

КЛУБ КОНТЕКСТ

PUBLIC SPACE DESIGN: DATA DRIVEN APPROACH.

АНАСТАСИЯ КОЛЬЦОВА. ШВЕЙЦАРСКАЯ ВЫСШАЯ ТЕХНИЧЕСКАЯ ШКОЛА ЦЮРИХА

PUBLIC SPACE



Has two major components:
physical and social

Source: Carmona 2010

URBAN DESIGN

Urban design 'consists of making human and environmental characteristics congruent with each other.'

Source: Amos Rapoport 1990

QUALITY OF PUBLIC SPACE

Where good quality of public space becomes 'a central tenet'.

Source: Khan et al. 2014

SPACE MORPHOLOGY & PLACE STUDIES

Finally it should be noted that the pedestrian streets which seem most comfortable are the ones where the width of the street does not exceed the height of the surrounding buildings. (See "Vehicle free zones in city centers," *International Brief* #18, U.S. Department of Housing and Urban Development, Office of International Affairs, June 1972).

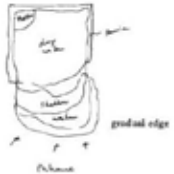


About square . . . or even narrower.

Make a public square much smaller than you would at first imagine; usually no more than 45 to 60 feet across, never more than 70 feet across. This applies only to its width in the short direction. In the long direction it can certainly be longer.



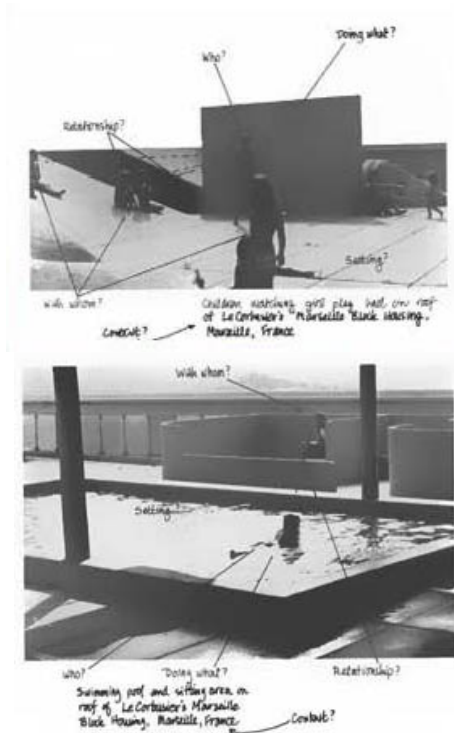
In every neighborhood, provide some still water—a pond, a pool—for swimming. Keep the pool open to the public at all times, but make the entrance to the pool only from the shallow side of the pool, and make the pool deeper gradually, starting from one or two inches deep.



- § Geometric properties of public space
- § Connection of public space to other city elements
- § Importance of views, openness
- § Etc.

Source: Christopher Alexander 'Pattern Language'

ENVIRONMENT BEHAVIOUR STUDIES



- § Observing Environmental Behaviour
- § Observing Physical Traces
- § Interviews & Surveys
- § Etc.

Source: Zeisel Inquiry by Design'

SPACE MORPHOLOGY & PLACE STUDIES



Public space is defined as the space that is open to all and is not owned by any individual or institution. It is a space that is shared by all and is a part of the urban fabric. It is a space that is open to all and is a part of the urban fabric. It is a space that is open to all and is a part of the urban fabric.



