URBAN TOMOGRAPHY: GRAPHICALLY EXPLORING THE URBAN REALM: A FORM OF AUGMENTED SECTIONING

drs. architect tomas ooms
prof. dr. Johan Verbeke

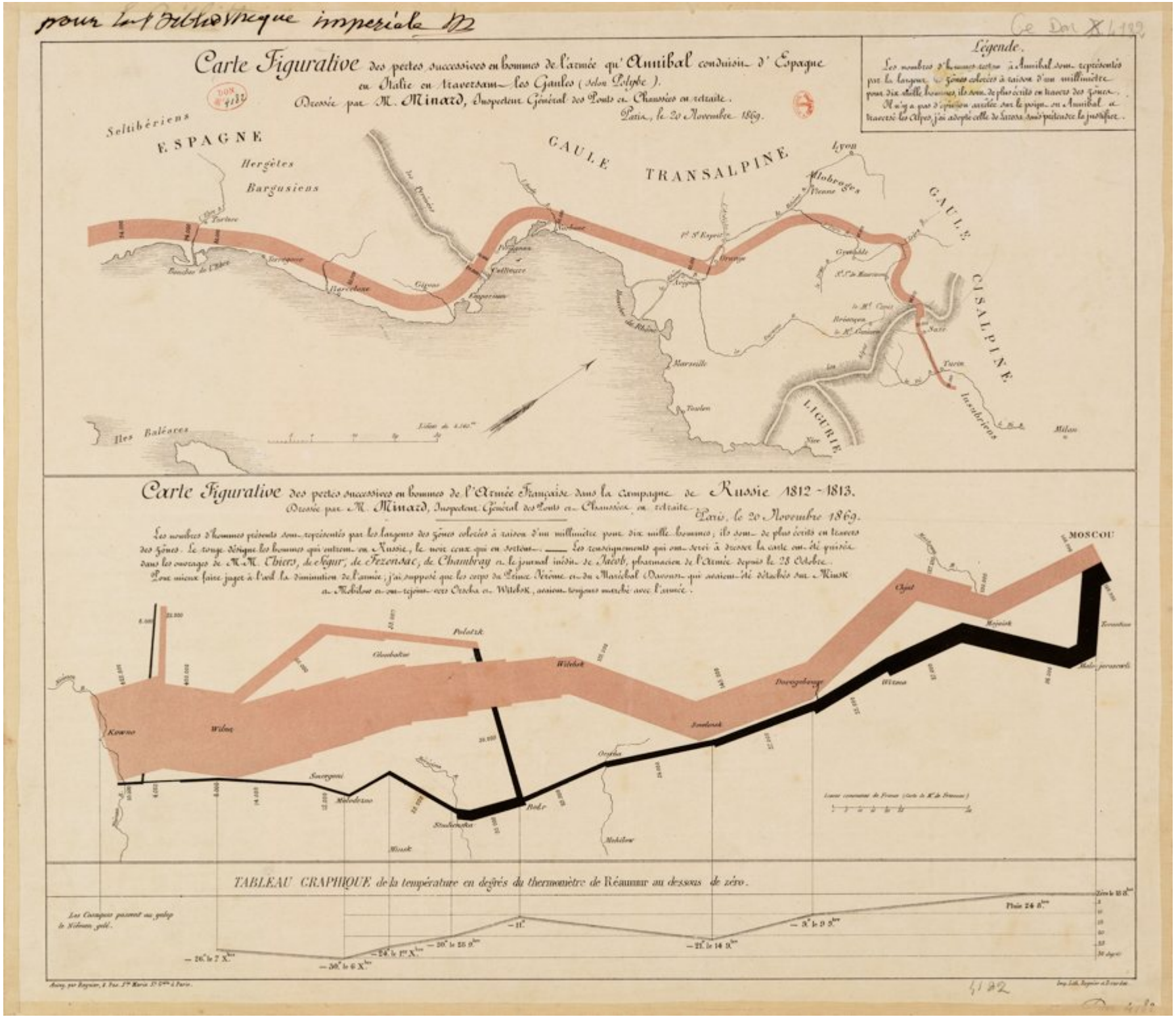
Faculty of Architecture KUL (BE)

presented at the:
third international conference
global dwelling
Manchester (UK)
2309 2016

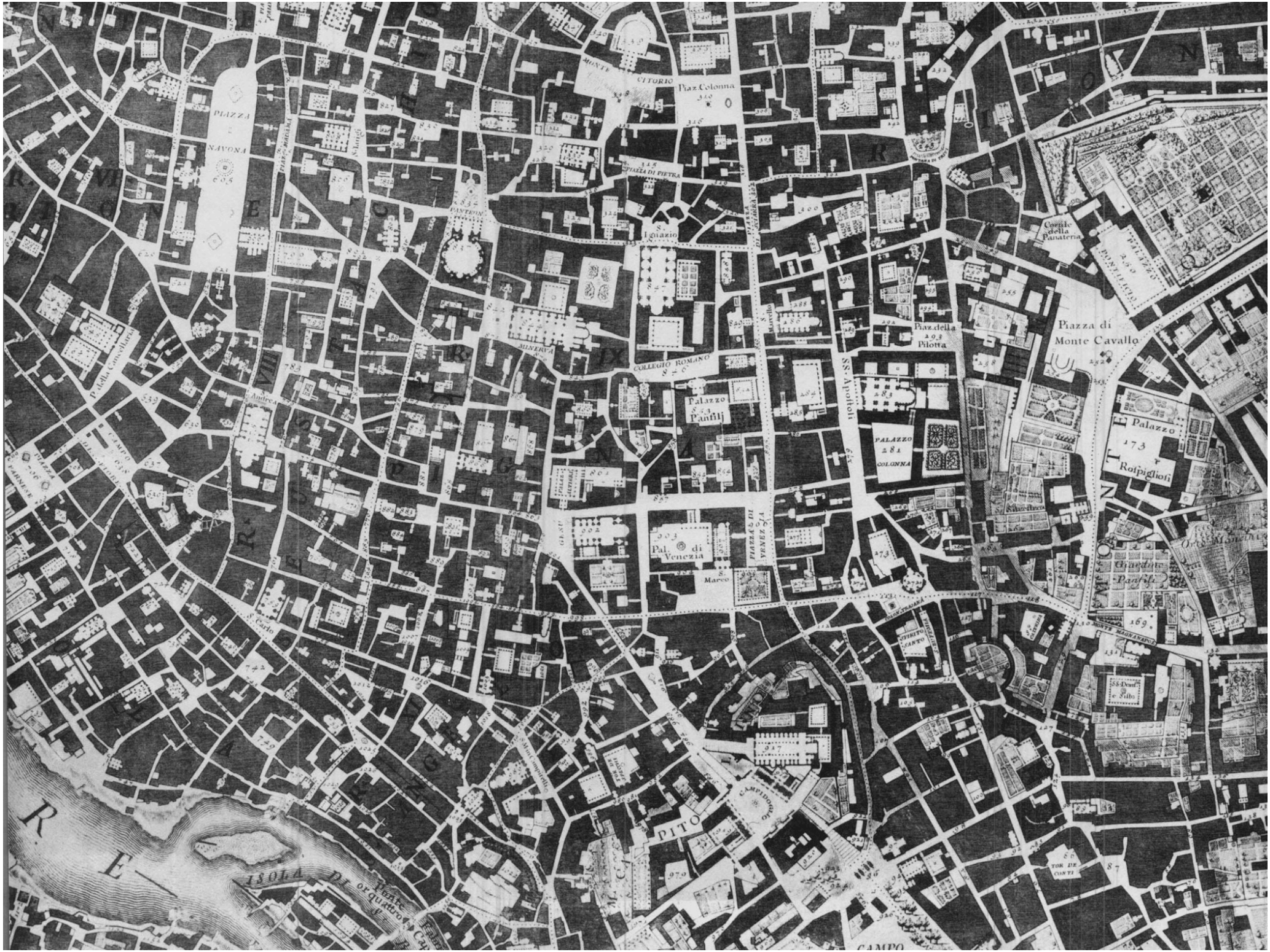
“space is inherent in a plan but visual in a section”

