



ADAPTIVE REUSE OF UNDERGROUND CAR PARKS

Research: Raf Ilsbroekx & Maarten Van Acker

photo © raf ilsbroekx



University of Antwerp
Research Group for
Urban Development

Presentation: Raf Ilsbroekx, 15 MARS 2022

at Cyber Agora #6 Underground Urbanism (ISOCARP/ITACUS)

4 ELEMENTS | THE CAVE, THE RAMP, THE PAVILION AND THE SURFACE

PRESENTATION

1. ANALYSIS

_MORPHOLOGY

_(HYDRO)GEOLOGY

2. ADAPTIVE REUSE

_(TACTICAL) CASCO

_ARCHITECTURAL

_SYSTEMIC

3. REFLECTIONS



The Cave



The Ramp



The Pavilion



The Surface

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UNDERGROUND CAR PARKS | THE CAVE

PRESENTATION

1. ANALYSIS

MORPHOLOGY

(HYDRO)GEOLOGY

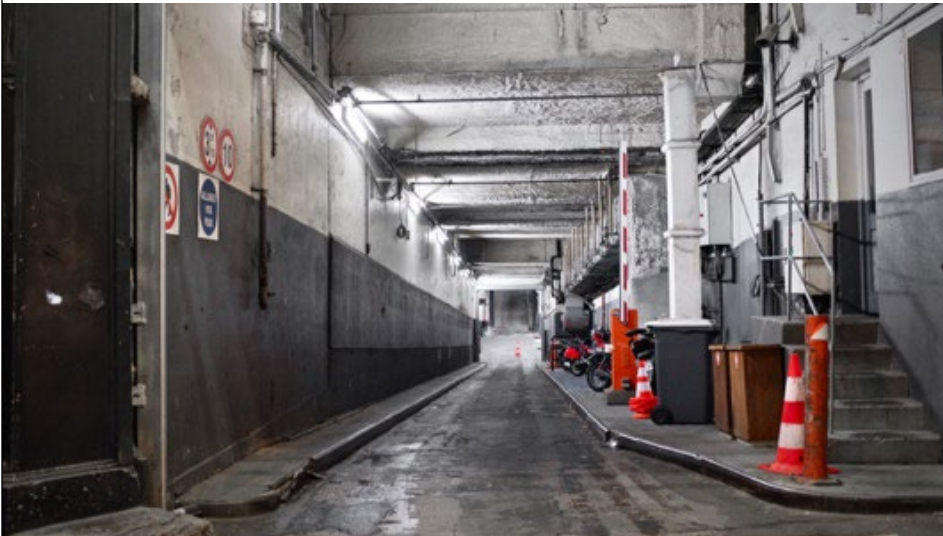
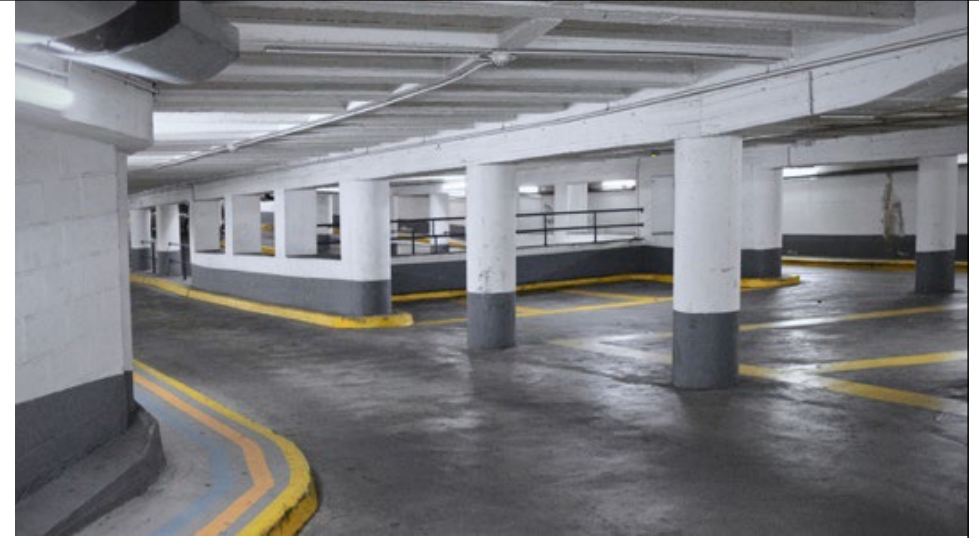
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SYSTEMIC

