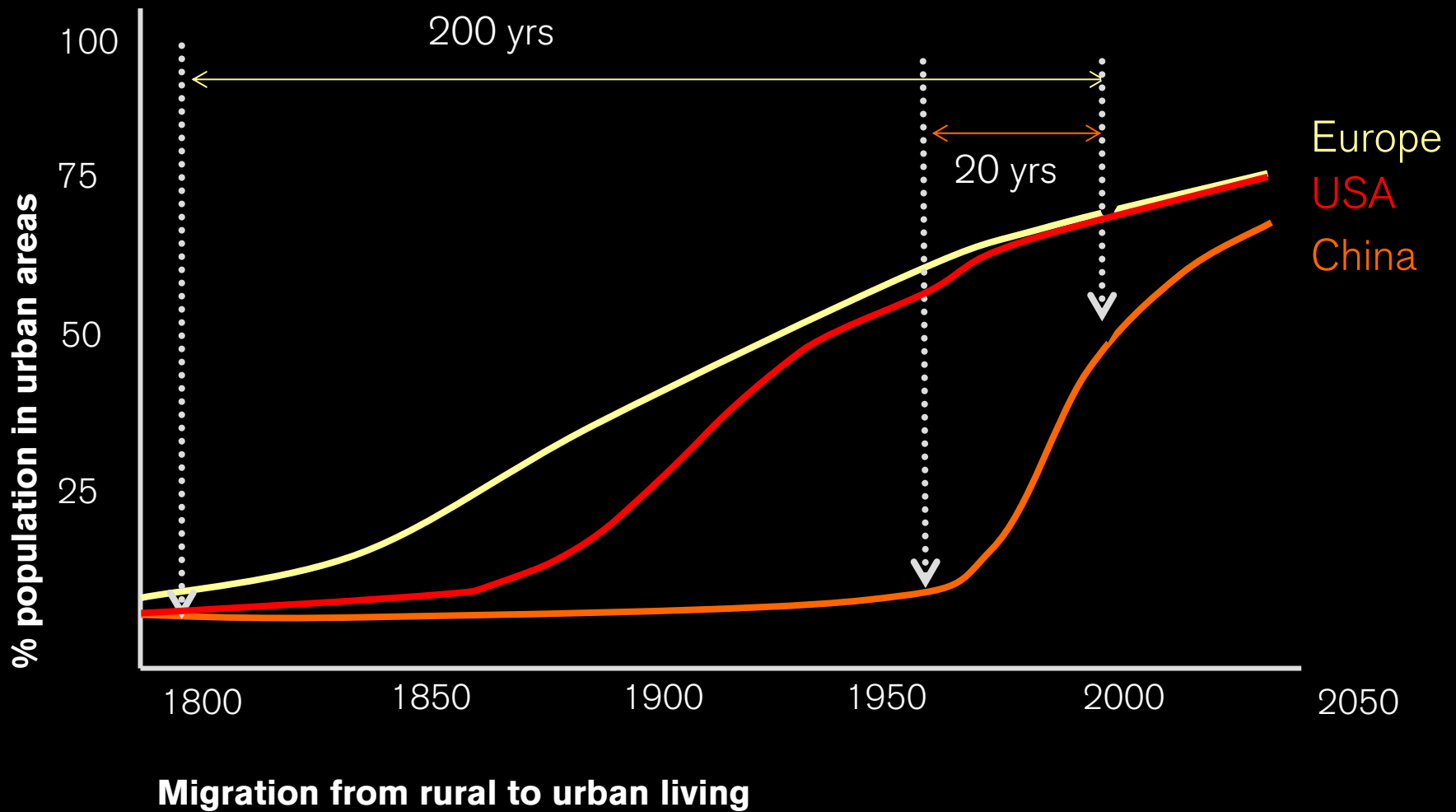
British Museum **6,049,000 visitors**

Royal Academy **969,693 visitors**

Beijing T3 **65,329,851 passengers**

people

Industrialisation





1950





2015



over 30M



20-30M



15-20M



10-15M



5-10M

Traditional Cities