Paris 1995, Nasrin Seraij

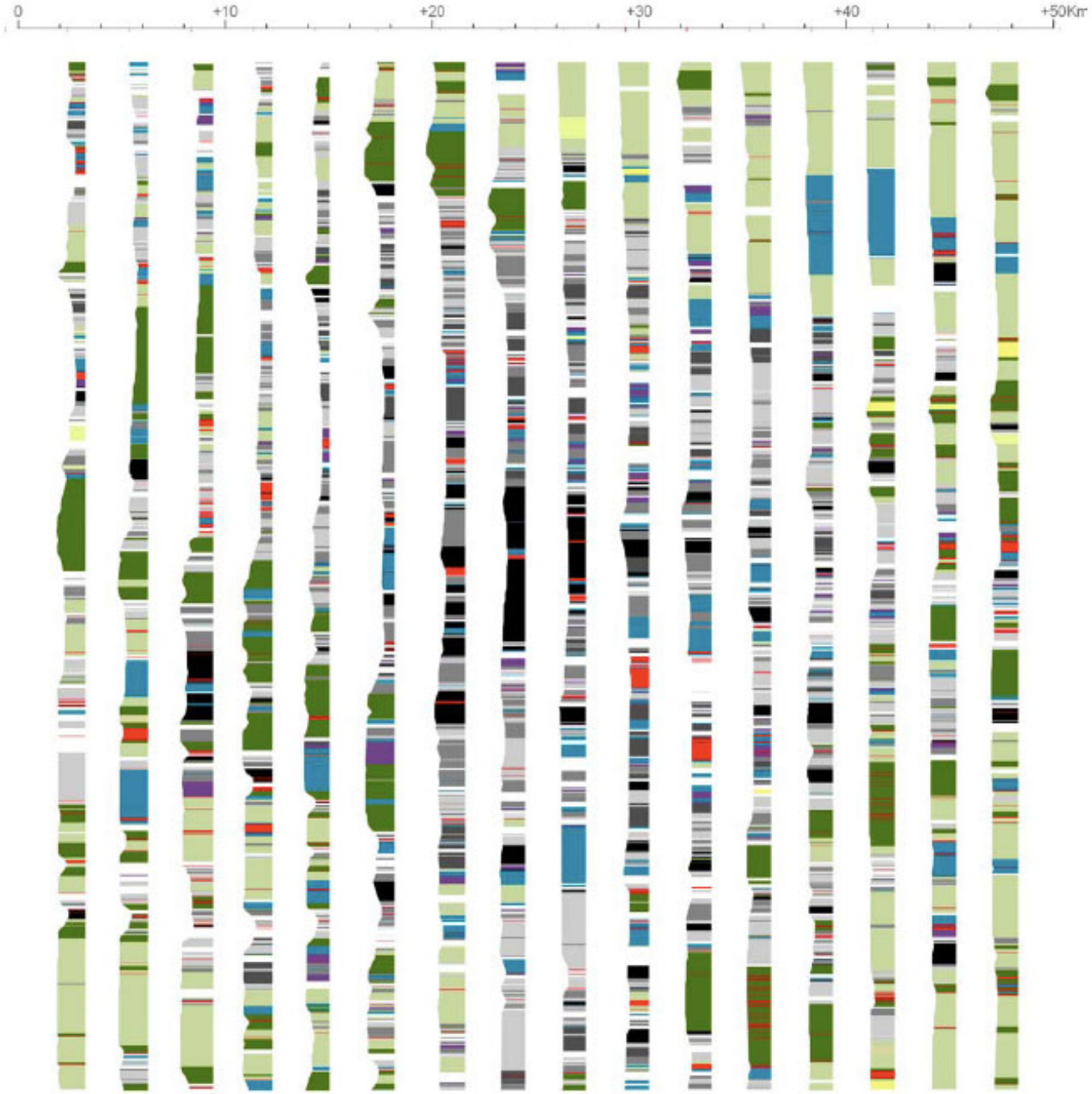
John-Snow
cholera-map
1854


Carte Figurative des pertes successives en hommes de l'armée qu'Annibal conduisit d'Espagne en Italie en traversant les Gaules (selon Polybe).
Dressée par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite.
Paris, le 20 Novembre 1869.
Légende.
Les nombres d'hommes restant à Annibal sont représentés par la largeur des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en travers des zones.
Il n'y a pas d'opinion arrêtée sur le point où Annibal a traversé les Alpes, j'ai adopté celle de Lacroix dont je crois la justifier.
Seltibériens
ESPAGNE
Hergètes
Bargusiens
GAULE TRANSALPINE
GAULES CISALPINE
Lyon
Allobroges
Vienne
Grenoble
Gap
Briançon
Suse
Turin
Insubriens
Milan
Marseille
Toulon
LIGURIE
Nice
Iles Baléares
Tortose
Tarragone
Barcelone
Gigean
Emporium
Ruscino
Toulouse
Narbonne
Vaison
Orange
Arles
Valence
Vienne
Bouches du Rhône
Rivière du Rhône
Les Pyrénées
Carte Figurative des pertes successives en hommes de l'Armée Française dans la campagne de Russie 1812-1813.
Dressée par M. Minard, Inspecteur Général des Ponts et Chaussées en retraite.
Paris, le 20 Novembre 1869.
Les nombres d'hommes présents sont représentés par les largeurs des zones colorées à raison d'un millimètre pour dix mille hommes; ils sont de plus écrits en travers des zones. Le rouge désigne les hommes qui entrent en Russie, le noir ceux qui en sortent. — Les renseignements qui ont servi à dresser la carte ont été puisés dans les ouvrages de MM. Thiers, de Ségur, de Fezensac, de Chambray et le journal inédit de Jacob, pharmacien de l'Armée depuis le 28 Octobre.
Pour mieux faire juger à l'œil la diminution de l'armée, j'ai supposé que les corps du Prince Jérôme et du Maréchal Davoust qui avaient été détachés sur Minsk et Mohilow et ont rejoint avec Oudinot et Witebsk, avaient toujours marché avec l'armée.
MOSCOU
Polotsk
Witebsk
Smolensk
Dorogobouge
Wiazma
Mojaisk
Gjatz
Kowno
Wilna
Sacrgoni
Molodezno
Studienska
Minsk
Bobr
Orscha
Mohilow
Smolensk
Tarantino
Moscou
TABLEAU GRAPHIQUE de la température en degrés du thermomètre de Réaumur au dessous de zéro.
Les Cosaques passent au galop le Niémen gelé.
— 26° le 7 X.bre
— 30° le 6 X.bre
— 24° le 1er X.bre
— 30° le 25 9.bre
— 11°
— 21° le 14 9.bre
— 3° le 9 9.bre
Pluie 24 8.bre
Dégel le 13 8.bre

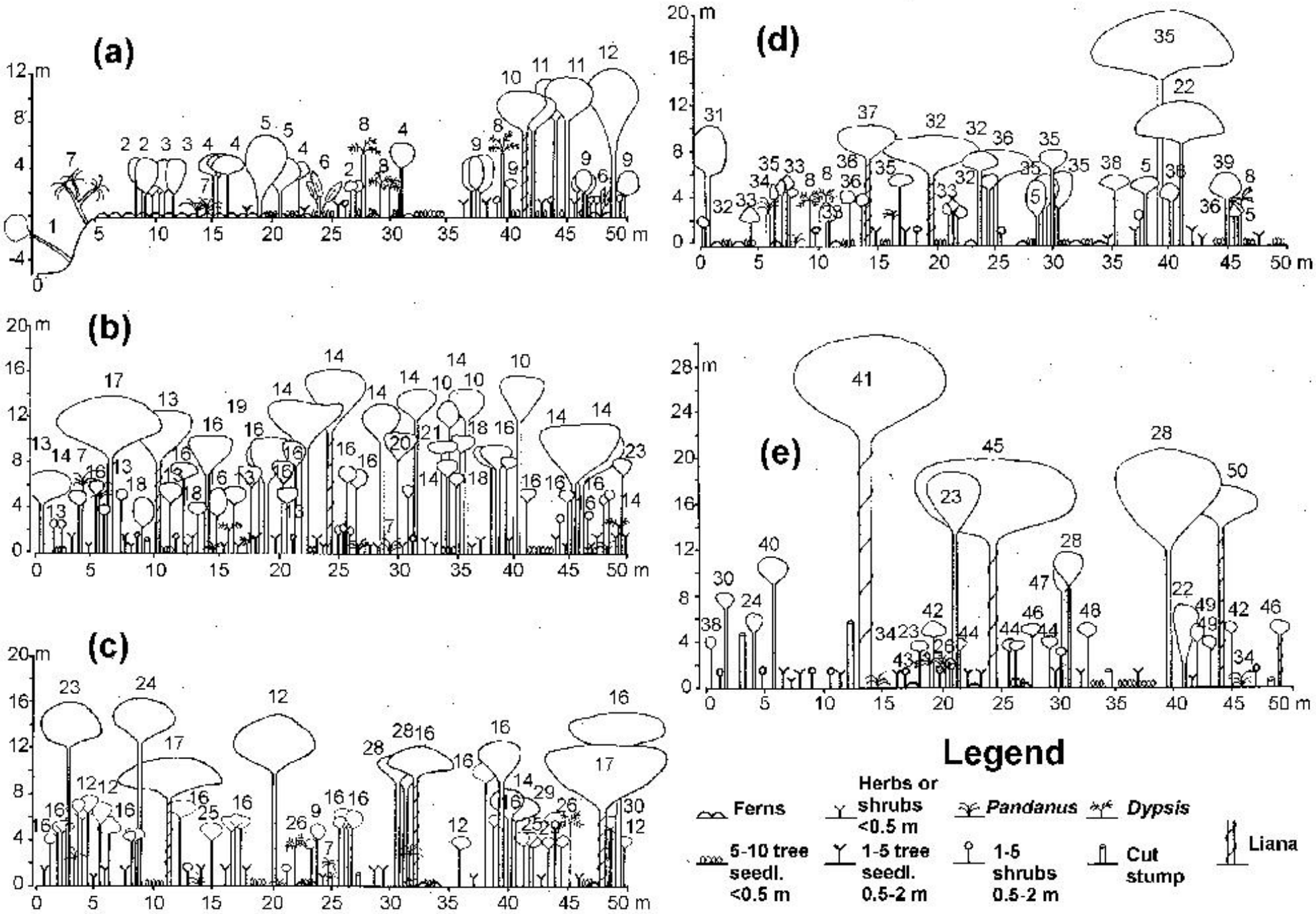
MINARD Map


MONTE CITORIO
Piaz. Colonna
PIAZZA NAVONA
PIAZZA DI PIETRA
PANTEON
S. Ignazio
COLLEGIO ROMANO
MINERVA
Palazzo Pamfilj
Pal. di Venezia
S. Marco
PIAZZA DI VENEZIA
SS. Apostoli
PALAZZO 281 COLONNA
Piaz. della Pilotta
Piazza di Monte Cavallo
Palazzo 173 Rospigliosi
Giardino Pamfilj
Cosmo della Panateria
PONTEFICIO SEMINARIO
P. della Cancellaria
S. Carlo
ISOLA DI
CAMPIDOGLIO
PITO
TOR DE' CONTI
CAMPO

