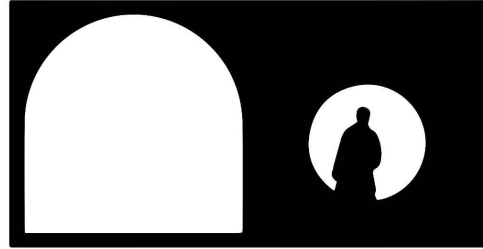


Reconfigurable architecture for compression-only structures



LOG BLOCK

Affordable luxury

Tutors:

Design: Roel van de Pas

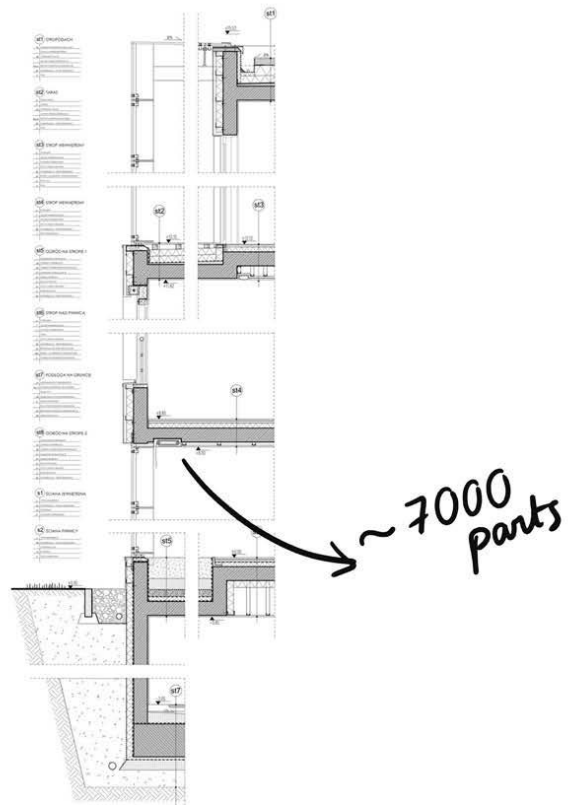
Research: Pirouz Nourian

Building technology: Hubert van der Meel

Student

Leticija Aleksandra Petrova | 5306345

The issue | ~ 7000 parts



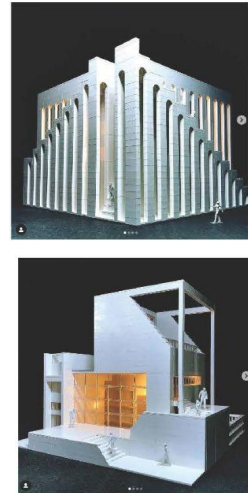
The current examples | modularity & prefabrication



Gilles Retsin, AUAR

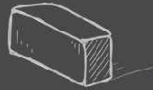


Gablok, wall lego like blocks



LEGO, architectural edition

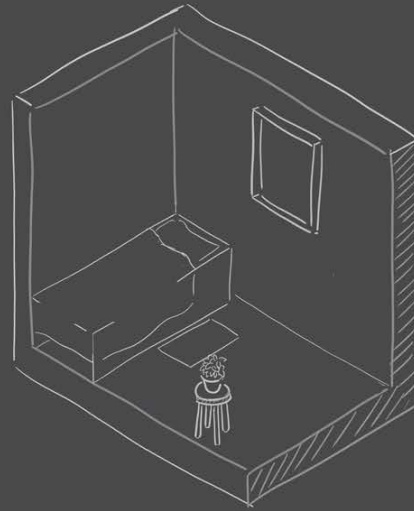
The goal | smoother process, reuse of knowledge and spatial qualities



