RETHINKING THE SPATIAL IMPACT OF THE OLYMPICS
THE EXPLORATION OF NEW SPATIAL STRATEGIES FOR FUTURE OLYMPIC HOST CITIES

EXPLORELAB 16
P5 PRESENTATION
JULIUS KIRCHERT & JOS REINDERS
LEGACY OF THE BARCELONA 1992 OLYMPICS
LEGACY OF THE ATHENS 2004 OLYMPICS
<table>
<thead>
<tr>
<th>Olympic Stadium</th>
<th>Athens 1896</th>
<th>Paris 1900</th>
<th>St. Louis 1904</th>
<th>London 1908</th>
<th>Stockholm 1912</th>
<th>Berlin 1916</th>
<th>Antwerp 1920</th>
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<tbody>
<tr>
<td>Stadium name</td>
<td>Panathinaiko</td>
<td>Vélodrome de Vincennes</td>
<td>Francis Field Stadium</td>
<td>White City Stadium</td>
<td>Stockholms Olympiastadion</td>
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<tr>
<td>seats (Normal capacity)</td>
<td>80,000 (45,000)</td>
<td>50,000</td>
<td>19,000</td>
<td>68,000</td>
<td>14,000</td>
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<td>Legacy development</td>
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<tr>
<td>Major conflicts</td>
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- The origins of Olympic urbanisation, few urban legacy
- The dominance of the Olympic stadium

Dow Jones Index

- W.W. I
The origins of Olympic urbanisation, few urban legacy

The dominance of the Olympic stadium

The rise of the Olympic quarter

Legacy development

Major conflicts

Dow Jones Index

1900
1895
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950

Olympic Stadium

Panathinaiko
80,000 (45,000)

Vélodrome de Vincennes
50,000

Francis Field Stadium
19,000

White City Stadium
68,000

Stockholms Olym-pia Stadium
14,000

Antwerp Olym-pisch Stadium
30,000 (13,000)

Stade Olympique Yves-du-Manoir
45,000 (14,000)

Amsterdam Olym-pisch Stadium
31,600 (22,291)

Los Angeles Memorial Coliseum
101,574 (93,607)

Olympia Stadion Berlin
110,000 (74,244)

Empire Stadium (Wembley)
82,000

Olympic Stadium Helsinki
70,000 (40,000)

Introduction of Olympic village

Emerge of the Winter Games

Events: 43

Events: 79

Events: 91

Events: 96

Events: 101

Events: 128

Events: 124

Events: 109

Events: 116

Events: 128

Events: 136

Events: 149

W.W. II

The rise of the Olympic quarter
The Olympics as a catalyst of urban change

- Environmental aspect added to Olympic Charter
- Legacy first mentioned in Olympic candidature
- Official declaration of sustainable ambitions

Melbourne Cricket Ground 103.000 (100.000)
Stadio Olimpico 65.000 (72.000)
National Olympic Stadium 57.363
Estadio Olímpico Universitario 83.700 (63.186)
Plympia stadion München 80.000 (69.250)
Olympic Stadium Stade Olympique 58.500 (66.308)
Luzhniki Stadium 103.000 (72.360)
Los Angeles Memorial Coliseum 92.000 (93.607)

Avoid over-extravagant projects

Urban expansion

Legacy first mentioned in Olympic candidature
First fully broadcasted Olympics
First sponsored Olympics: $225 Mil Profit
The rise of the Olympic quarter

Urban expansion
Avoid over-extravagant projects
Inner-city regeneration
Sustainable urban form

The Olympics as a catalyst of urban change

Environmental aspect added to Olympic Charter
First sponsored Games: $225 Mil Profit
First fully broadcasted Olympics
Legacy first mentioned in Olympic candidature

Legacy aspect added to Olympic Charter
Official declaration of sustainable ambitions

Seoul Olympic Stadium
100,000 (69,950)

Seoul 1988

Estadi Olímpic Lluis Companys
67,000 (56,000)

Barcelona 1992

Centennial Olympic Stadium
85,000 (49,586)

Atlanta 1996

Stadium Australia
110,000 (82,500)

Sydney 2000

Olympic Stadium Athens
71,030 (75,000)