Studio 08 bernardo secchi, paola viganò
la ville "poreuse": état d'avancement du chantier 2



La Ville Poreuse
Secchi-Vigano
2011



Flora transect

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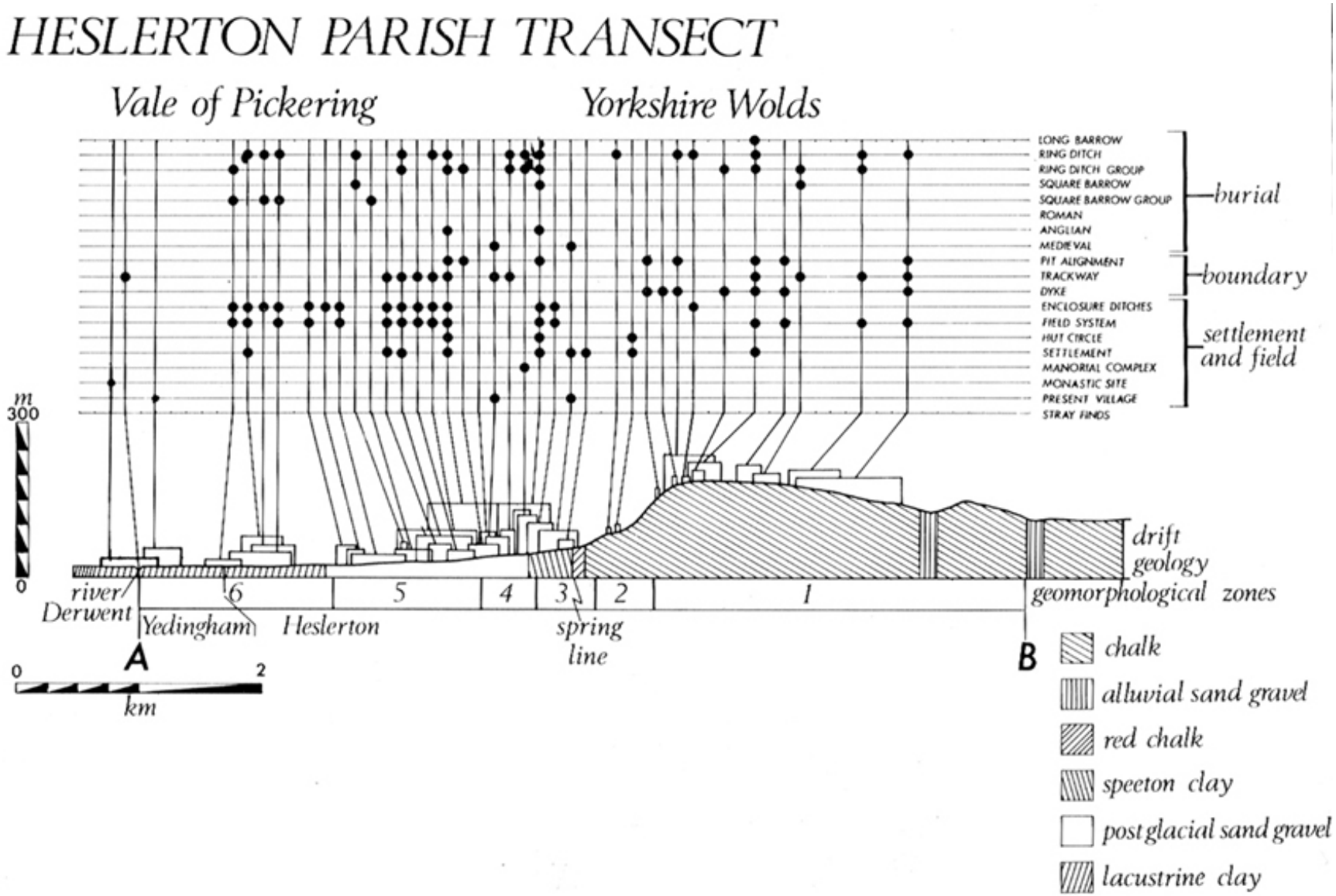

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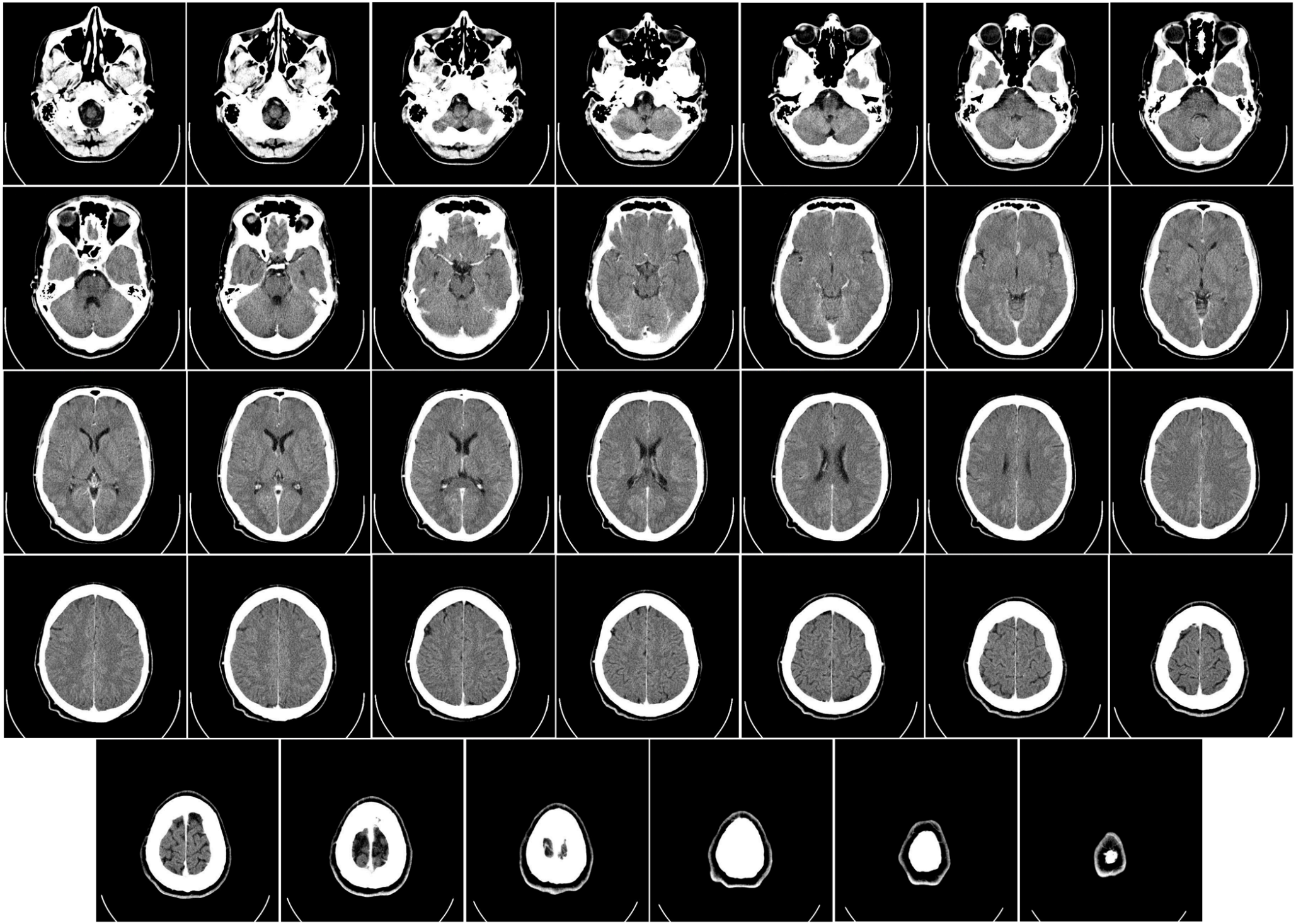