brick



**building
block**



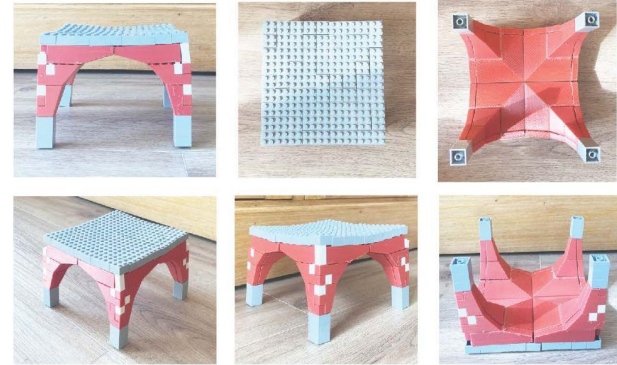
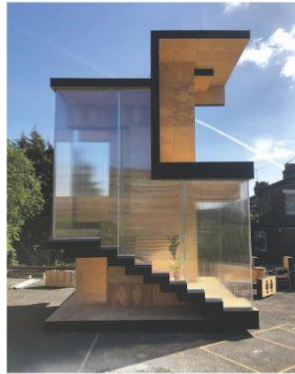
room

*Does not predefine
the size of the space*

The 2 directions | tension rods vs lego-like structure

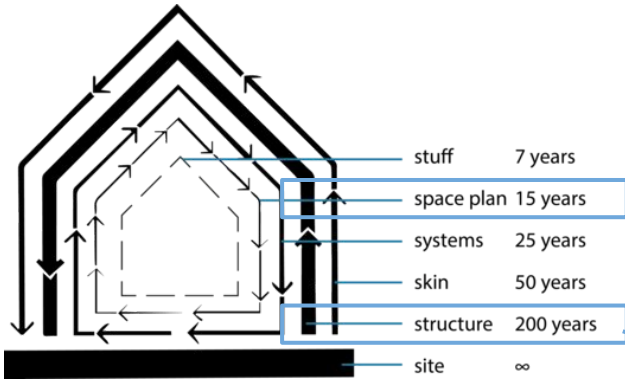


AUAR, Steel tension rods + wooden plates,
COMPLETE SPATIAL FLEXIBILITY



Author, Wooden boxes, 12 elements
MATERIAL FLEXIBILITY, LEGO LIKE ASSEMBLY

The choice | Structure vs infill & spatial qualities



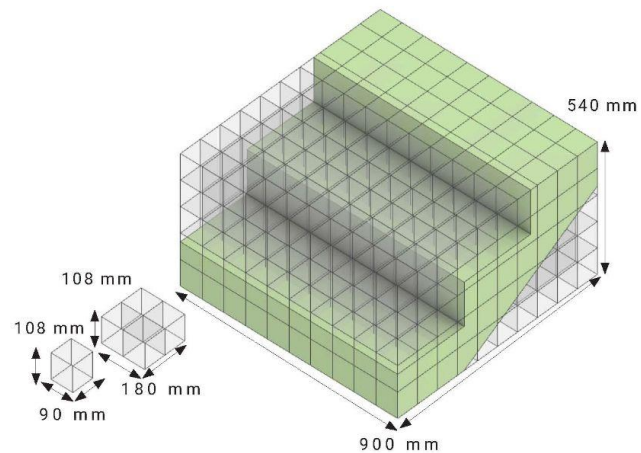
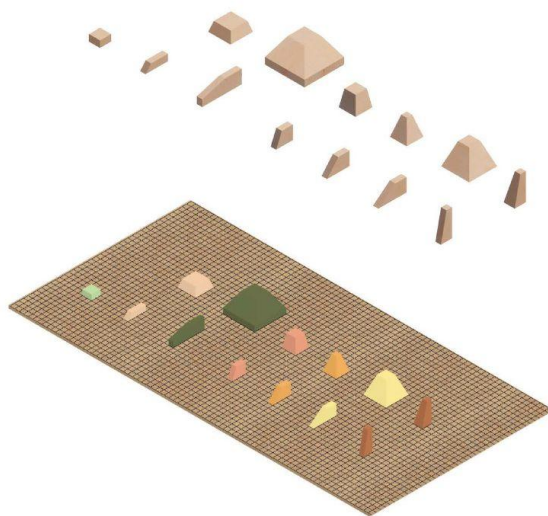
Shearing Layers of Change (1994) Stewart Brand