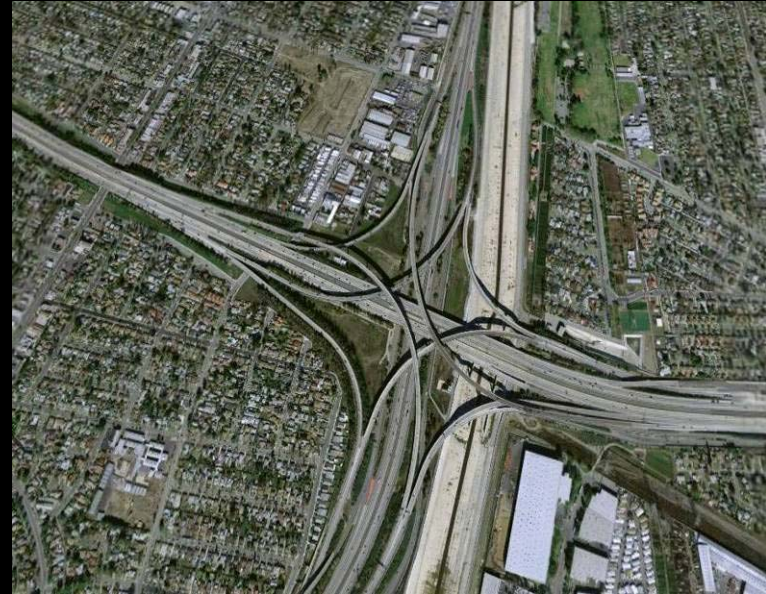


Florence



Athens

Car-dependent Cities

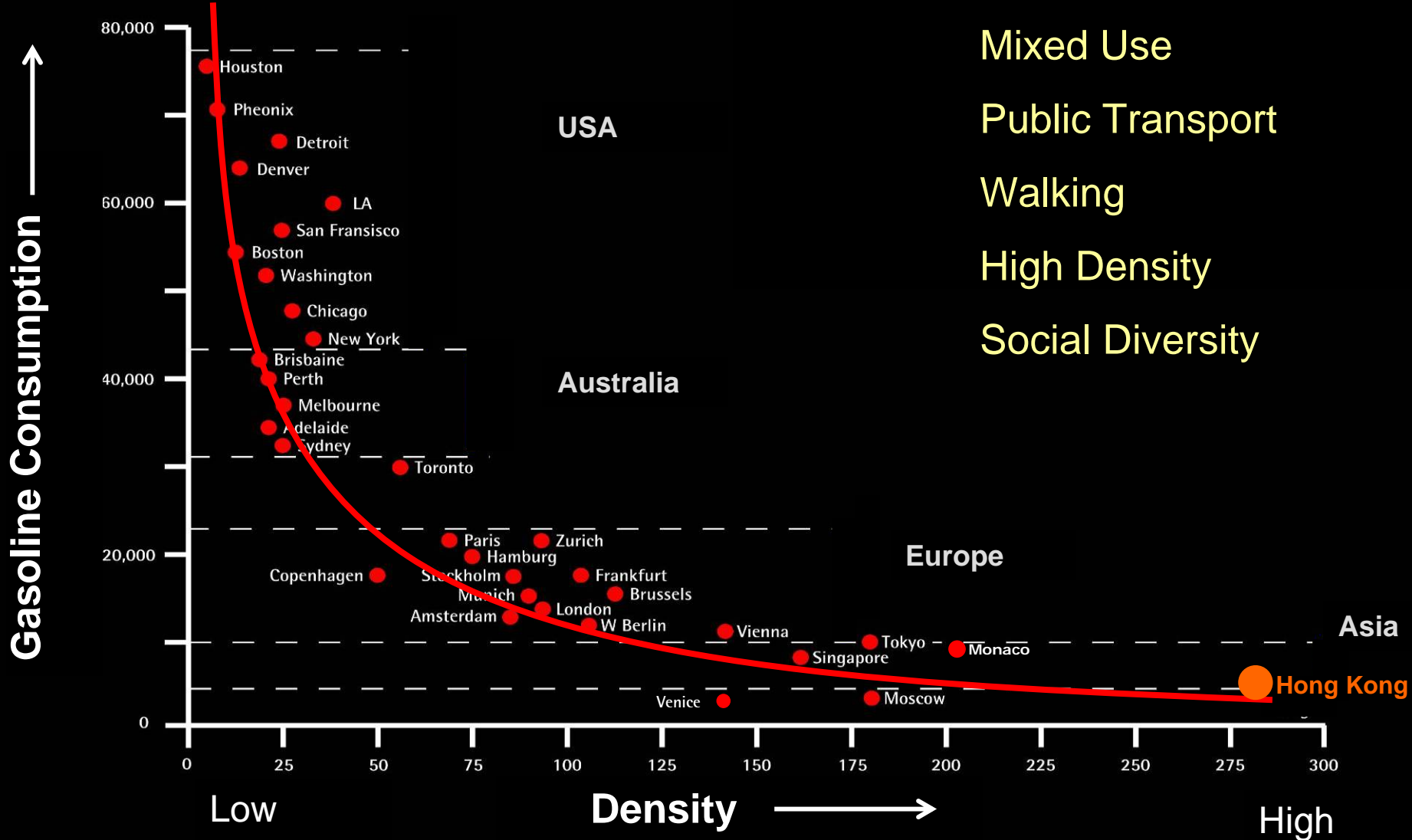


Los Angeles



Dallas

Density versus gasoline use



Source: Newman and Kenworthy

Detroit

2,600 people/sq km

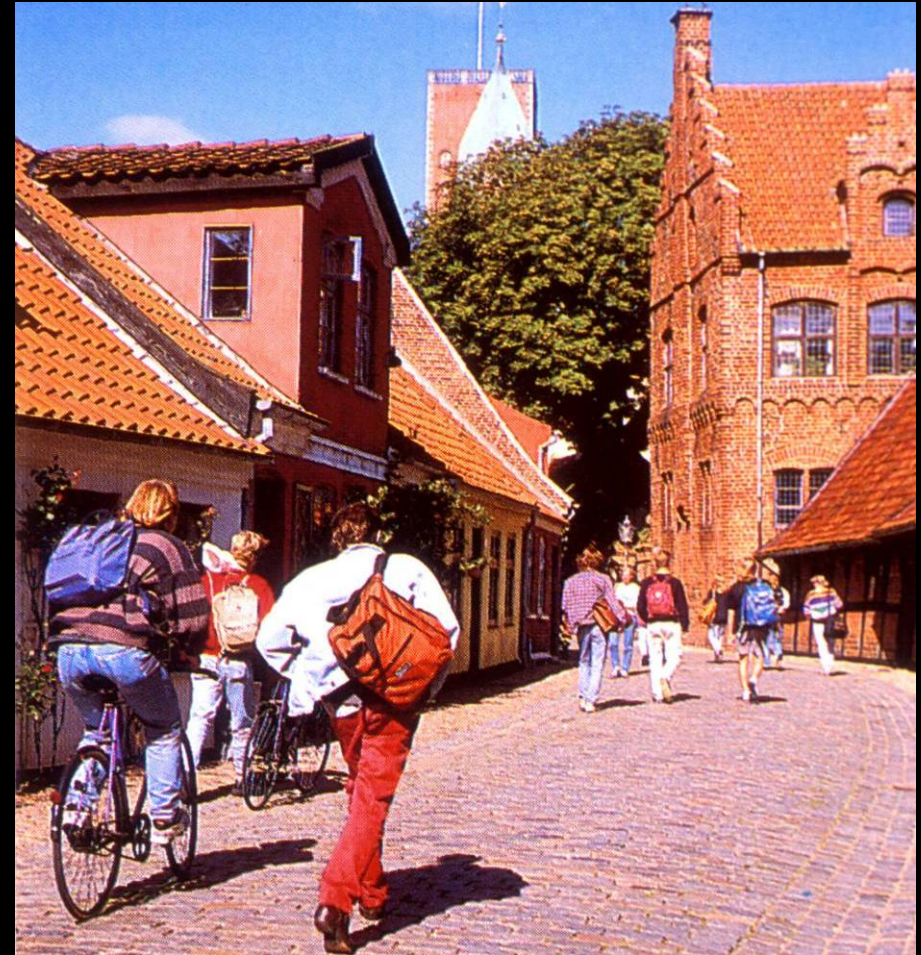