Athens 2004

Birds Nest/Beijing National Stadium
91,000 (80,000)

Beijing 2008

London Olympic Stadium
80,000 (25,300)

London 2012

Rio de Janeiro 2016
MISMATCH BETWEEN IOC AND HOST CITY

IOC PROGRAM & REQUIREMENTS vs CITY DEMAND

IOC PLANNING

CITY PLANNING

7 Years

...Years
OLYMPIC REQUIRED DEVELOPMENT PROJECT ON THE ROTTERDAM HARBOUR
FUTURE PERSPECTIVE - DECENTRALISATION
How do you ensure good legacy for future host cities?

- **City** // Regional strategy Øresund region
- **Area** // Aerial strategy Brøndby
- **Building** // Øresund Olympic Stadium
REGIONAL STRATEGY
Historic City Center

Olympic area(s)
Main city ring-roads
City centre

LONDON CENTRAL PARK

Inner-City Mono-Clustering:
1968 Mexico City, 1984 Los Angeles

Inner-City Poly-Clustering:

Periphery Clustering:

Satellite Clustering:
1996 Atlanta

Joint Clustering:
2000 Sydney
BARCELONA - CLUSTERING OF FUNCTIONS

- Olympic area(s)
- Main city ring-roads
- City centre

Inner-City Poly-Clustering

- 1968 Mexico City, 1984 Los Angeles

Periphery Clustering


Satellite Clustering

- 1996 Atlanta

Joint Clustering

- 2000 Sydney
How can European networked city regions hosting the Olympic summer Games benefit from a decentralized planning scheme in terms of the physical legacy generated by the event?
CITIES WITHIN THE REGION

GREATER COPENHAGEN

HELSINGØR

HELSINGBORG

LANDSKRONA

Malmö

LUND
'A mega-event as planning tool for Øresund's regional development'
OLYMPIC DEVELOPMENT STRATEGY

Input ▲

Formulation key points ▼

1. ▲
2. ▲
3. ▲
4. ▲
KEY POINTS IN DEVELOPMENT STRATEGY

1. Urban densification in the periphery located areas
2. Regional development clusters located along new infrastructure
3. Clusters of mix-use: an area of synergy
4. Functional icons as catalysts for local and regional development
ØRESUND ANNO 2028 - THE FIRST REGIONAL OLYMPIC GAMES
SUMMARY AND STARTPOINT FOR AERIAL STRATEGY

• The organisation of the olympics follows the regional long-term planning
• The organisation is not restricted by city or even country borders
• The olympics create a framework and planning directions for the long-term development to follow.
• The Olympics create financial and public support for major (infrastructural) development
AERIAL STRATEGY
ATHENS - OLYMPIC PARK AS ISLAND IN THE CITY
LONDON - OLYMPIC PARK AS AN INTEGRATED PART OF THE CITY
DESIGN QUESTION

How can the Ceremonial area for the Olympic Games within a decentral strategy be well integrated in the urban structure in its legacy?
AREA'S LOCATION WITHIN GREATER COPENHAGEN

- PLANNED LIGHT-RAIL
- DESIGN SITE
- OLYMPIC AREA II
- CPH CITY CENTER
- 11KM
- CPH AIRPORT
- ØRESUND BRIDGE
PRIMARY ROLE WITHIN THE REGION

SITE AS A FUNCTIONAL ENTRANCE POINT TO REGION

TRANSFER POINT
THE PRIOR PARK STATION
A new smaller station is planned to build and finished in 2018. It connects directly to the city center of Copenhagen.

THE PRIOR PARK
A closed industry park is to be public accessible and transformed into a mix-use area (over a 20 year period from now).

THE GREEN WEDGE
The recreative areas are pointed out to be more functional and better connected (transformation is to be done in 2020).