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UNDERGROUND CAR PARKS



photo © raf ilsbroekx

LIMITATIONS & RAW POTENTIAL

- Limited dialogue with the urban scenery above (monofunctional)
- Limited heights (approx. 2.10m) & daylight entrance: (un)safety perception
- Limited load capacity intermediate floors: 2kN/m^2 (e.g. 10kN/m^2 , supermarket)
- Potential: 'bunker' characteristics (buffer sounds/goods/temperatures/...) & underground topography (city metabolism: in relation to water management, geothermal, V2G energy networks)

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REMARQUE: HYDROGEOLOGICAL CONDITIONS

Study area (Flanders & the Netherlands):

- high groundwater tables

-> multilevel underground car parks:

⇒ In practice: continuous drainage & pumping

- repercussions for potential future underground residential uses
- adjacent ecological & stability imbalance (cf. constructions, watering trees)

Cf. '*Metodo Milano*', 1950s technique (i.e. creating a dry basin by semi-watertight 'slurry walls' reaching deeper clay layers + additional pumping)



photo © unknown

“WHAT CAN BE DONE WITH URBAN UNDERGROUND CAR PARKS?”

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0_PARKING /
BUSINESS AS USUAL

1_CASCO /
TACTICAL

2_RESIDENTIAL /
ARCHITECTURAL

3_METABOLISM /
SYSTEMIC

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1. LIGHT INTERVENTIONS | (BEST) PRACTICES

PRESENTATION

1. ANALYSIS

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photo © unknown



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Running track:

Agricultural programme:

Commercial showroom:

Temporary cultural activities:

Integrated infrastructure at A4 Schiedam, The Netherlands

La Caverne, Paris

Hafele, Shanghai (AIM architects, 2015)

Bold Tendencies, Peckham London

1. LIGHT INTERVENTIONS | INSPIRATION

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photos © unknown

Bicycle parking: *Kleine-Gartmanplantsoen/Leidseplein* Amsterdam (Zwarts & Jansma, 2017-2021)

Underground nordic ski facilities: Planica Nordic Center, Slovenia (StVAR, 2015)

‘Box in box’: Lhoas & Lhoas, 2005 (Erna Hecey Gallery, Brussel) & Daniel Buren, 2016

1. LIGHT INTERVENTIONS CASE MECHELEN | RESEARCH BY DESIGN

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Underground urban distribution hub: *'Vlieten revisited'*, incl. cargo bike distribution (student work UA)
Mixed mobility Concept: Shared Mobility + Mobility As A Service + Vehicle to Grid (student work UA)
Vehicle to Grid: 3MegaWatt at Johan Cruijff Arena, Amsterdam

2. LARGE INTERVENTIONS | INSPIRATION 'LIGHT ENTRANCE'

PRESENTATION

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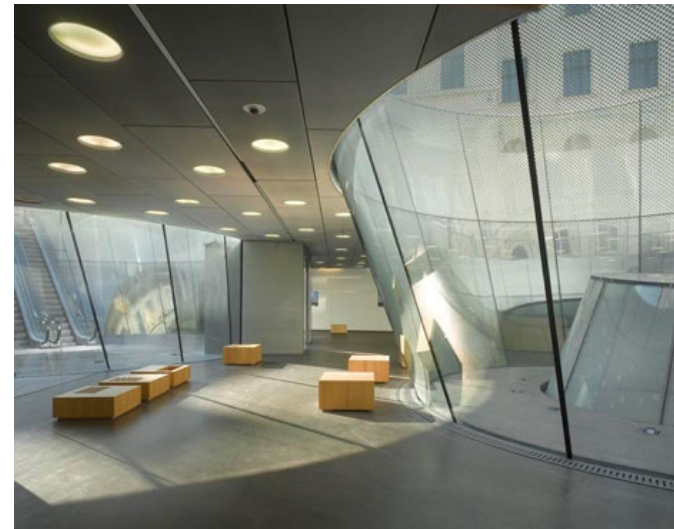
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photos © unknown