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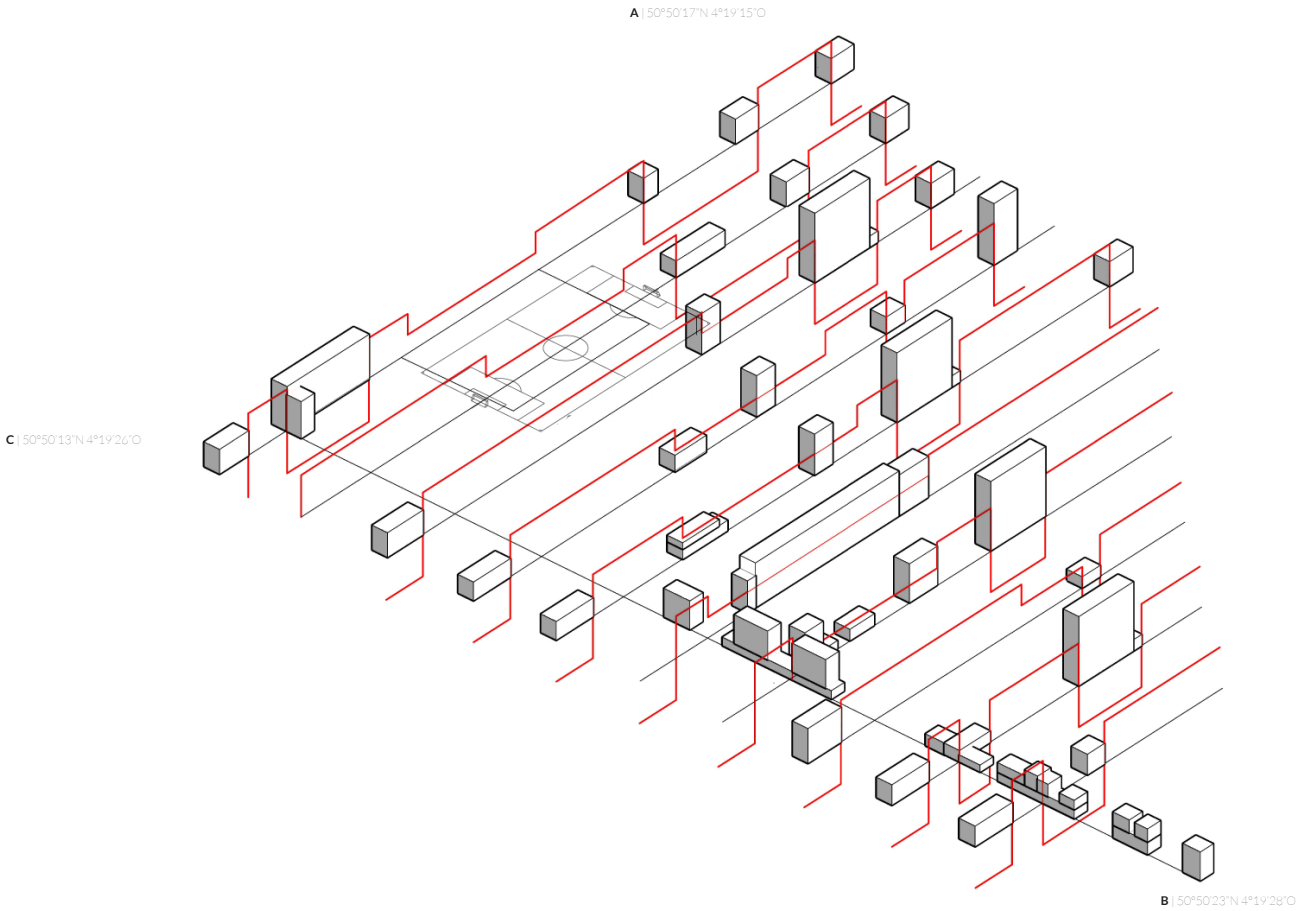
URBAN TOMOGRAPHY

01 | SPATIAL HIERARCHY PRIVATE TO PUBLIC GRAPHIC



PRIVATE VERSUS PUBLIC

Cureghem

Anderlecht, Brussels

Making sections each 45 m through the plot. Each section cuts through the most important zones.

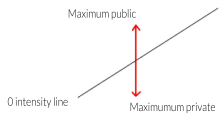
The section lines were taken as zero intensity lines, equal private as public. For each section a line was generated, highlighting the intensity of public or private zones through the plot.

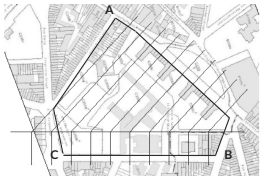
By highlighting the buildings and making the front black, the graphic became stronger.

The footballfield is drawn to have a point of orientation.

LEGEND:

Private versus public Graphic





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Delvaux Kwinten

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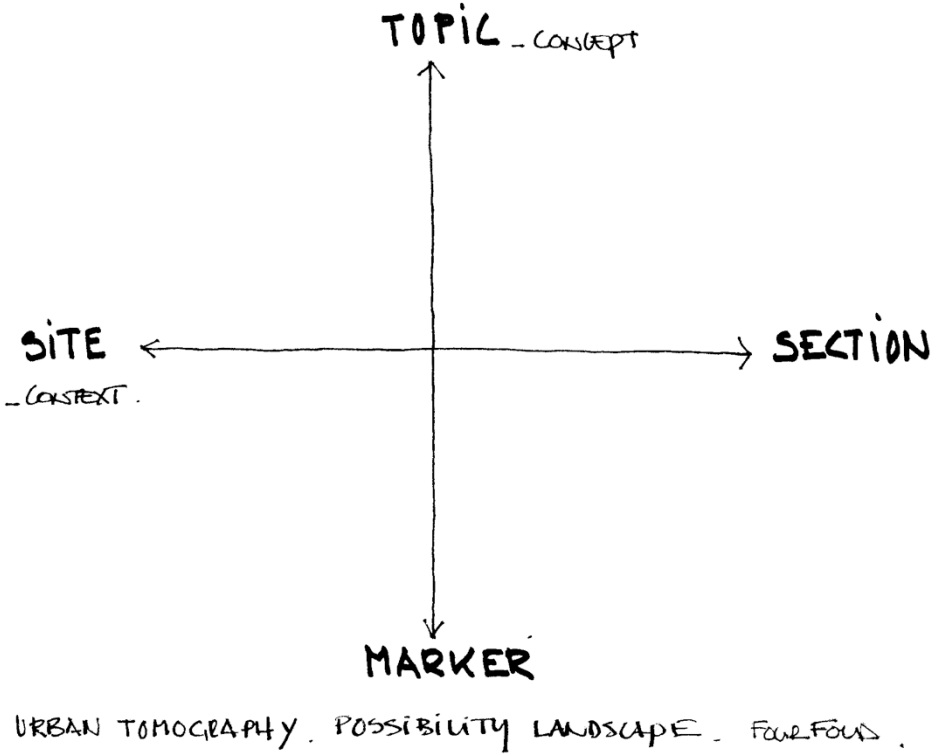
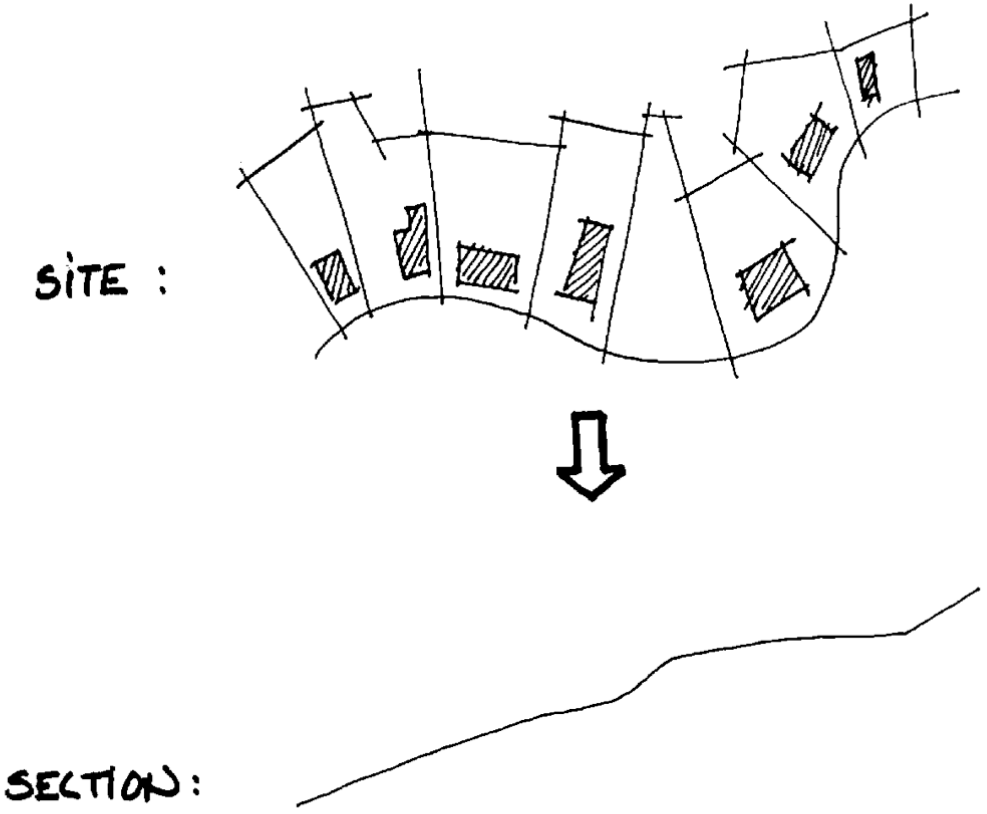


gear or engine of the Urban Tomography


SITE :
SECTION :