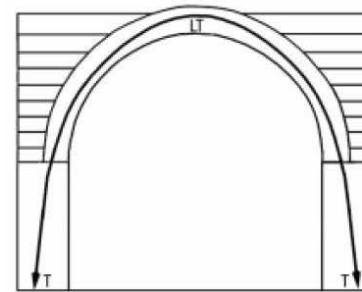
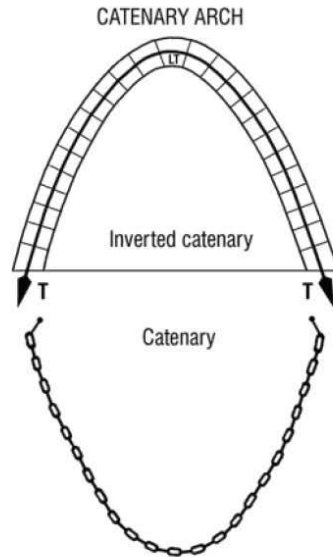


R E S E A R C H & B U I L D I N G B L O C K S

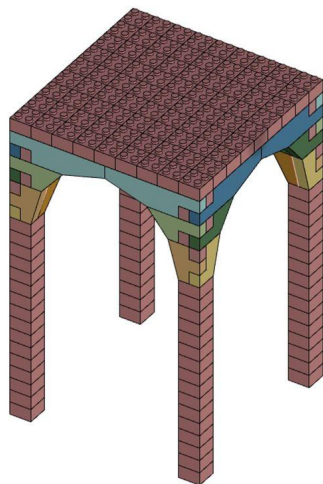
How to design **a small set of stackable timber elements** to form both a **structure and the inner shell** of a building that can be configured into **versatile housing units** using **combinatorial design** and a **compression-only structure**?

Elements | 12 predefined elements



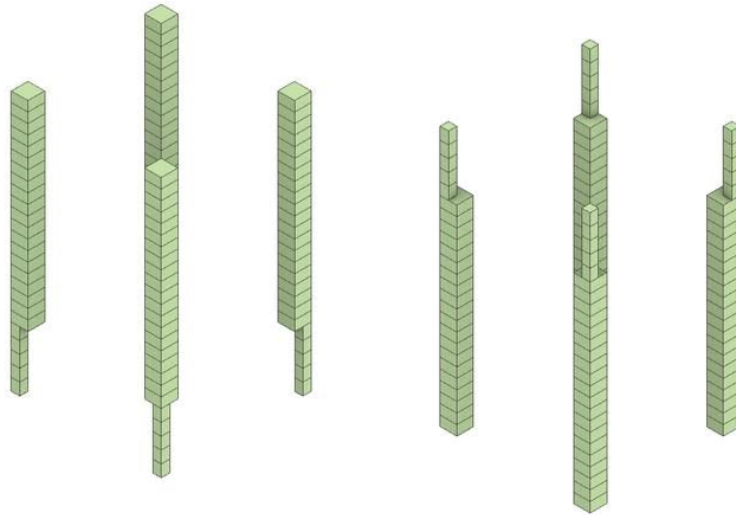


Semi-circular arch with its haunches loaded and $t=S/10$ (thickness = Span/10)

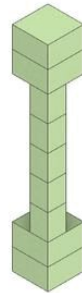
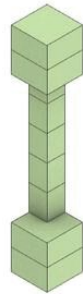