Tirpitz Museum, Blavand Danmark (BIG, Bjarke Ingels 2017)

Joanneum Museum extension, Graz (Nieto Sobejano arquitectos/eep architecten, 2012)



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2. LARGE INTERVENTIONS | INSPIRATION 'FOLDED LANDSCAPES'

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Sloping landscape design at Hellerup Gymnasium, BIG 2013 © BIG

'Dog-eared' entrance car park/supermarket, *Museumplein* Amsterdam (Sven-Ingvar Andersson, 1999)

Patio landscape at Moesgaard Museum, Højbjerg (Henning Larsen, 2014)

2. LARGE INTERVENTIONS | PUBLIC TRANSPORT + COMMERCIAL

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photo 1973 © unknown



photo © raf ilsbroekx

Gare Châtelet-Les Halles: 750.000 daily passengers!
+ Commercial programme Les Halles



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2. LARGE INTERVENTIONS | LE VOLCAN, LE HAVRE

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Urban dialogue: Le Volcan (by Oscar Niemeyer, 1982)
vs. Post-war city renewal (by Auguste Perret, 1945-1964)

2. LARGE INTERVENTIONS CASE STUDY | P ALBERTINA BRUSSELS

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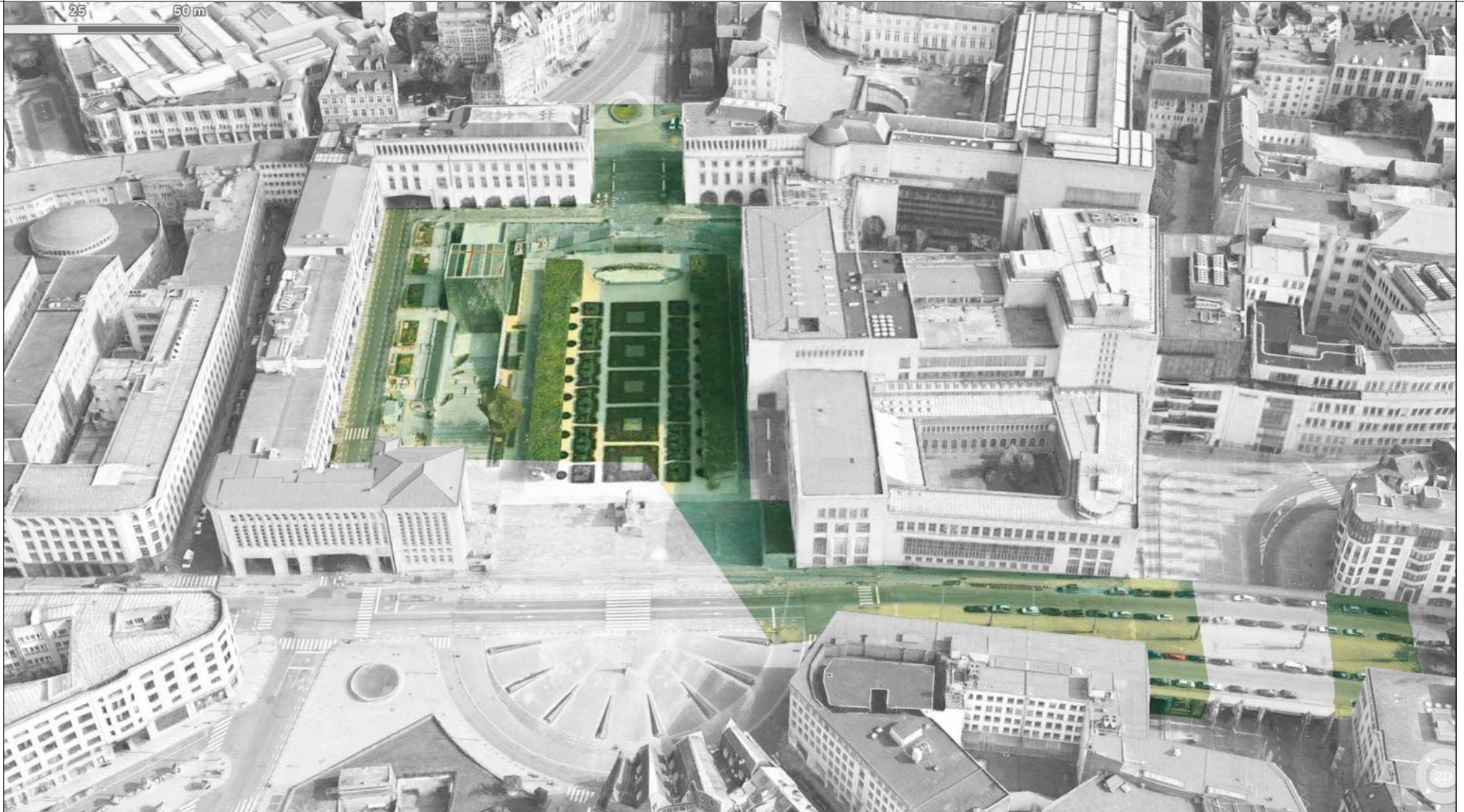
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Source: Apple Maps