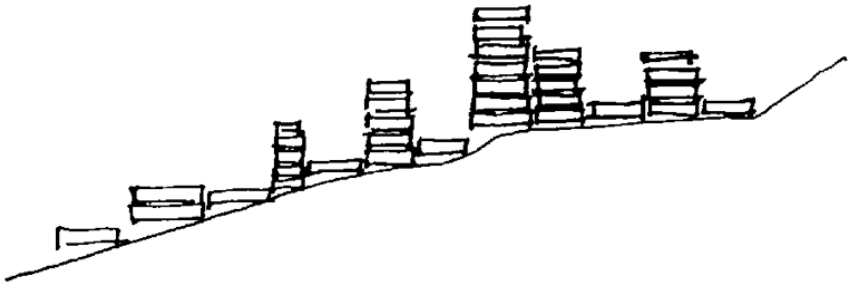
TOPIC : VISUAL PERMEABILITY : DEPTH OF VIEW.

MARKER :

LOW PERMEABLE : LIMITED DEPTH OF VIEW

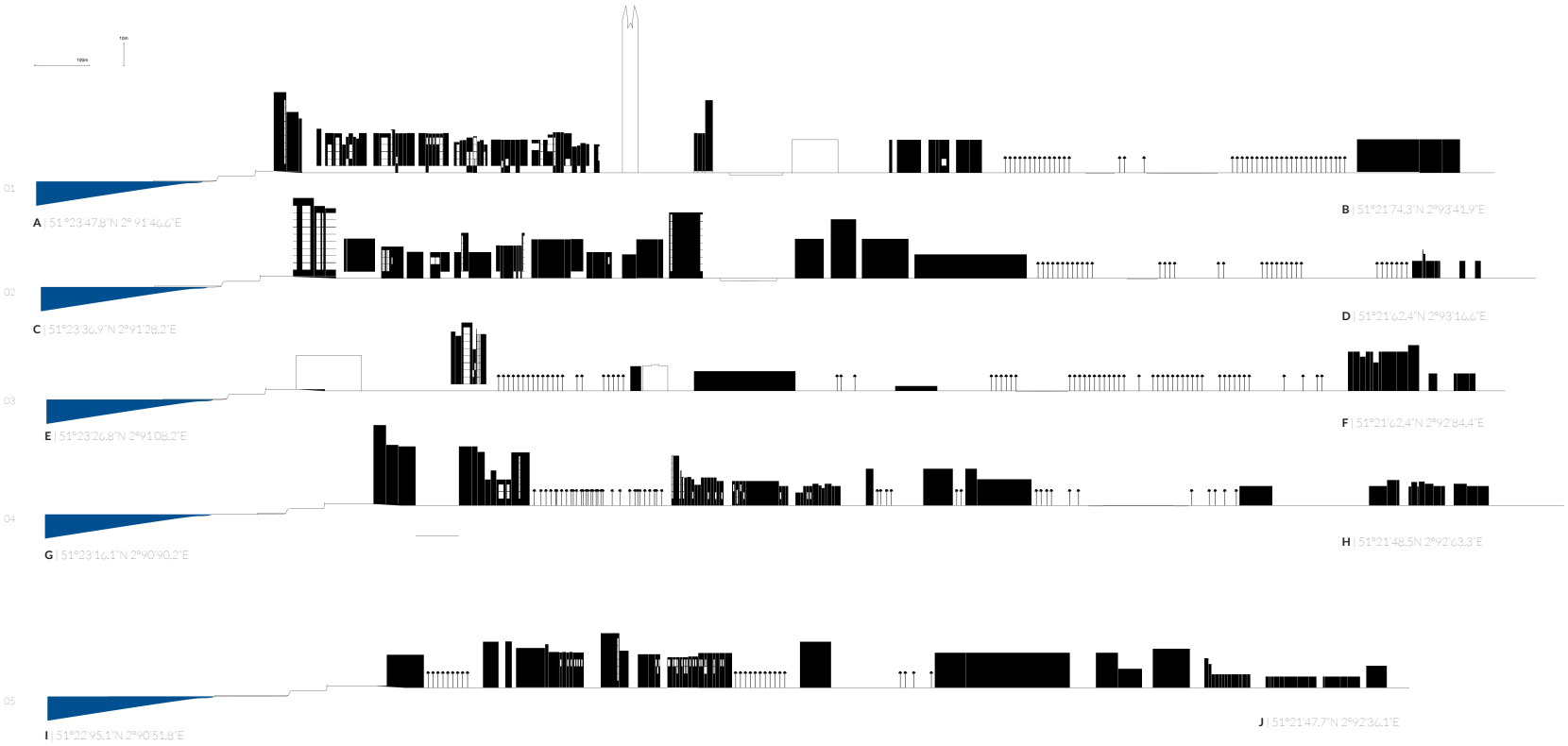
HIGH PERMEABLE : LARGE DEPTH OF VIEW.

URBAN
TOMOGRAPHY



URBAN TOMOGRAPHY

01 | SECTIONS FROM A BREAKWATER TO THE QUEEN ASTRID AVENUE



Soft Edges

Ostend

Belgium

In Ostend, soft edges are rare. The streets and seawall are overshadowed by tall apartments and buildings. The heigt of the building is four times the width to emphasize this.

Five lines are drawn, the starting point is always a seawall. Five sections are made , starting from the sea to the queen Astrid avenue, through Ostend. The contours of the buildings are drawn as black volumes.

Looking for the soft edges, an analysis is made through these sections. The white dots on the black buildings represent the number of balconies. The balconies are a part of the identity of Ostend as a (touristic) beach town. The white space at the bottom of the buildings are public places, as restaurants, cafes, stores,...
In Ostend, the balconies are soft edges by way of making the big facades more interactive and less closed. It provides the opportunity to bring (and show) the life of the inside to the outside. Remarkably, the deeper you penetrate Ostend, the lower and more closed the buildings become.

The first part of the section, the breakwater, the sand and the seawall, are a soft edge as well.

LEGEND:

- 1 buildings
- 2 restaurants, cafes, stores, public spaces
- 3 balcony
- 4 the sea

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Vervaet Jana

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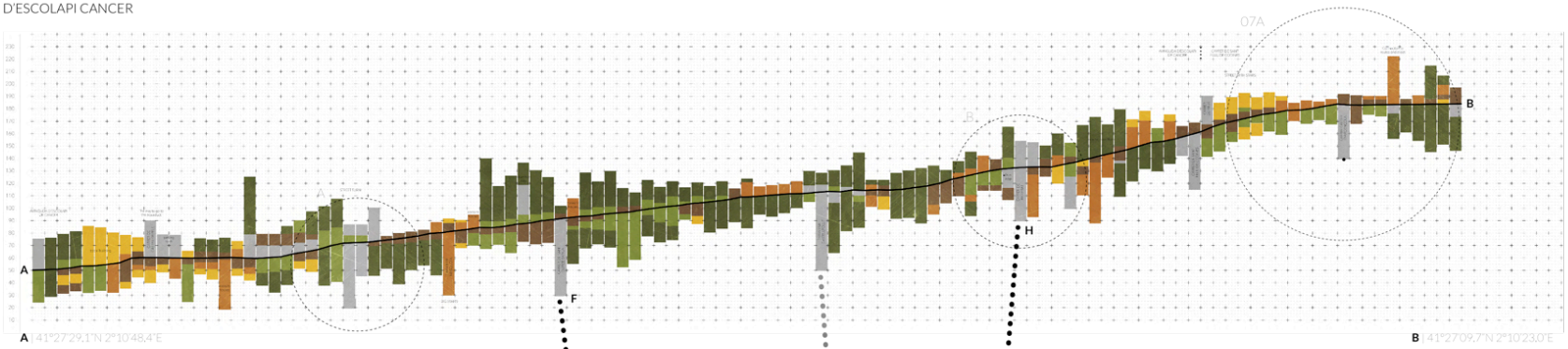
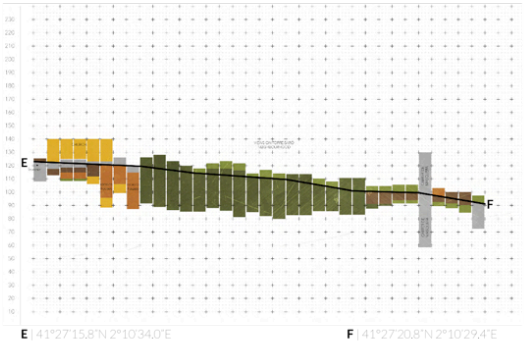
URBAN TOMOGRAPHY