THE LIGHT-RAIL TRACK
All the involved communes have agreed to the Loop-city project, though the exact location and financing of the track not decided.
BRØNDBY AREA - DEVELOPMENT STRATEGY

Current situation with planned areas of transformation

Olympic Games - 2028

Post-Olympics - 2029

legacy - 2047
Recovery centre for neuro patients
*Temporarily relocated*

School of health care (SOSU center Brøndby)
*Temporarily relocated*

Brøndby stadium
*Updated and used as venue doing the Olympics*

Head office of DBU (Danish football association) and the dif (Danish sports association / Olympic organisation)
*Temporarily relocated*

The brøndby arena and sports hall
*Temporarily relocated*

Football fields belonging to brøndby if
*Temporarily relocated to the green wedge across the highway*
BRØNDBY OLYMPIC CAMPUS - GRADUAL DEVELOPMENT
BRØNDBY OLYMPIC CAMPUS - LEGACY MODE

5 CLUSTERS AROUND THE CENTRAL LINE

FUNCTIONAL SCHEME WITH RELATIONS

CAR TRAFFIC

BRONDBY
HOUSING
CULTURE
HOUSING
OFFICES
HIGHWAY
LEGACY OF THE OLYMPIC STADIUM?
BUILDING STRATEGY
PREVIOUS OLYMPIC STADIUMS - OVERVIEW

BARCELONA 1992

ATLANTA 1996

SYDNEY 2000

ATHENS 2004

BEIJING 2008

LONDON 2012
BUILDING STRATEGY - PERSERVING THE OLYMPIC SETTING

- ADJUSTED TO FACILITATE FOOTBALL CLUB
- USED OCCASIONALLY FOR EVENTS

BARCELONA 1992
- PERMANENT TOURIST ATTRACTION AND EVENTSPACE
- TOO BIG FOR A CHINESE SPORTS CLUB

ATHENS 2004

BEIJING 2008
BUILDING STRATEGY - MAJOR TRANSFORMATION

- TRANSFORMED INTO A BASEBALL STADIUM
- USED OCCASIONALLY FOR EVENTS

▲ ATLANTA 1996

- ADJUSTED TO FACILITATE AUSTRALIAN FOOTBALL CLUB AND OTHER SPORTS
- USED OCCASIONALLY FOR EVENTS

▲ SYDNEY 2000
BUILDING STRATEGY - DOWN-SCALING

- TRANSFORMED TO FACILITATE FOOTBALL CLUB
- USED OCCASSIONALLY FOR EVENTS

LONDON 2012
What becomes clear is that the (financial) effort needed to construct such a big and iconic structure should be exploited and not compromised.

What do you do however, when the host city or region doesn’t require a stadium of this size?
Arles Amphitheatre

Highbury stadium - London

Torre David - Caracas

Conceptual skyscraper, NY

Takara Beautilion

Pueblo Bonito
ARCH. CONCEPT - FUNCTIONAL TRANSFORMATION

Olympic Games

Shell

Bowl

Base

Legacy

Functional catalyst

Transferium

DESIGN
**The Deck // Logistics to Transferium**

1. Shaped to its context.
2. Creates an open relation with Olympic area/Campus.
3. Oval first ring to match Athletic Pitch
4. Dimensioned for parking and logistics

**The Disc // Stands to framework**

1. Ideal viewing lines
2. Repetative segments
3. Creating a literal roundabout under base
PLACEHOLDER will show the result of the conceptual approach
PRIMARY STRUCTURE OF BASE
PRIMARY STRUCTURE OF BASE
CONCEPTUAL SECTION - FREEDOM OF CONSTRUCTION
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CONCEPTUAL SECTION - FREEDOM OF CONSTRUCTION
OLYMPIC MODE
STADIUM EXPRESSION - REFERENCE PROJECTS

ESTÁDIO MUNICIPAL DE BRAGA, BRAGA, PT, 2003

ARCHITECT: EDUARDO SOUTO DE MOURA
CAPACITY: 30 286
USER: SPORTING CLUBE DE BRAGA / UEFA EURO 2004 VENUE

RHEIN ENERGY STADIUM, KÖLN, DE, 2003

ARCHITECT: GERKAN, MARG UND PARTNER
CAPACITY: 49 968
USER: FC KÖLN / UEFA EURO 2008 VENUE
MAIN DESIGN PARAMETERS FOR A STADIUM

80 000 X

CAPACITY (IOC Requirement)