Integrated underground construction since 1957-1958

2. LARGE INTERVENTIONS | P ALBERTINA -> SQUARE MEETING CENTRE

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Removal of intermediate floor plates
(cf. limited load capacity & asbestos)



2008-2009



2008-2009



TODAY

photos © unknown

Transformation car park -> Conference Spaces (A2RC, 2008-2009)

2. LARGE INTERVENTIONS | P ALBERTINA -> SQUARE MEETING CENTRE

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Reflection: Private Partners vs. Management Public Space ?

2. LARGE INTERVENTIONS | P ALBERTINA -> SQUARE MEETING CENTRE

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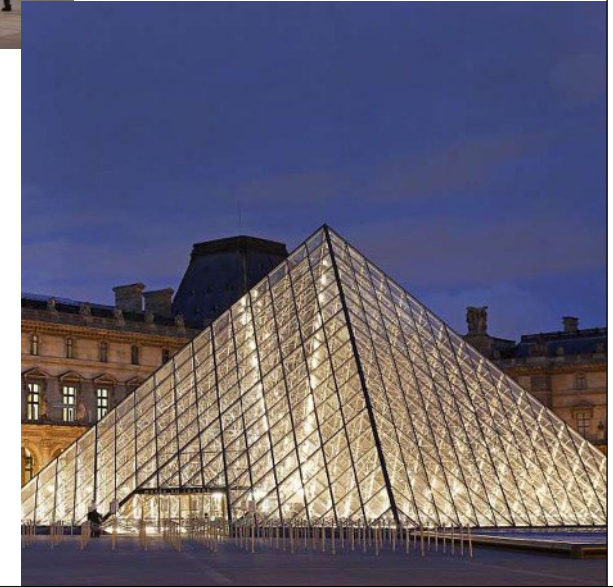
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Reflection: Private Partners vs. Management Public Space ?