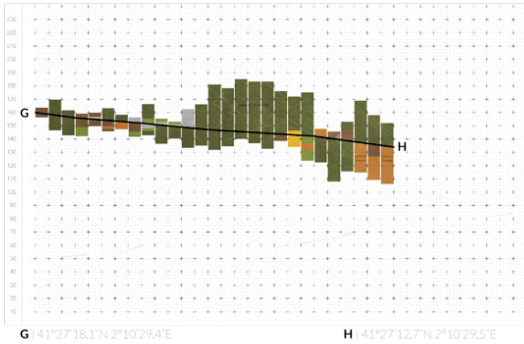
01 | SECTION THROUGH AVINGUDA D'ESCOLAPI CANCER



03 | SECTION THROUGH CARRER DE SAFAJA



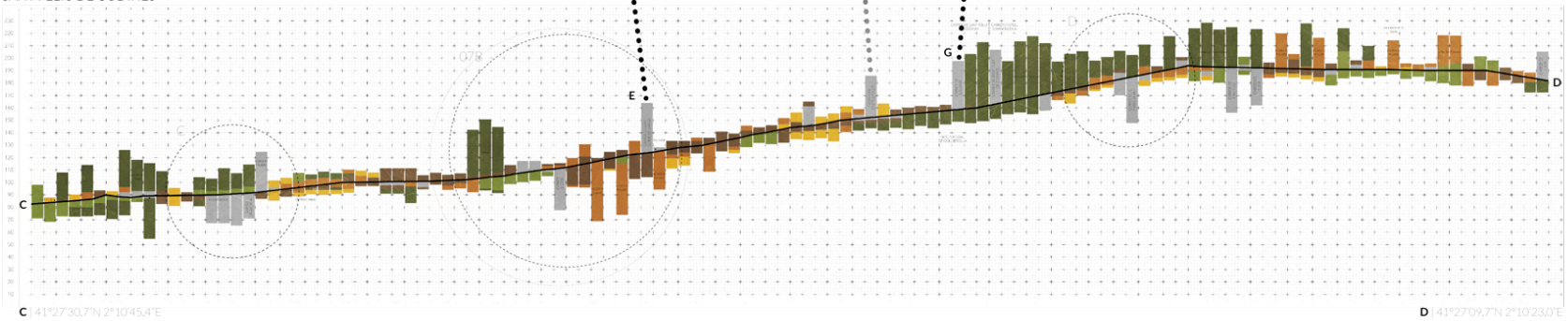
04 | SECTION THROUGH CARRER DE BELLPRAT



03 | SECTION THROUGH CARRER DE SAFAJA

04 | SECTION THROUGH CARRER DE BELLPRAT

02 | SECTION THROUGH CARRER DE SANT FELIU DE CODINES



Streetscape

Torre Barro

Barcelona, Spain

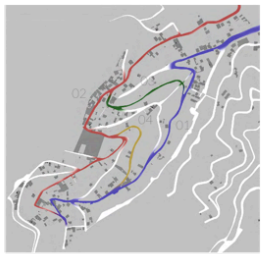
The goal of that urban tomography is to show the perception of the streets in Torre Baro. The urban district of Barcelona is located at mountain slope with various topographical changes. Therefore, typical sections do not show real the feeling of the place. As the roads are the only spaces that are publicly accessible, that is one the way to show the urban perception in that place.

Created grid (10m x 10m) was the base to highlight 2 crucial aspects:
- street section; how the road changes height above sea level
- elements that limits the street; colors shows different urban borders (see legend below)

Drawings are orientated. Graphs above the section line show left-hand side of the street, those below - right-hand side. The height of marks is determined by the view limit; the longer the stripe is the longer view is possible.

LEGEND:

- solid wall/no views
- perforation in fances or walls
- walls with visible openings
- low vegetation
- bigger vegetation/forrest
- leftovers/empty space



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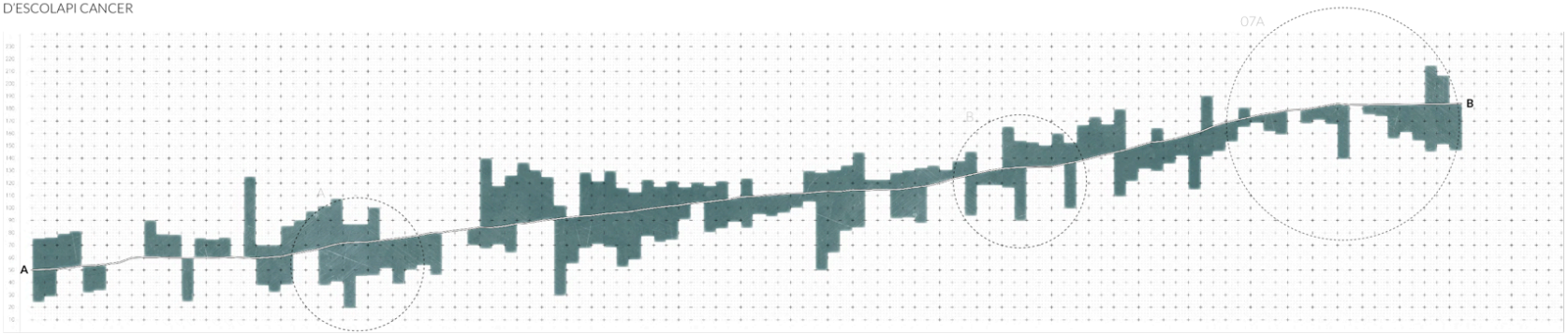
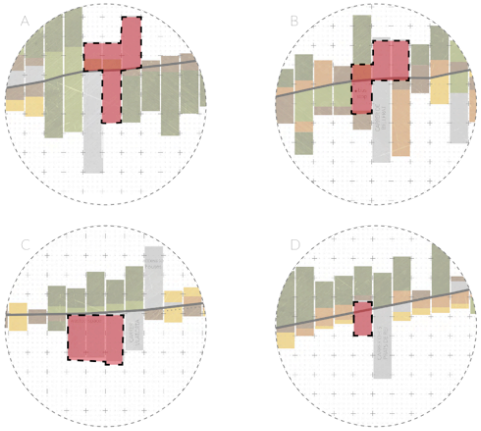
URBAN TOMOGRAPHY

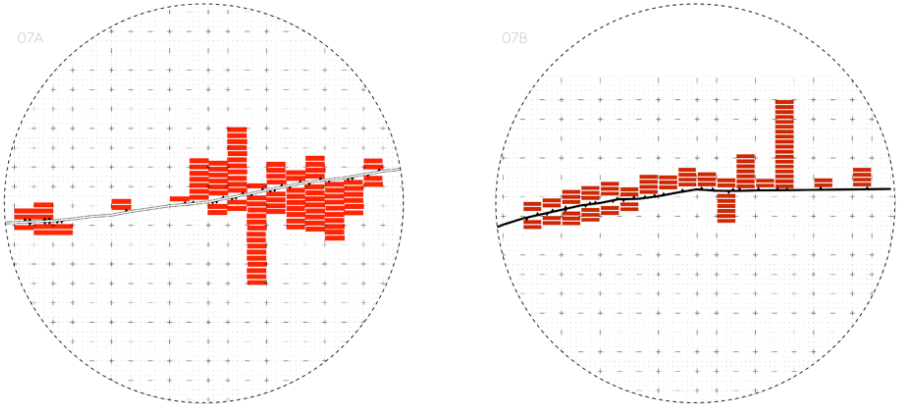
05 | SPACE FLOW OF AVINGUDA D'ESCOLAPI CANCER



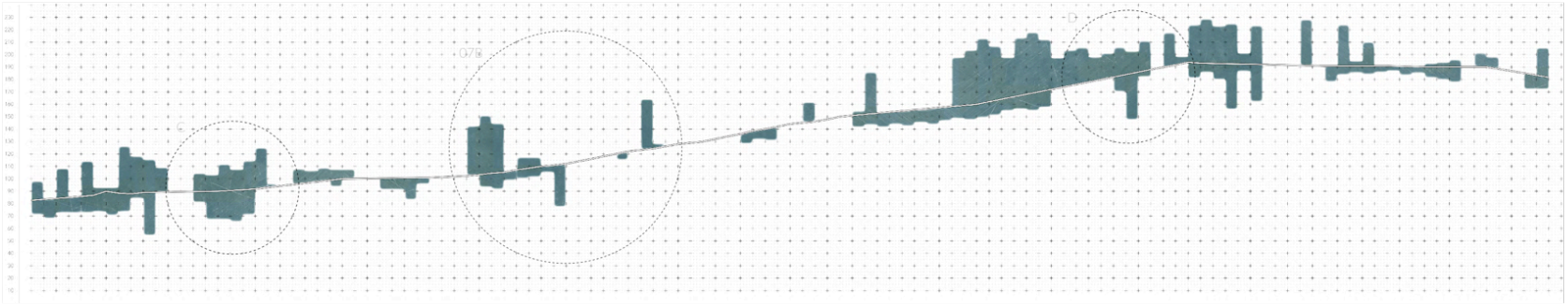
08 | CHARASTERISTIC ELEMENTS OF STREETSCAPE



07 | NUMBER OF ROOFS ON CARRER DE SANT FELIU DE CODINES



06 | SPACEFLOW OF CARRER DE SANT FELIU DE CODINES



Streetscape

Torre Barro

Barcelona, Spain

This paper show the space flow of streets and conclusions of Streetscape Tomography. From every section it is possible to observe characteristic features that are repetitive in many points in Torre Baro.