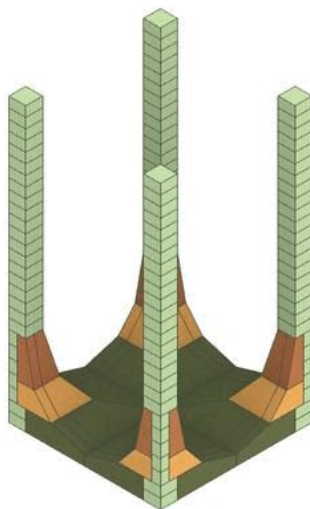
Elements | build up full vault

12/71

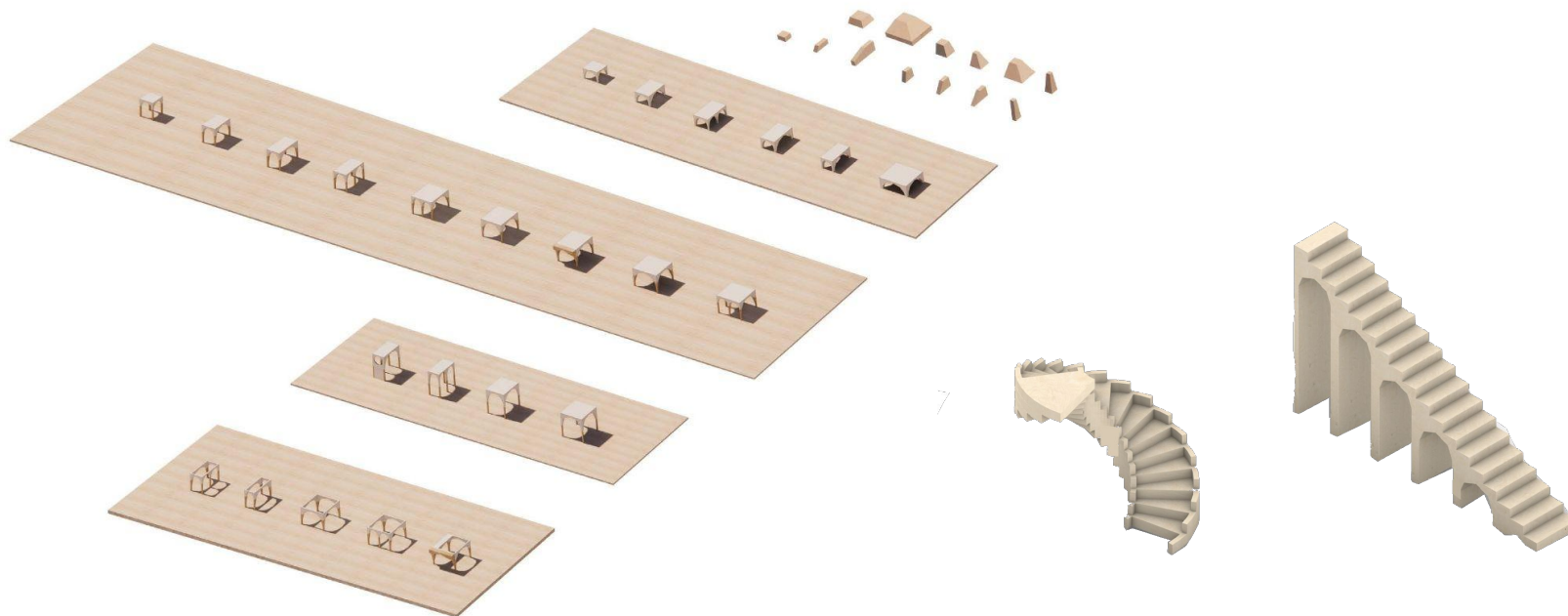


Elements | build up 1/4th of a vault, side and corner pieces





Spatial units | modules



6 T H E M E S

F R A M I N G

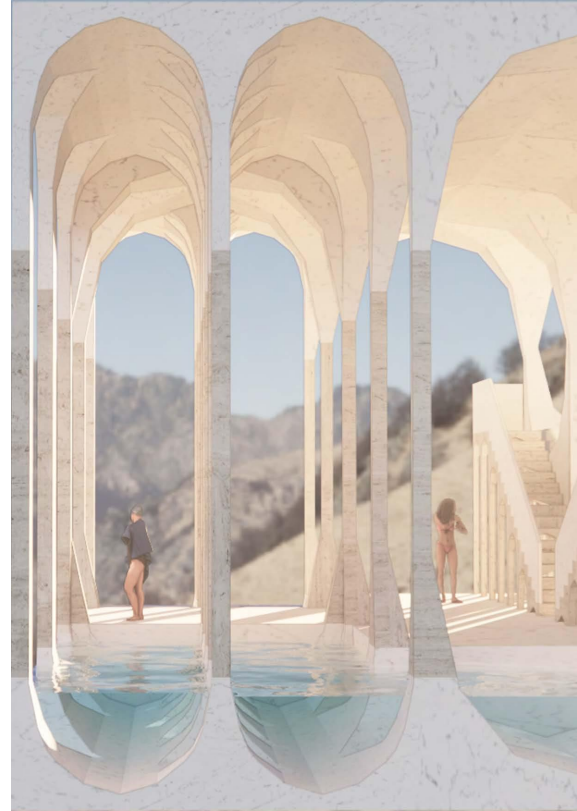






SCALE & CUSTOMIZATION





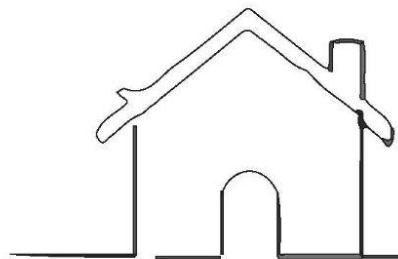


H O N E S T S T R U C T U R E



T H E B U I L D I N G , T H E C A S E S T U D Y

Location | Amsterdam, IJburg, Strandeiland