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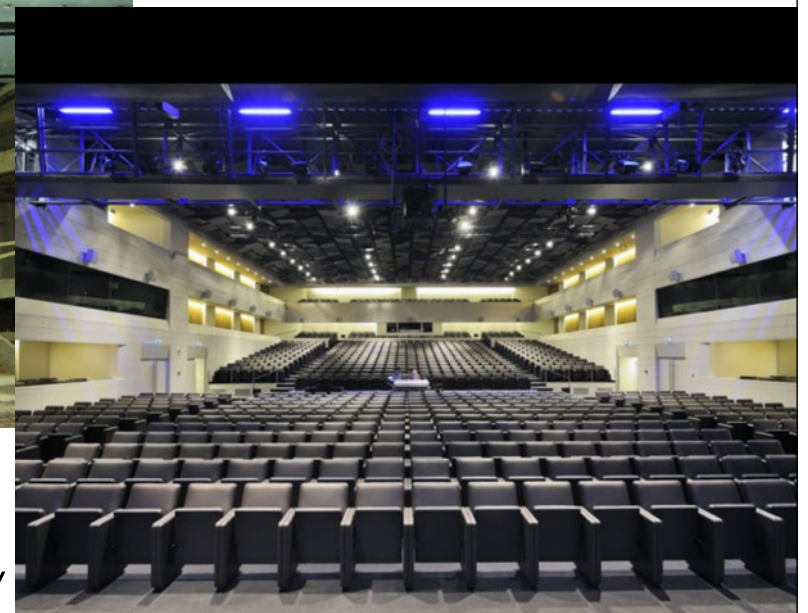


1962



2007

TODAY



photos © unknown

Integrated underground construction since 1957-1958
(Including an underground theatre)

2. LARGE INTERVENTIONS | BEST PRACTICES

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Center for Renhold, Hauser Plads, Copenhagen
(Polyform, Karres & Brands, 2013)



photos © unknown

Transformation underground car park -> offices for city's cleaning services
(incl. parking space for 13 trucks)

2. LARGE INTERVENTIONS CASE MECHELEN | RESEARCH BY DESIGN

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Underground Car Park *Kathedraal* -> Columbarium and memorial spaces
(student work Master Architecture)

3. CITY METABOLISM | INSPIRATION '(RAIN)WATER MANAGEMENT'

PRESENTATION

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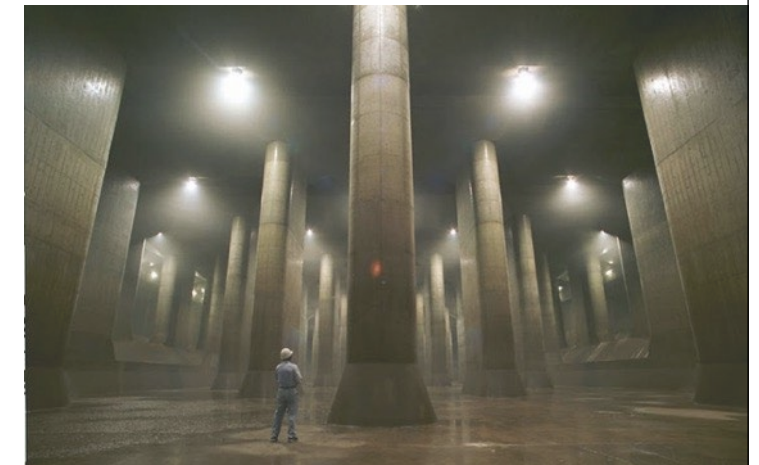
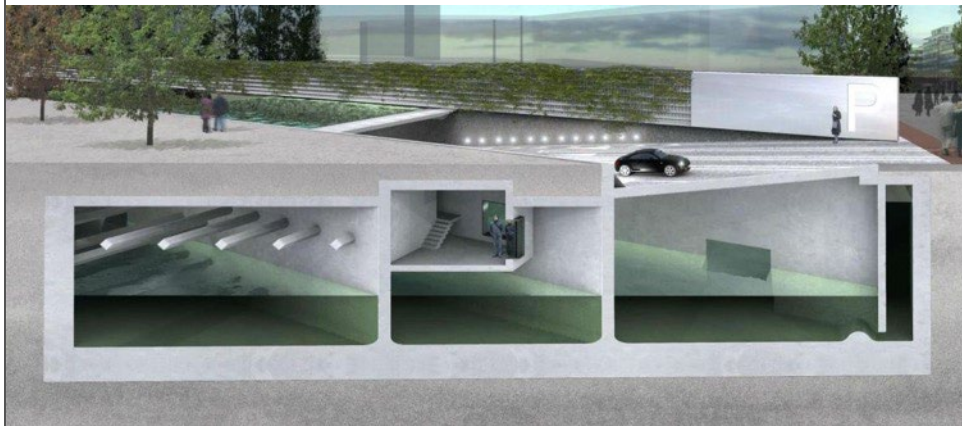
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Paris, *Réservoirs de Passy* (19th century, Eugène Belgrand), urban water networks

photos © unknown

Neighbourhood scale: climate adaptation & recreation, *Bentheemplein* Rotterdam (De Urbanisten)