1,027,094 population



Copenhagen

5,800 people/sq km

1,153,615 population



Detroit – half the density of Copenhagen but consumes 10 times the energy

Monaco

16,486 people/sq km

32,800 population



Hong Kong

17,536 people/sq km

7,000,000 population



Heat recovery
Photovoltaics

Activated blind
Management
Responsive shading

Ventilation
Orientation

Form

Active Systems

Passive Systems

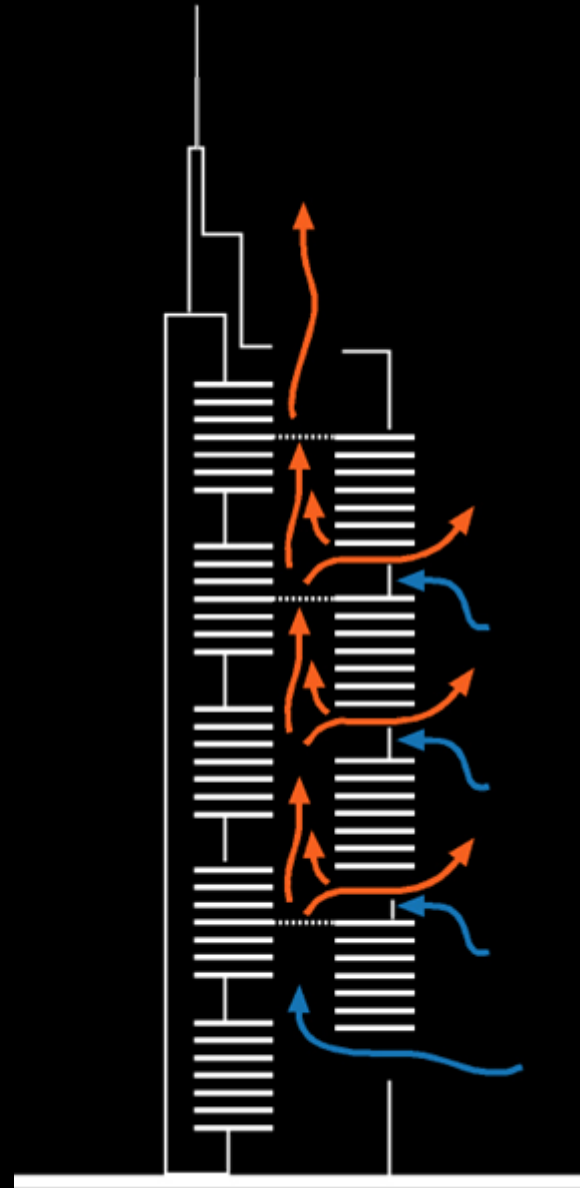
Buildings
(Cities)

Cost

\$

\$

Environmental Gain



Naturally ventilated 85% of the year (predicted 55%)



