Creating effective places
Integrating transport & urban design

Rail~Volution 2011, Washington DC
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Space Syntax Limited
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Strategic consulting
Urban planning & design
Spatial economics
Human behaviour analysis

Space Syntax Laboratory
University College London
Fundamental research
Technology development
Space Syntax  Evidence-based urban planning & design

Observe  Explain

Forecast  Deliver

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Sao Paulo
St Pancras International Station, London
Masdar, Abu Dhabi

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Movement types

Pedestrian

Cycling

Vehicle

Public transport  Bus, tram, metro

A single modelling environment
Movement inputs

Land use  Type, density

Environmental comfort  Sun/shade, wind, surface, lighting

Capacity  Path width, directional conflict

Comfort  Bus, tram, metro

Spatial layout accessibility  Connectedness & betweenness

Spatial & temporal  Dynamic outputs
Stratford City, London

Stratford International Station

Westfield Stratford City Shopping Centre
Stratford City, London  London Olympics 2012 Masterplan
London

King’s Cross & St Pancras International Station

Stratford International Station

Waterloo Station
Kings Cross and St Pancras Stations, London

St Pancras International Station
Kings Cross Station
Spatial masterplanning Rapid design development & testing
Spatial masterplanning  Rapid design development & testing
Spatial masterplanning  Rapid design development & testing
Spatial layout as infrastructure

It costs money to provide.

It has a functional impact.
The cost of access  Fast highways not “Main Streets”

Main street  mixing global & local movement.
Enhanced movement economy.

Fast highways, separating global & local movement.
Supported movement economy.
Why is any of this important?

Climate change & resource depletion
Cost & scarcity of energy & materials

Economic regeneration
Personal, community & institutional wealth

Social wellbeing
Real & perceived safety; health

Cultural continuity
The risk  Failed urbanism
London

King’s Cross & St Pancras International Station

Stratford International Station

Waterloo Station
Waterloo, London  High density, mixed-use regeneration
Masdar, UAE  Multi origin – multi destination modelling

Origins

Destinations
Masdar, UAE  Agent paths between origins & destinations
Movement through the central square is more direct, reflecting the focus on getting to work at this time of the day.

Podium level adjacent to Project One becomes much busier as pedestrians commute from residential space and car park entrances.

Pedestrian movement forecast 9am

Masdar, UAE

Building outline
Shading

Pedestrian movement
People per hour

- 400+
- 200-400
- 100-200
- 50-100
- 25-50
- 0-25
As exposure to sunlight becomes greater on the shopping street, pedestrians move to the side of the street where shading is provided.

Pedestrians stay close to the shade provided by buildings rather than moving to the centre of the central square.

The University area picks up more movement as pedestrians prefer the shaded routes through to offices.

Pedestrian movement forecast 2pm

Masdar, UAE

Building outline
Shading

Pedestrian movement
People per hour
- 400+
- 200-400
- 100-200
- 50-100
- 25-50
- 0-25

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Spaces at the edge of the development will be avoided when there is exposure to direct sunlight.

Movement becomes more exploratory as more shade is provided further into the evening.
Some of the narrower streets of the masterplan will still receive reasonable flow levels. One of the busiest streets in the masterplan is the link between the central public square and the retail street. This connection would also be suitable for small scale retail provision.

The busiest part of Phase 1 will have up to 700 people per hour passing through the area. This figure will rise further at specific times of the day and will ensure that small scale retail will be able to survive on the back of passing trade.

The central public space works well as a local focal space for the development. The square is a convenient short-cut between many destinations and as such will benefit for pedestrians passing through the centre of the square as well as static activity at the edges of the space.

Masdar, UAE Place profiling

Pedestrian movement
People per hour

- 400+
- 200-400
- 100-200
- 50-100
- 25-50
- 0-25

450 People Per Hour

700 People Per Hour
Masdar, UAE  

**Place profiling**

The edge of the University area is likely to benefit both from University workers walking through to the deeper parts of the University area and those seeking shaded short cuts through to other parts of Phase 1.

The internal parts of the University area will be relatively quiet for the majority of the day. The spaces are likely to be filled with sitting & standing activity however due to spill out areas and the frequency of trips between University buildings.

The space outside the Project 1 site will have highly varying flows throughout the day. At lunchtime flows are likely to be quite low (around 200 people per hour) but could reach over 600 people per hour during the peak of a morning commute.

The majority of the Project One development will be very quiet for almost all of the day. The internal landscaping spaces are very unlikely to be used by anyone other than immediate residents which may fit well with the intentions for the residential aspect of the Phase 1 development.

**Pedestrian movement**

- **People per hour**
  - 400+: Red
  - 200-400: Orange
  - 100-200: Yellow
  - 50-100: Green
  - 25-50: Light Green
  - 0-25: Blue

180 People Per Hour

30 People Per Hour

10 People Per Hour

240 People Per Hour
Ebbsfleet, Kent  Poor connectivity
Ebbsfleet, Kent  Poor connectivity

Source: Land Securities
Spatial layout efficiency  Global integration
Spatial layout efficiency  Local integration

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Ashford, Kent  Urban Severance

The railway tracks act as a barrier to pedestrian movement.

Historic commercial centre

Ashford International Station
Ashford, Kent  Regeneration masterplan

Designed to strengthen connections across the railway tracks.

Creates a “connective tissue”.

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Ashford, Kent  Public realm transformation

Source: hamilton-bailie associates
Ashford, Kent Spatial Integration analysis

Designed to strengthen connections across the railway tracks.

Creates a “connective tissue”.
Benefits of an evidence-based design approach

Revealing unseen opportunities & creating better ideas

Generating the key spatial layout & land use features of development projects.

Diagnosing existing contexts & identifying opportunities.
Benefits of an evidence-based design approach

Measuring & improving the likelihood of success

Providing reassurance.

Alerting clients to the risks of functional failure.

Finding alternative strategies to mitigate risk.
Facilitating communication between teams/stakeholders

Speaking a common, spatial language.

Building bridges between consultants & communities.
UK  HS2  London – Birmingham / Manchester / Leeds

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