Museumgarage, Rotterdam

'Metropolitan Area Outer Underground Discharge Channel', Tokyo, 1992-2006

3. CITY METABOLISM | INSPIRATION DISMANTLING & 'RENATURING'

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Les Nefs, Nantes

Parking, Alken

3. CITY METABOLISM CASE MECHELEN | RESEARCH BY DESIGN

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Synergy of urban water management, all season public space, cooled data centres and an urban heat network (student work Master Architecture)

3. CITY METABOLISM CASE MECHELEN | RESEARCH BY DESIGN

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Deepened Urban Park: Tackling climate change and loss of biodiversity

SOCIOLOGICAL REFLECTIONS

Through a Public Space lens (Benn & Gaus, 1983)

Underground Car Parks = Strategic locations in Public Space

=> (i) Interest: Who benefits?

=> (ii) Access: To Whom available?

=> (iii) Agency: Who manages?

- Today:
 - Monofunctional use (cf. interest & access)
 - Concessions up to 50 years (privatized management)
- Future pressures: neoliberal discourse?
 - (Semi-)privatization of public space vs. genuine public space?
 - Speculation on 'sub-estate' (cf. strategic locations)
 - Commodification of public space?

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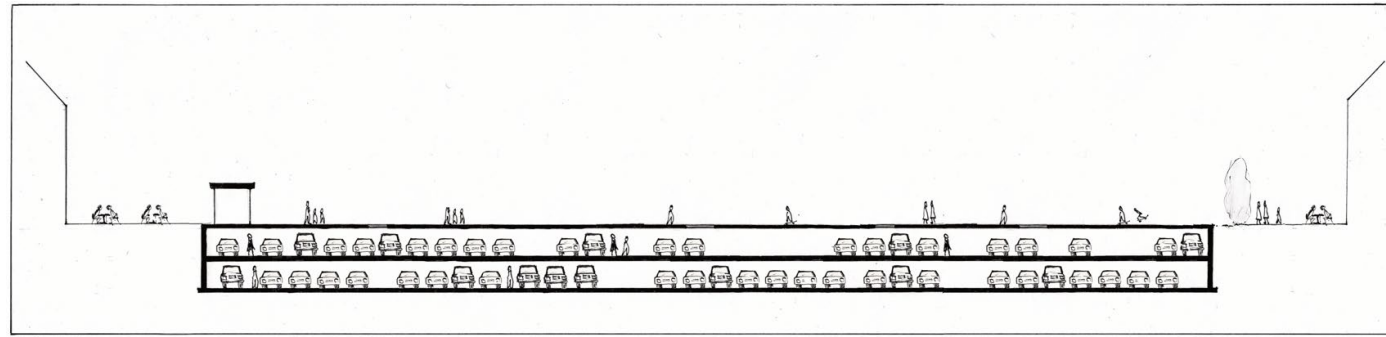
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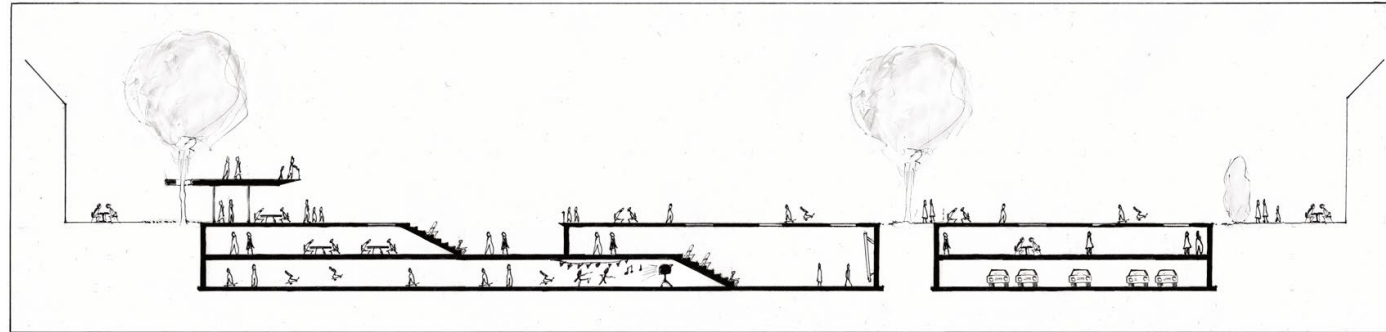
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DISCUSSION