100%

80%

60%

40%

20%

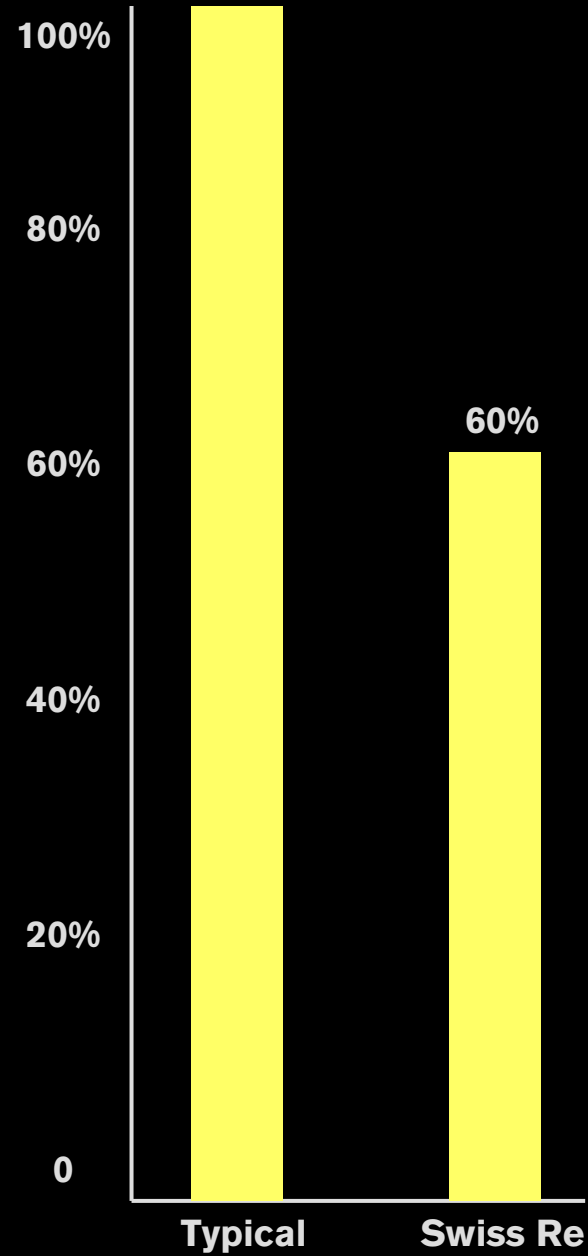
0

Typical

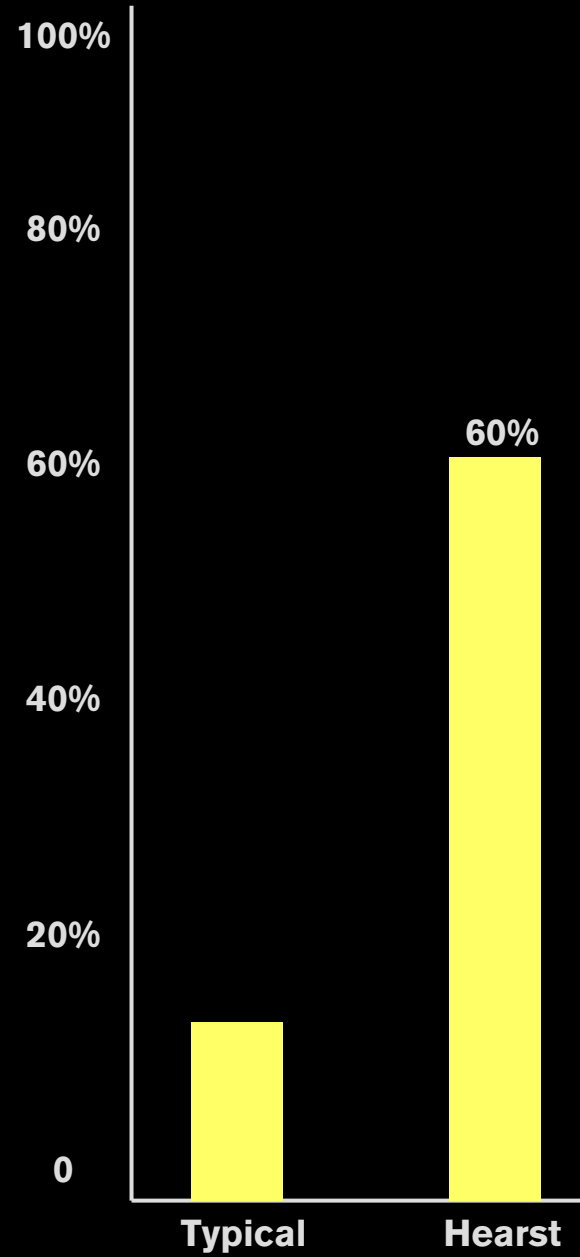
Commerzbank

15%

Naturally ventilated 40% of the year



Free cooling 60% of the year

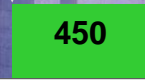




Reichstag: CO₂ Emissions in Tonnes per Year

CO₂ Emissions (T/A)