Location | Neighbourhood urban design



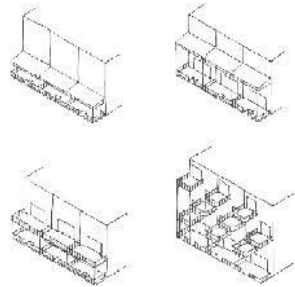
Light color scheme



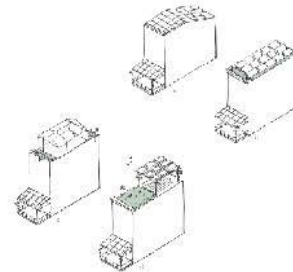
Lively facade



No large boundary/fence



Depth in the facade



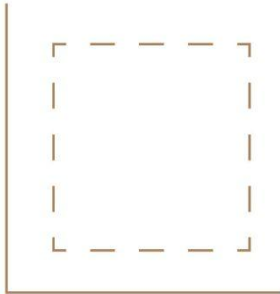
Different uses of the roof

Brief | 2 family homes

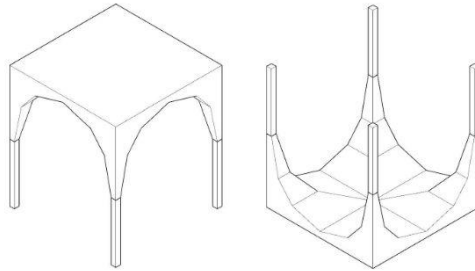


- *2 single family houses*
- *~ 3 people per family*
- *Necessity for:*
 - *Working spaces*
 - *Equally large sea views*
 - *Gardening area*