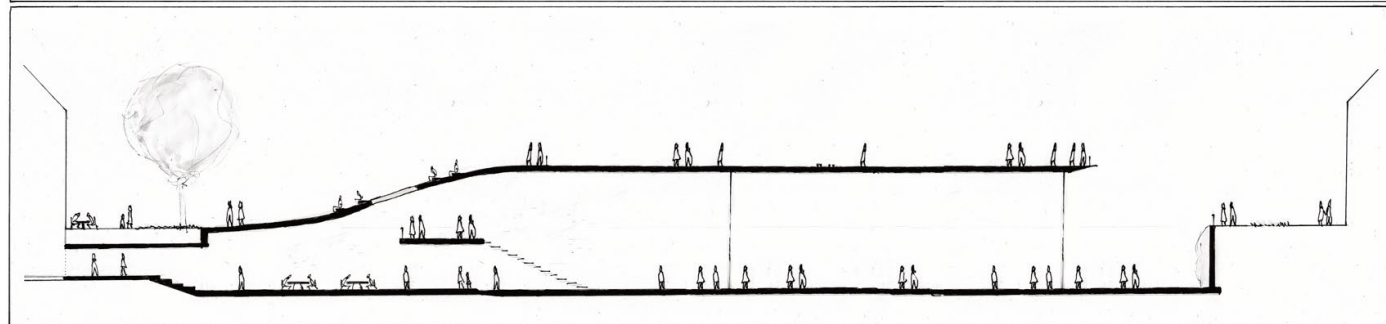
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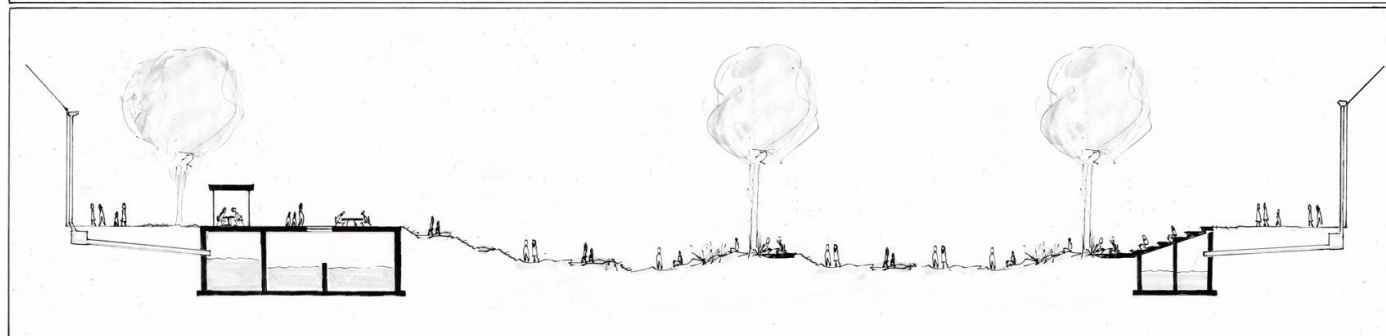
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