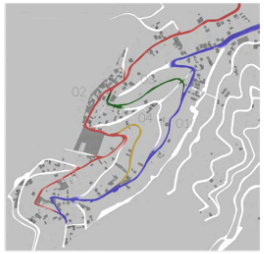
Drawings 05,06
By simple modification of drawings 01,02 "space flow" is shown. By selecting only graphs of low vegetation, high vegetation and leftover, we can observe how the street space is limited by urban elements. Characteristic is that after every moment, where the view is strongly limited by buildings and walls, there is long perspective on landscape.

Drawings 07A, 07B
Drawings show number of roofs and entrances from the street. By over-placing it over drawings 01,02, we could observe that number of housing units (families) are not reflecting urban perception. Typologies with common stairs often hide the real number of inhabitants, especially when we stand in upper part.

Drawings 08
It shows characteristic moment with the junction with the other street. It often goes with certain empty area nearby.

LEGEND:

- solid wall/no views
- perforation in fances or walls
- walls with visible openings
- low vegetation
- bigger vegetation/forrest
- leftovers/empty space



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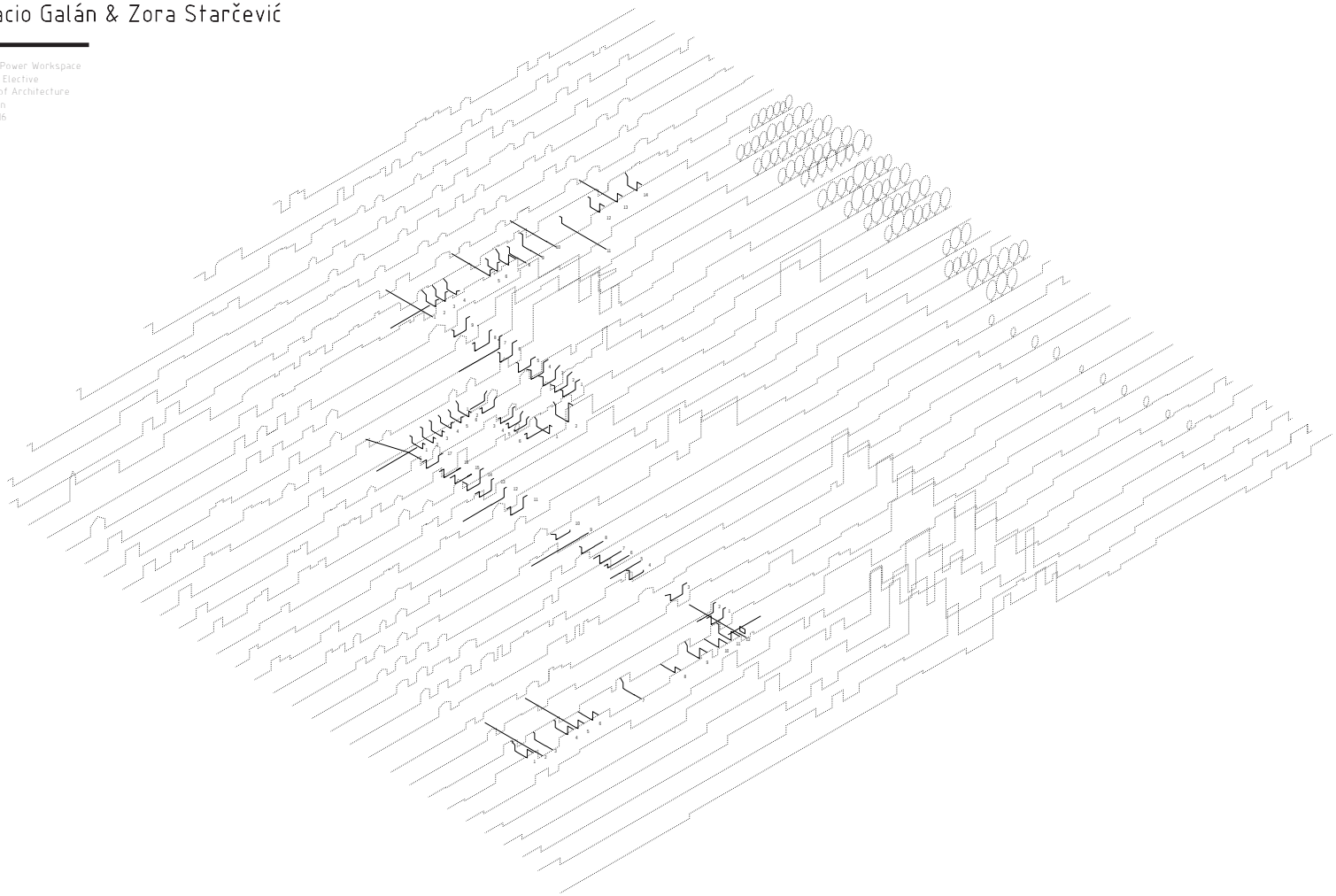
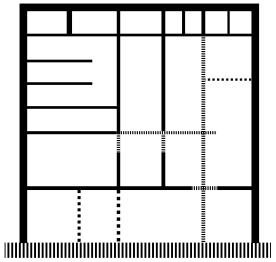
Borders and boundaries

Ignacio Galán & Zora Starčević

Small is Power Workspace
OIKONET Elective
Faculty of Architecture
KULeuven
2015-2016





walkable straight lines through an open area

walkable straight lines across neighbourhood from its perimeter

open view which can not be crossed

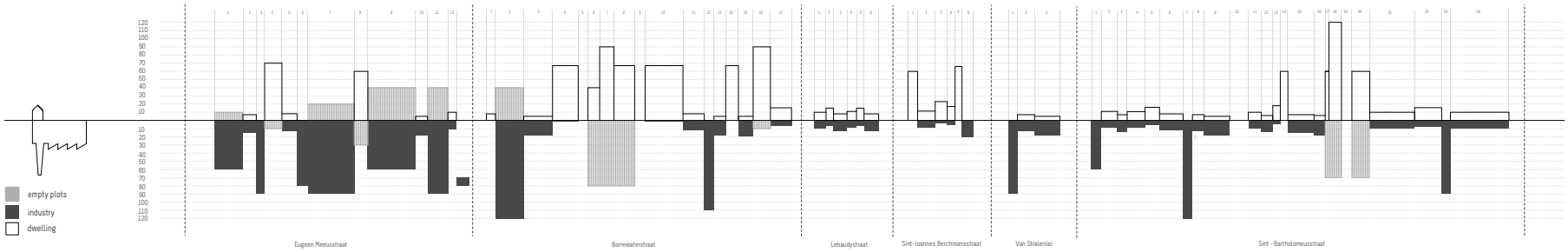
When we went by first time to our site, we soon realized of the strong limits which were generated by the clash of different typologies, function, and society who coexist in this place. Therefore, borders and boundaries seemed to be an interesting marker to research on this neighbourhood.

Although "border" and "boundary" are commonly confused, as both are considered edges, semantically, and applied to the context of public and private space in an urban context, they are different from each other, being permeability the main element which distinguishes them.

Therefore , we developed two different types of analysis. One of them, studies the permeability of the neighbourhood from its perimeter, the cultural limit. In it we trace the distance of open straight view that you have until it reaches a wall . In it we distinguish also when is it possible to walk through it, when is it only a visual edge, and when does it cross an open area, such as the docks.

The second analyis tackles directly one of those borders/boundaries. We chose the limit in between the residential area and the industrial monofunctional blocks, which make a clear difference, mainly highlighted by the difference on heights , where big mills and silos become a strong presence visible from most of the streets, and which block the view and connection towards the water, the only open area in such a dense environment. We traced sections through that street every time there was a change in between each side, which already gave us a modulation, showing in which zones there is a bigger contrast or different typologies. We calculated the factor resulting from the proportion between facing facades, multiplied by 10. On one side of the graphic, its shows the industrial part, while the other corresponds to the housing. In the points where there is a street or an empty plot, this factor will be much higher. This analysis also shows clearly the areas where the contrast of heights is bigger.