GOOD VIEW LINES (C-value)
STADIUM CONCEPT IN THE OLYMPIC MODE

RING 1.1 - PERMANENT
RING 1.5 - TEMPORARY
RING 2 - TEMPORARY
Assembly of temporary components on permanent casco

Ring 1 & 1.5 - Ring 1.5 change in size throughout the oval shape it follows
STADIUM ORGANISATION - RING 1, RING 1.5 & RING 2

- VIP: 11,226 SEATS
- MEDIA: 3,066 SEATS
- PUBLIC: 65,939 SEATS

TOTAL: 80,231 SEATS
STADIUM SECTIONS - VIP/MEDIA AREA & PUBLIC AREA

\[ C = \frac{D_{\text{min}}(N+R_{\text{min}})}{D_{\text{min}}+T} - R_{\text{min}} = \frac{6800(28+138)}{6800+80,5} - 138 = 26 \text{ cm} \]

\[ C = \frac{D_{\text{max}}(N+R_{\text{max}})}{D_{\text{max}}+T} - R_{\text{max}} = \frac{13600(28+3240)}{13600+80,5} - 3240 = 8,7 \text{ cm} \]

\[ N = 28 \text{ cm} \quad D_{\text{min}} = 6800 \text{ cm} \quad R_{\text{min}} = 138 \text{ cm} \]

\[ T = 80,5 \text{ cm} \quad D_{\text{max}} = 13600 \text{ cm} \quad R_{\text{max}} = 3240 \text{ cm} \]
STADIUM ORGANISATION - BASE

- SERVICE ROAD
- DROP OFF & PARKING VIP
- DROP OFF ATHLETES
- MEDIA AREA AND COMPOUND
- ATHLETES AREA
- FACILITIES
- FOOD & BEVERAGE (COMPOUND)
- VIP PARKING
- SERVICES
- SECURITY
- CIRCULATION SPACE
- LOGISTICS (COMPOUND)
- STORAGE
STADIUM ORGANISATION - VIP LEVEL
STADIUM ORGANISATION - SEGMENT OF VIP LEVEL
1:200
PUT VECTOR BEHIND
THE ØRESUND OLYMPIC STADIUM
THE GAMES HAVE ENDED - WHAT HAPPENS TO THE STADIUM?
THE GAMES HAVE ENDED - BUILDING TRANSFORMATION
TEMPORARY MATERIALS - WHERE DO THEY GO?

The materials used in the stadium are recyclable. That means that in all cases optional are the most sustainable materials chosen in order to reduce the CO2 emission in relation to the event.

The reuse of components on the scale of building segments like the temporary stands or more of the prefabricated concrete stands etc. To the extent possible are standard elements used.

The reuse of components on the scale of building components like a beam, seats etc. To the extent possible are standard elements used.

The materials used in the stadium are recyclable. That means that in all cases optional are the most sustainable materials chosen in order to reduce the CO2 emission in relation to the event.
MEASURES FOR RE-USEABLE COMPONENTS

Bolted connections

Straight Elements

Orthogonal Segments

Curved Stands
REUSE OF ELEMENTS - DISTRIBUTION TO AMATEUR CLUBS IN DK & SE
BUILDING TRANSFORMATION
BUILDING TRANSFORMATION
BUILDING TRANSFORMATION
EMPTY FRAME - READY TO BE INVADED
DIFFERENT DEVELOPMENT SCENARIOS OF THE ØRESUND STADIUM
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DIFFERENT DEVELOPMENT SCENARIOS OF THE ØRESUND STADIUM
LEGACY MODE
THE LEGACY PROGRAM OF THE BUILDING

PROGRAMMATIC REASONING:

• NEED OF TRANSFERIUM & HOUSING

• UPGRADE AND INTRODUCTION OF NEW LOCAL AND REGIONAL FUNCTIONS

• THE MULTIFUNCTIONAL STRUCTURE
INNER SQUARE - TRANSFORMATION
AXO VIEW GROUNDFLOOR

- OLYMPIC MUSEUM & SHOP
- MUSEUM
- LOCAL FUNCTION (STORAGE)
- SUPERMARKET
- LIBRARY (STORAGE)
- PREFORMING ART SCHOOL
- PRIMARY SCHOOL (STORAGE)
- CONVENTION CENTER
- SPORTS CENTER (STORAGE)
THE PUBLIC SPACE - A MULTI FUNCTIONAL SQUARE