7000
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0

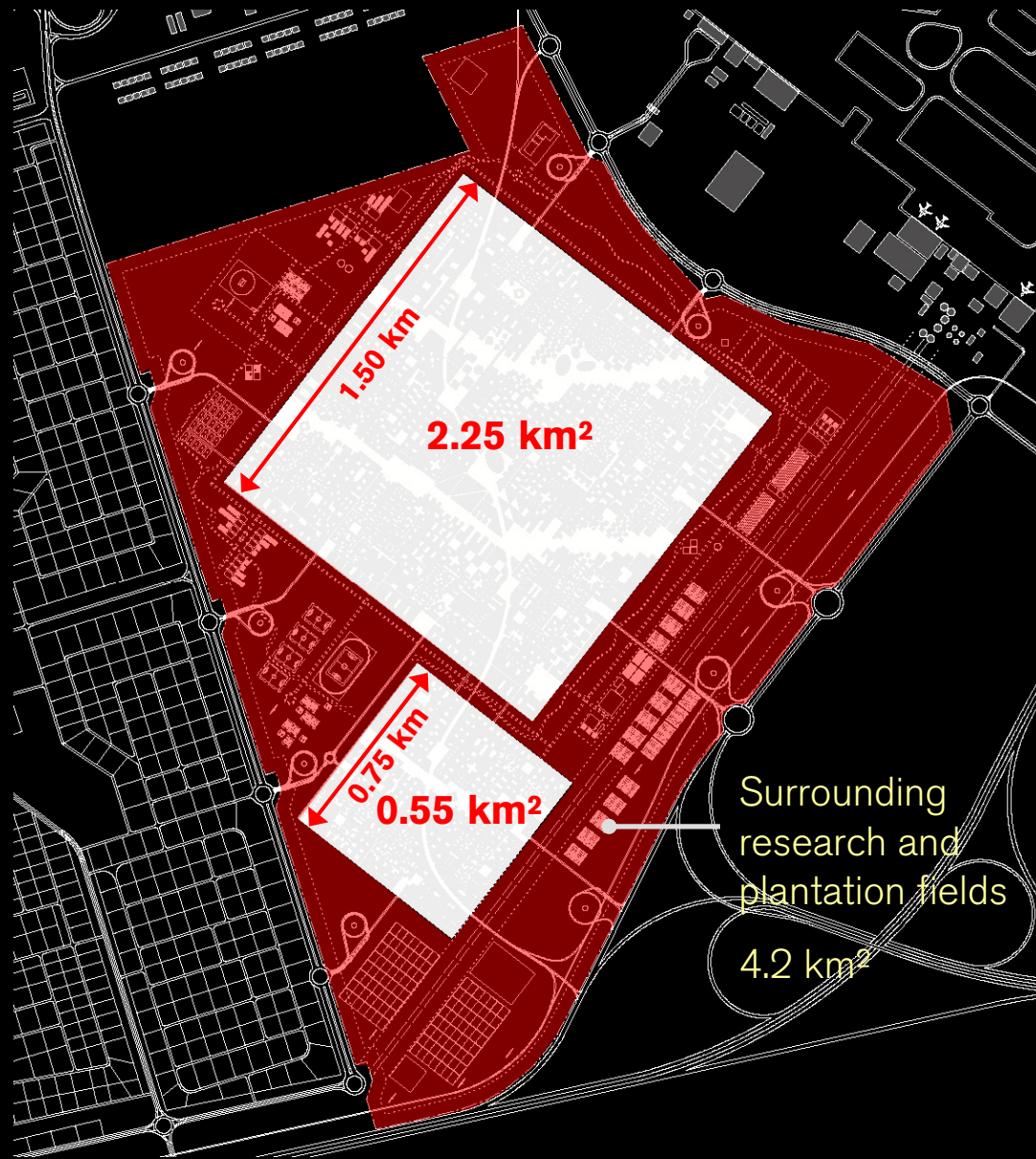


94%
Reduction

City Utilities
1960 - 1965

Vegetable Oil
1999

Area and population



Total Site Area
7 km²

Total Population
100,000



Residents 50,000



Commuters 50,000



Site – Scale comparison

MASDAR - 135 People / ha

Venice - 115 people / ha



Street Microclimate – Felt Temperatures



Desert



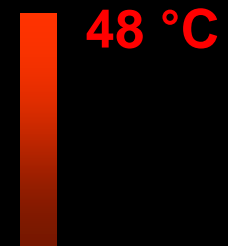
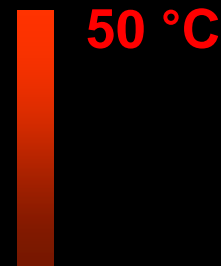
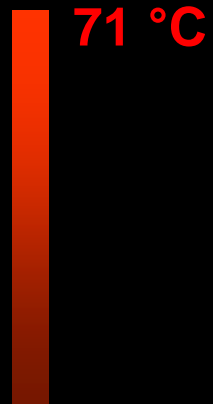
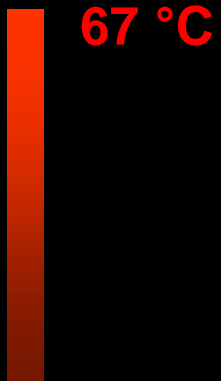
Central Abu Dhabi



