Input

This is a code that follow the logic of the computing science. This code came from a study of the Haussmannian rules. The different diagrams can be assimilated to steps in the process of having an Haussmannian Block.

Data

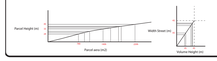
Arondi

Area : 2,33 km2
Population : 21 516 hab.
Density : 9 236 hab/km2
Region : Ile-de-France
Belong to Grand Paris : Yes
County : Val de Marne
Distance from Paris : 2 km

Percentage of greenspace : 8%
Percentage of build space : 91%
Percentage of rural space : 1%
Percentage of social house : 45%

Site

Area : 53 000 m2
Major axes : Highway and avenue
Neighbourhood : Dense block and house
Equipment and Sport : sport field and highschool.



The Haussmannian Morphogenesis
William Dorsey
Jeffrey Huang - Inam Louis Scamaccio - Peter Simon - Frederic Kim

Original Process

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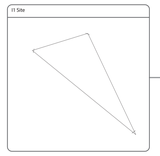
I1 Site



F1 Facade width

The minimum width of the facade is 15 meters. This correspond to the addition of the three mains rooms in rowhouses.

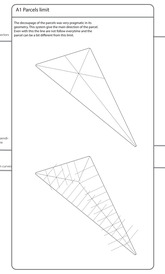
Divide with parallel lines (Lines lines to the street)

Divide with perpendicular lines (Lines lines to the street)

Distance between curves

A1 Parcels limit

The decoupage of the parcels was very pragmatic in its first step. It was based on the existing parcels in the neighborhood. Even with this the lines are not follow everywhere and the parcel can be a bit different from this limit.

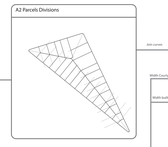


Using symetry to develop the facade

Windows = 1.4 m width

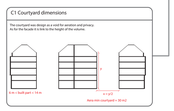
A2 Parcels Divisions

Join curves



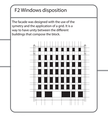
C1 Courtyard dimensions

The courtyard was design as a void for aeration and privacy. As far the facade is it link to the height of the volume.



F2 Windows disposition

The facade was designed with the use of the "Haussmannian Proportion Rule". This rule says that there is a ratio between the different buildings that compose the block.



No elevator
Ground floor = Offices / commerces
First floor is for richest people. Last floor is for servants.

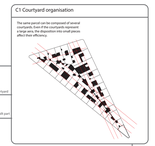
Zoin curves

Width Courtyard

Width build part

C1 Courtyard organisation

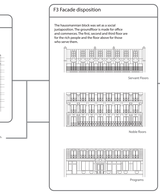
The semi-parcel can be composed of several courtyards. Even if the courtyards represent a void, their disposition into small pieces affect their efficiency.



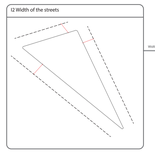
Reverse surfaces

F3 Facade disposition

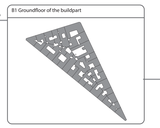
The haussmannian block was set as a social juxtaposition. The groundfloor is made for office and commerces. The first floor was made for the richest people and the floor above for those who are not rich.



I2 Width of the streets

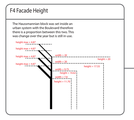


B1 Groundfloor of the buildpart



F4 Facade Height

The Haussmannian block was set inside an urban system with the Boulevard Haussmannian. This system was composed by two change over the year but is still in use.



Composition Facade

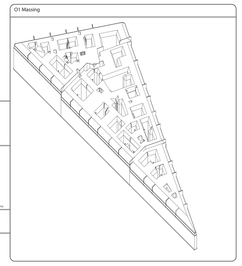
Width Streets

Extrude

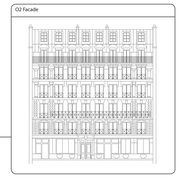
Height volume

Shape roof

O1 Massing



O2 Facade



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Output Large Scale 1 : Urban flow

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Output Large Scale 2 : Parcels

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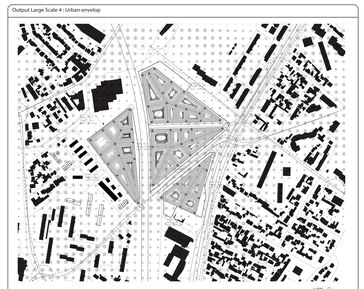
Output Large Scale 4 : Urban envelop



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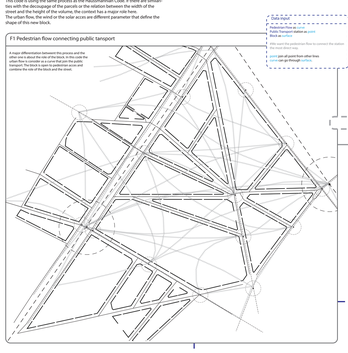
Process

This code is using the same process as the Haussmannian Code. If there are similarities with the decoupage of the parcels or the relation between the width of the street and the height of the volume, the context has a major role here.
The Urban flow, the wind or the solar acces are different parameter that define the shape of this new block.

F1 Pedestrian flow connecting public tansport

A major differentiation between the process and the other one is about the role of the block. In this code the block is not only a block but also a node of public transport. The block is open to pedestrian acces and combine the role of the block and the street.



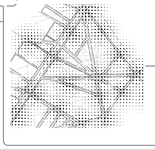
Data input
Select the **Public Transport station** as point
Block as **surface**

Draw lines the pedestrian flow to connect the station with the existing streets

Lines can offset to a distance of 7 meters
Solar envelope curve is base on the Urban curve
Lines can be divided by the Urban curve or Surface and solve overlaps intersect and clean the geometries which is extrude by 3 meters in z direction

Urban Flow Analyze

B1 Porosity of the parcel with urban flow



Porosity inside the block is gave by the analyze of the different urban flow. The block touched is the need of the most porosity or acces to the exterior. Each parcel get its own porosity.

```
import math
import rhinoscriptsyntax as rs
import Rhino
import scriptcontext as sc
import System.Guid
import System.Drawing.Color
import System.Collections.Generic.List
import Rhino.Geometry
import Rhino.Geometry.Intersect
import Rhino.Geometry.Transform
import Rhino.Geometry.AreaMassProperties
import Rhino.Geometry.VolumeMassProperties
import Rhino.Geometry.Curve
import Rhino.Geometry.PolyCurve
import Rhino.Geometry.Point3d
import Rhino.Geometry.Vector3d
import Rhino.Geometry.Plane
import Rhino.Geometry.BoundingBox
import Rhino.Geometry.Line
import Rhino.Geometry.Circle
import Rhino.Geometry.Arc
import Rhino.Geometry.Interval
import Rhino.Geometry.AreaCentroidProperties
import Rhino.Geometry.VolumeCentroidProperties
import Rhino.Geometry.Intersect.CurveIntersections
import Rhino.Geometry.Intersect.AreaContainment
import Rhino.Geometry.Intersect.RayIntersection
import Rhino.Geometry.Intersect.Intersection
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