Swimming pool/Ice skating rink
Expo
Free
Playground/Mountain
Catwalk
THE PUBLIC SPACE - A MULTI FUNCTIONAL SQUARE
THE PUBLIC SPACE - A MULTI FUNCTIONAL SQUARE
REGIONAL ORIENTATED PUBLIC FUNCTIONS

MUSEUM

CONFERENCE CENTRE

SUPERMARKET

PERFORMING ARTS SCHOOL
Individual

Collective
BOX FILL-INS - RULES AND PRINCIPLES FOR EACH UNIT

TYPICAL SECTION

- Thermal facade
- 7m (2 x 3.5m)
- Ventilation option
- Facade facing intermediate climate (atrium)
- Ventilation with pre-heated air from atrium

The in-fill should always separate the exterior from the atrium.

TYPICAL PLAN

- Building border
- Shafts
SECTION - POSSIBLE FILL-INS OF FRAME
ELEVATIONS
CLIMATIC SCHEME

ATRIUM - Naturally ventilated; chimney effect creates under pressure so hot air rises and escapes. The atrium is operable and controlled by a temperature sensor. It works as a buffer for the housing units.

INTEGRATED SHADING DEVICES - Protects for direct sunlight in summer.

SMOKE EXHAUST - fan used in case of a fire.

PRISMATIC GLASS (Transparent) - Filters the light and ensure good light conditions in the atrium.

GREEN ROOF - Reduces stormwater runoff, collects rain water, insulates (in summer through evaporation), shields roof membranes from intense heat and direct sunlight, the entire roofing system has a longer lifespan than conventional roofs, consumes carbon dioxide and increases the local levels of oxygen and humidity.

PLANTS - consumes carbon dioxide and increases the air quality.

Mechanical ventilation systems - The climate of each of the units on the deck level have their own control unit connected to each their system in the ground level.

EXHAUST AIR - Taking out the used air of the tempered zones (marked with orange).

AIR OUTLET ENSURING AIRFLOW - The exhaust air from the non-public parking, the technical spaces and the function under the deck is blown out in the adjacent parking area directing and creating an airflow. The air is blown out through the air chimneys above the inner street.

FRESH AIR INLET - providing the tempered zones (marked with orange) with fresh air.

Electricity from city supply.

Water from city supply.

City sewer system.

GREY WATER TANK - Rain water (grey water) from the deck and the roof top is stored and used for landscape irrigation.

Heat exchanger - The fresh air is heated by the used air of the function under the deck.
Initiative: Collective, 4 households
Housing sizes: +/- 4 x 50m²

Initiative: Collective, 2 households
Housing sizes: +/- 2 x 100m²

Initiative: Individual, 1 household
Housing size: 158m²
DEVELOPMENT TYPE 1 - 4 APARTMENTS PER UNIT

Initiative: Collective, 4 households

Housing sizes: +/- 4 x 50m²
DEVELOPMENT TYPE 1 - 4 APARTMENTS PER UNIT

Initiative: Collective, 4 households

Housing sizes: +/- 4 x 50m²
DEVELOPMENT TYPE 2 - 2 APARTMENTS PER UNIT

Initiative: Collective, 2 households

Housing sizes: +/- 2 x 100m²
Initiative: Collective, 2 households

Housing sizes: +/- 2 x 100m²

DEVELOPMENT TYPE 2 - 2 APARTMENTS PER UNIT

96m²  104m²
DEVELOPMENT TYPE 3 - 1 APARTMENT PER UNIT

Initiative: Individual, 1 household

Housing size: 158m²

108m²

50m²
DEVELOPMENT TYPE 3 - 1 APARTMENT PER UNIT

Initiative: Individual, 1 household

Housing size: 158m²
HOUSING INTERIOR VIEW TOWARDS CENTRAL SQUARE
IF WE TAKE A STEP BACK...
REFLECTION - INTER-RELATION OF DIFFERENT SCALES

‘we are creating a destination not just for the big day, but for every day and for everyone’