MASDAR - Arcades

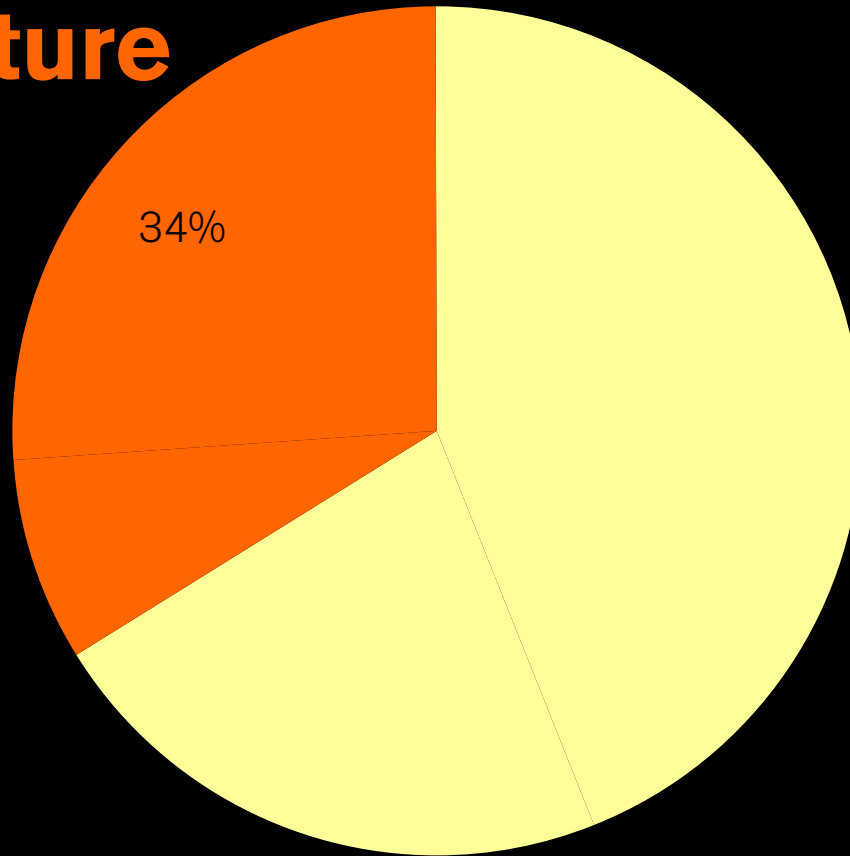


MASDAR – Green Gardens



Energy consumed in a typical industrialised society

Infrastructure



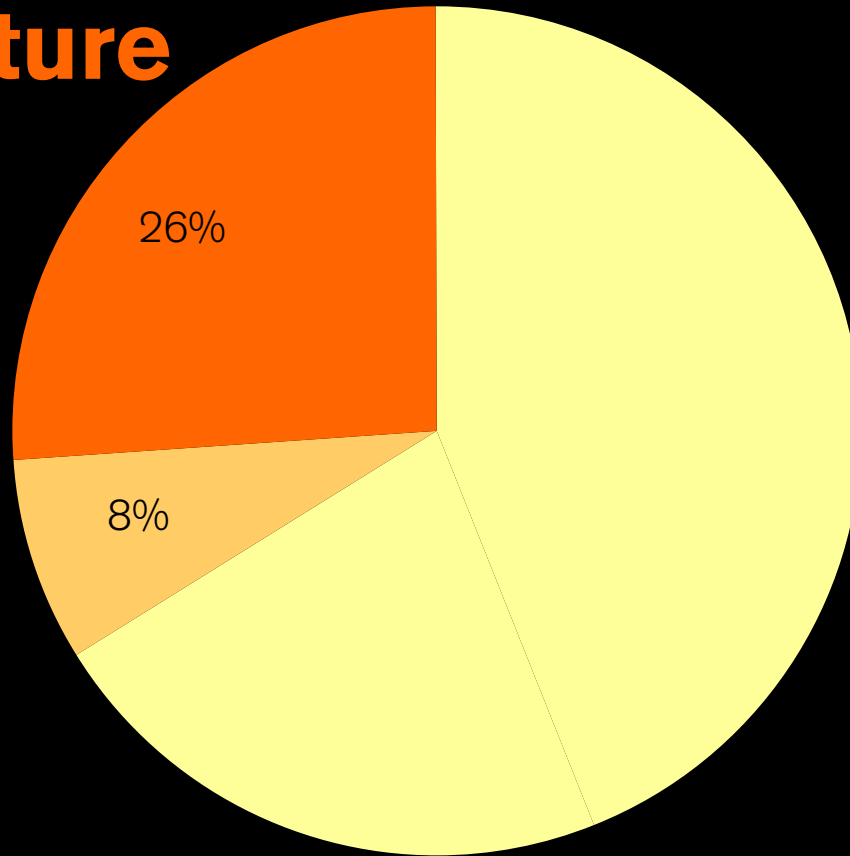
Source: Energy Consumption in the UK, DTI

Energy consumed in a typical industrialised society

Infrastructure

Transport

People



Energy consumed in a typical industrialised society

Infrastructure

**Transport
People**

Buildings