Concept | 2 waves/families meet



Corner plot

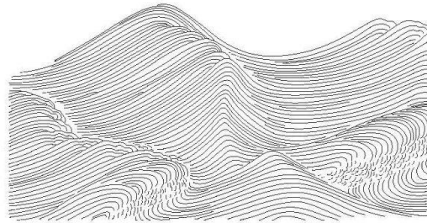


Privacy for tenants & curiosity for a passerby

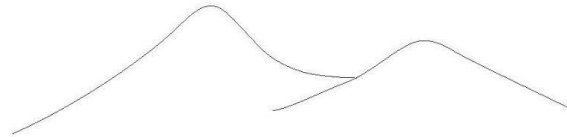


Wave splitting, if 2 waves meet at the corner

Concept | 2 waves/families meet

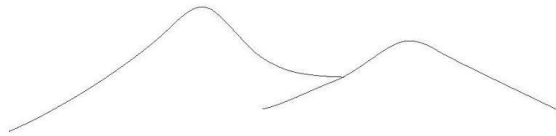


Wave splitting abstraction through lines and boundaries

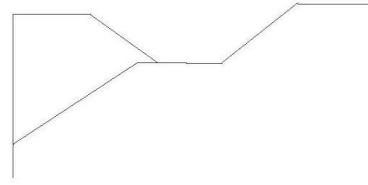


Wave splitting abstracted to 2 waves meeting

Concept | 2 waves/families meet