LA SECTIONS | Urban tomography



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URBAN RHYTHM SECTION

KIM CHUNG DUNG VU

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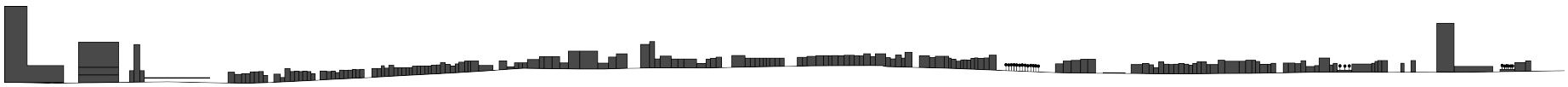
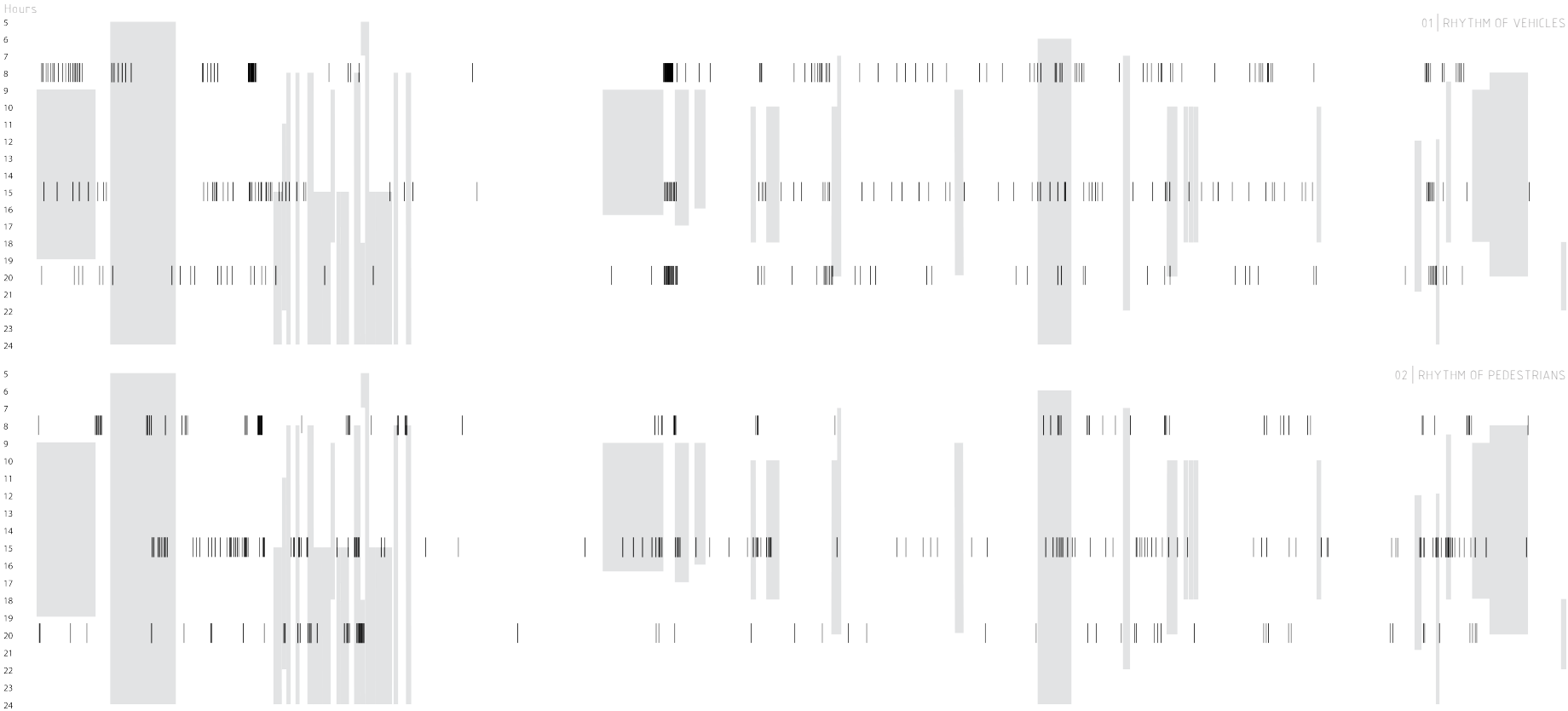


SCALE 1|3000



LA SECTIONS | Urban tomography

LEGEND:

Counting unit for an object (pedestrian/vehicle)

Opening time of building s function during a day

Saint Josse ten Noode is a super diverse district, has the highest dense and number of immigrants of Brussels so safety is one of significant issues in the area. Several boundaries make this district being divided into sections along the length of the area with different characteristics. Therefore, a long section has been selected to investigate on the safety throughout the region which relates to the rhythm of the urban activities.

As architectural facades are elements that can alter the routine of urban activities, then what happens on those facades such as hours of daily operation corresponding to the function of architecture could be a marker which generates rhythm of circulation in the city space.

By using tomography as a tool of approach, the relationship between architectural factors and social factors is discovered.

Three times a day at 8h, 15h and 20h, statistic of pedestrians and vehicles were recorded practically along the route of 2km in order to facilitate the comparison and evaluation.

Each line in the tomography corresponds to a counting unit of an object (pedestrian or vehicle). A gray layer is superimposed at the bottom represents the opening time of each architectural facade helps readers link between the elements of the tomograph easier.

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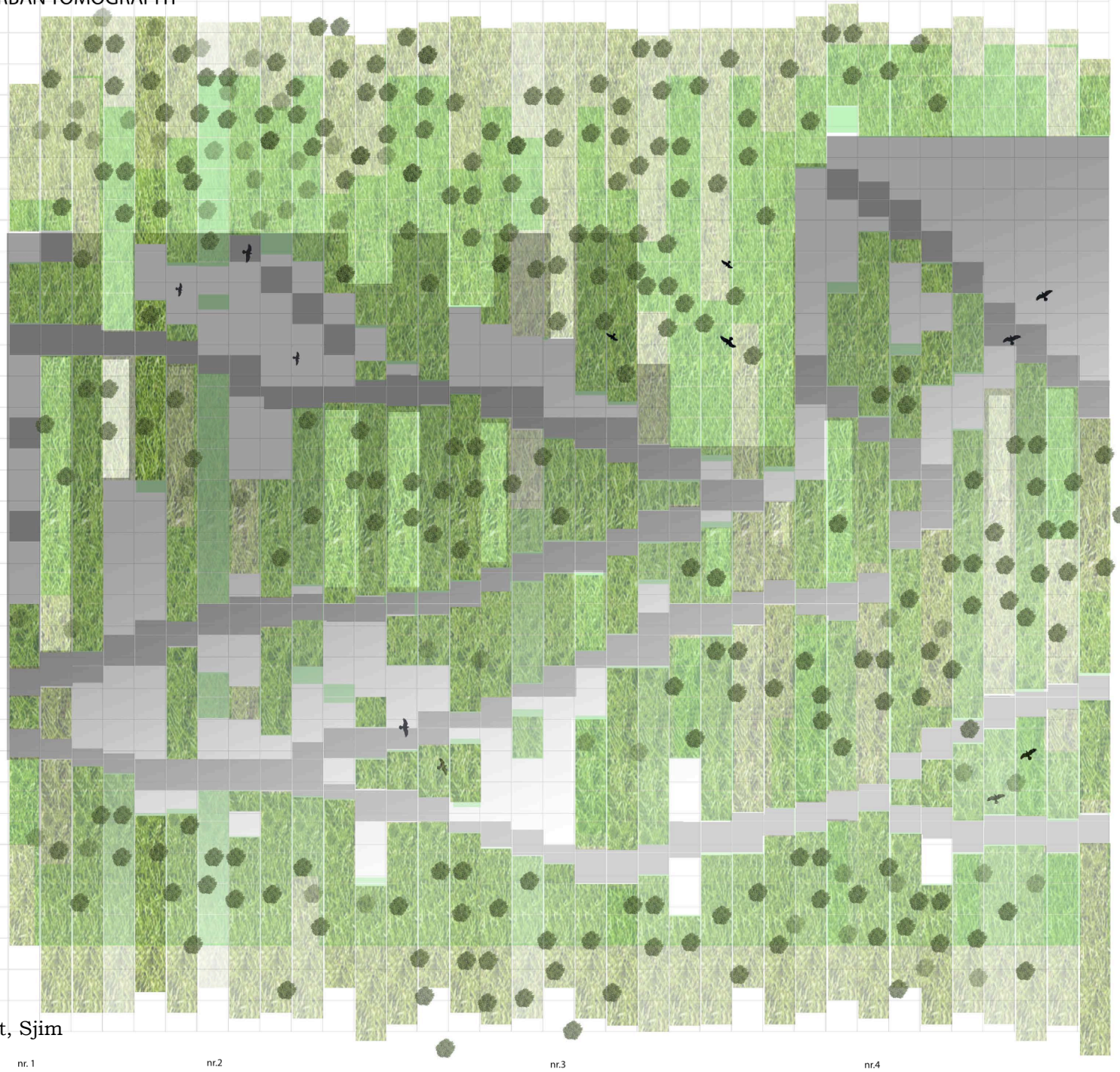

URBAN TOPOGRAPHY

TORRE BARO

Barcelona - Spain

Picture1: abstract plan of Baro taro (Barcelona, Spain), which shows the interaction between green space, build space and infrastructure

Picture 2: vertical section of the landscape

LEGEND:

1 Green

2 Housing

3 Infrastructure

Mesut, Sjim

Working towards a reading / **URBAN TOMOGRAPHY,** imaging by sectioning / **CONCEPT BY DRAWING - Maig14** KUL Faculty of Architecture KU Leuven **Tomas Ooms**

URBAN TOMOGRAPHY: GRAPHICALLY EXPLORING THE URBAN REALM: A FORM OF AUGMENTED SECTIONING

drs. architect tomas ooms
prof. dr. Johan Verbeke

Faculty of Architecture KUL (BE)

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