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COMPUTATIONAL METHODS FOR URBAN ANALYSIS & DESIGN

SOCIAL SPACE

Social Media Mining

Crowd Sourcing (movement frequency no use of GPS)

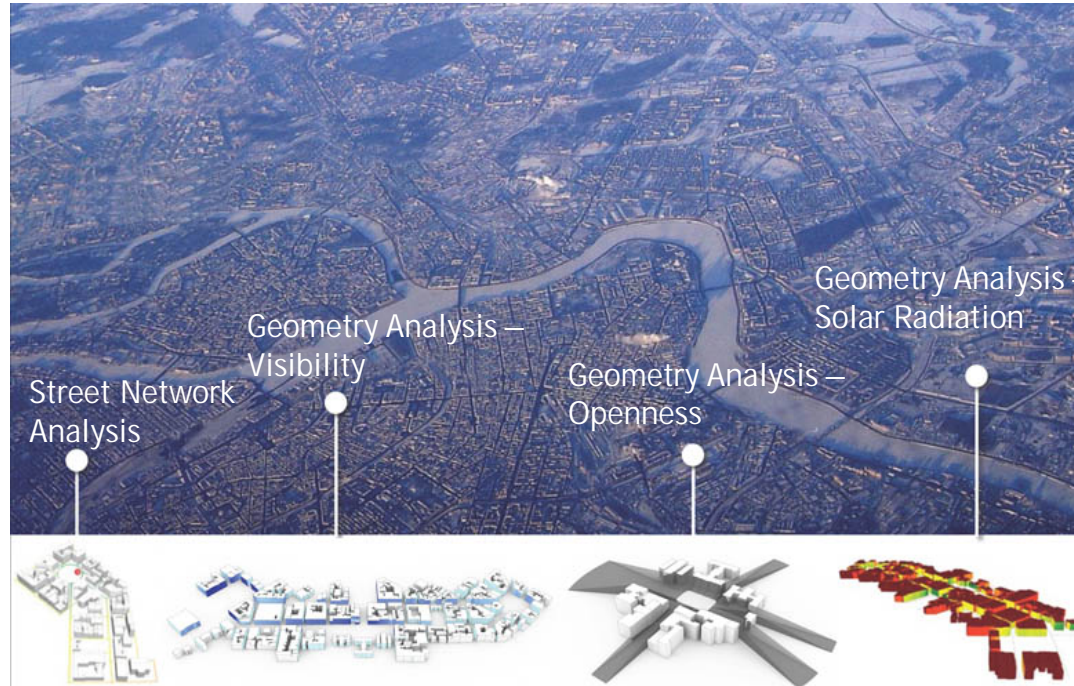
Crowd Behaviour during City Events (GPS)

Zack Zhu, PhD ETHZ

Dongyoun Shin, PhD ETHZ

Dr Ulf Blanke, ETHZ

DATA: PHYSICAL SPACE



Geometry Analysis –
Solar Radiation

Urban analysis &
simulation tools
Parametric urban
form generation

Data mining

DATA MINING IN URBAN DESIGN OR SMALL BIG DATA

METHOD

- § Looking at the existing public spaces with high vitality!
- § Measuring the attributed qualities of public spaces suggested as important in preceding well – established research studies!
- § Using data mining methods, clustering in particular, in order to reveal hidden patterns of spatial organisation

METHOD

1. Model Setup & Measurement

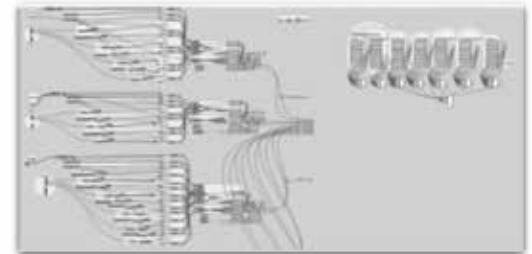
Public space
observation &
GIS data
retrieval



Model of public space



Attributes measurement



Source: <http://www.skyscrapercity.com>

METHOD

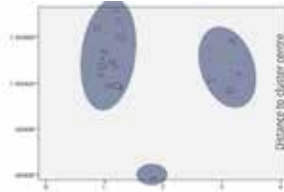
2. Clustering

Data table with measurement results



Social Attributes

Resulting clusters



3. Result Interpretation

Interpretation through panel discussions

Source: <http://www.skyscrapercity.com>

SPATIAL STRUCTURE ATTRIBUTES

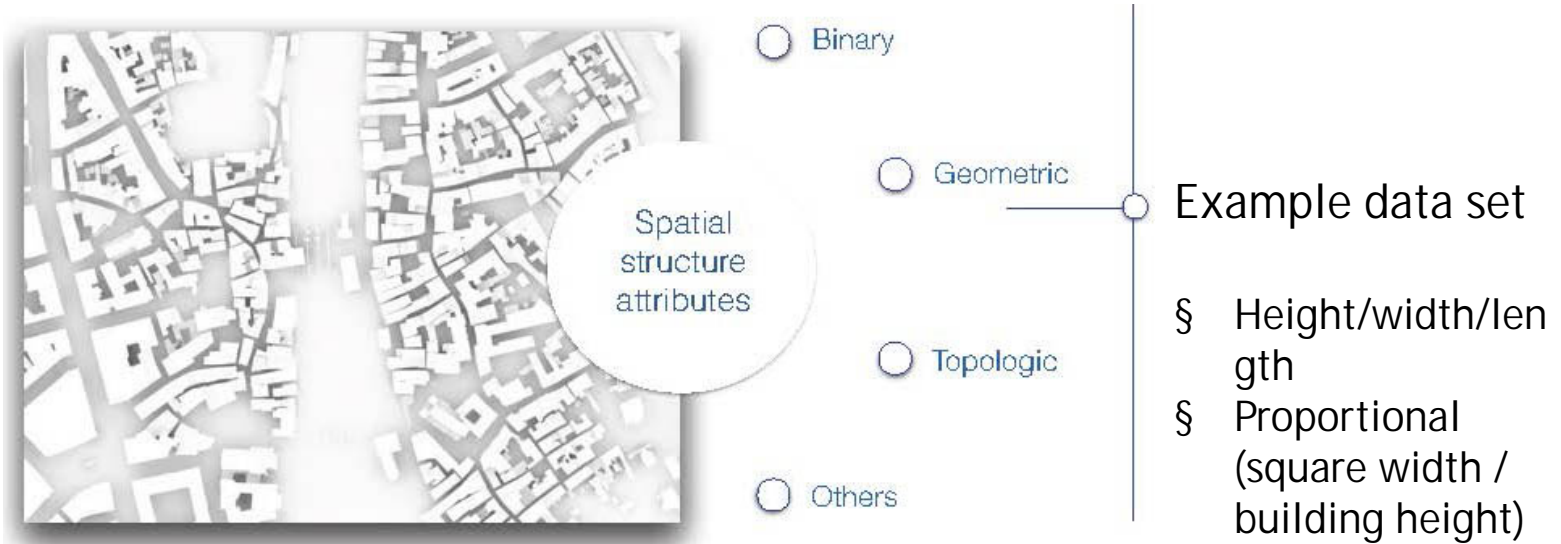


- Binary
- Geometric
- Topologic
- Others

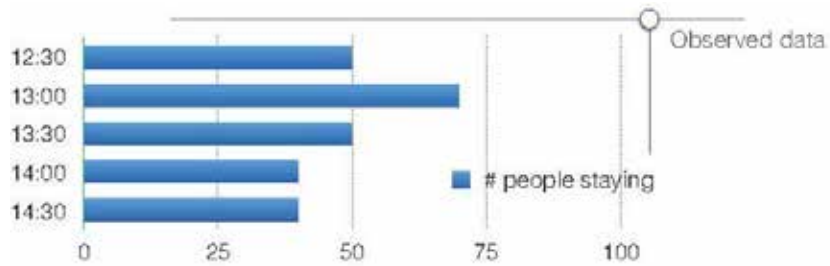
Example data set

- § Presence of vegetation
- § Presence of urban furniture
- § Is furniture used?

SPATIAL STRUCTURE ATTRIBUTES



VITALITY



TAKE – HOME MESSAGE

- § Collection & Analysis of Data on Public Space (Government Initiative)
- § Accessibility of Gathered Data Base for Design & Research Community
- § Design of new spaces driven by the knowledge acquired through data collection and analysis as a new challenge for local governments

DATA DRIVEN DESIGN OF FUTURE PUBLIC SPACES

THANK YOU!