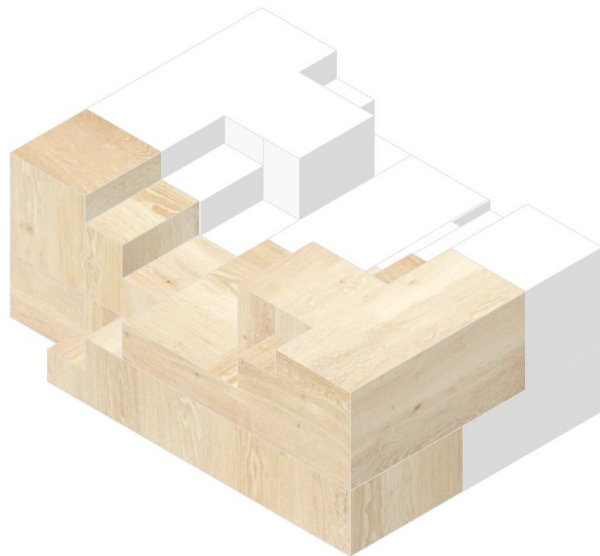


Wave splitting abstracted to 2 waves meeting

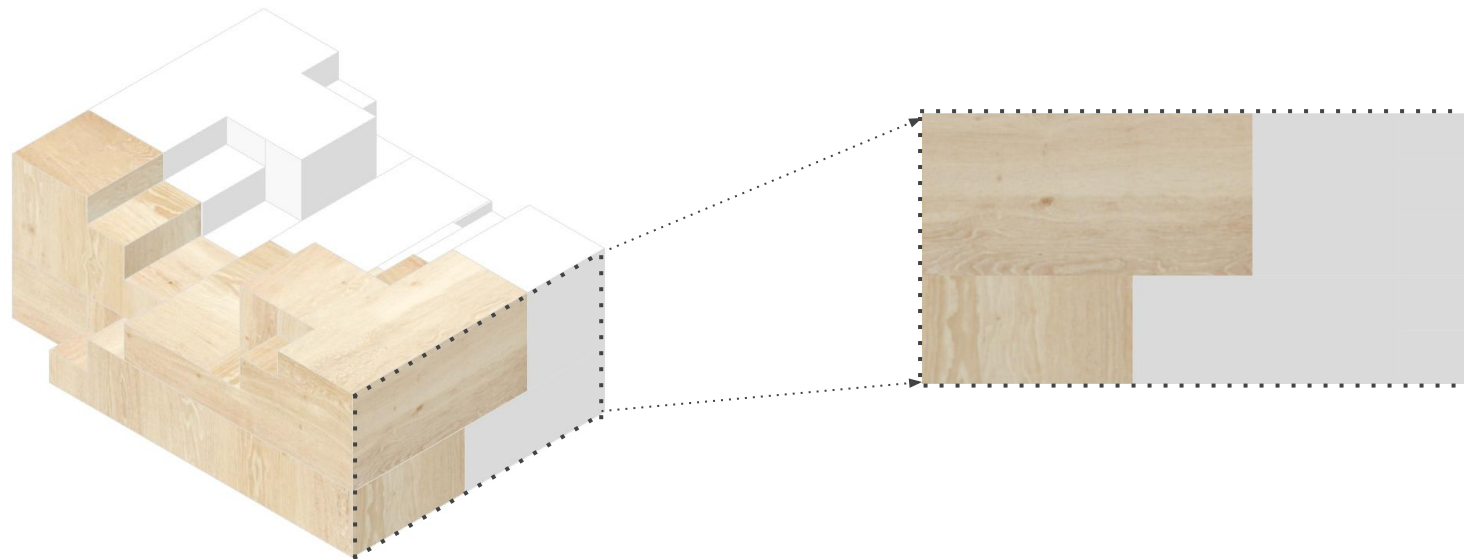


Wave splitting translated into 2 villas meeting

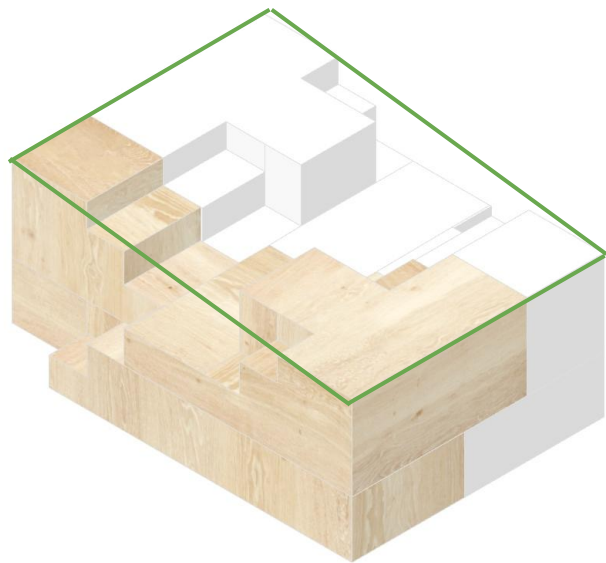
Massing | Interlocking 2 homes 1st step to mass customization



Massing | equal views



Massing | Small plot -> back garden on the roof



The site | zoomed out



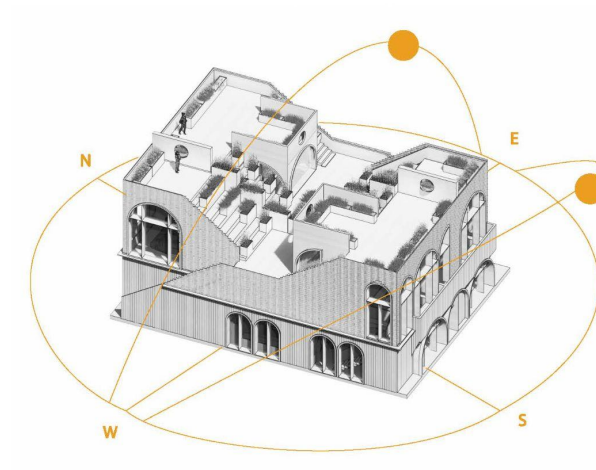
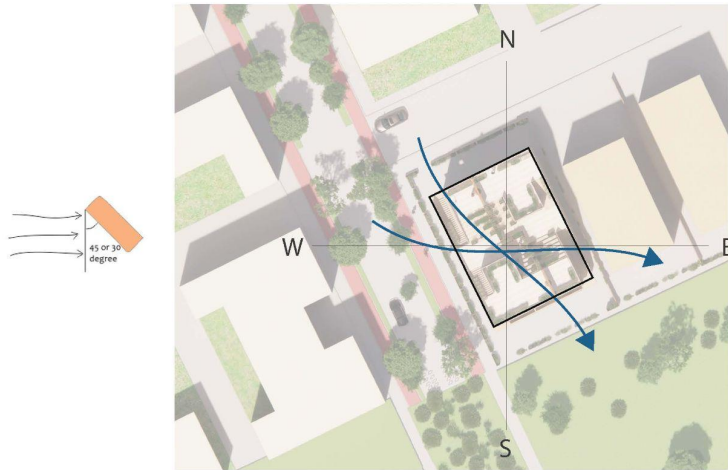
The site | zoomed in



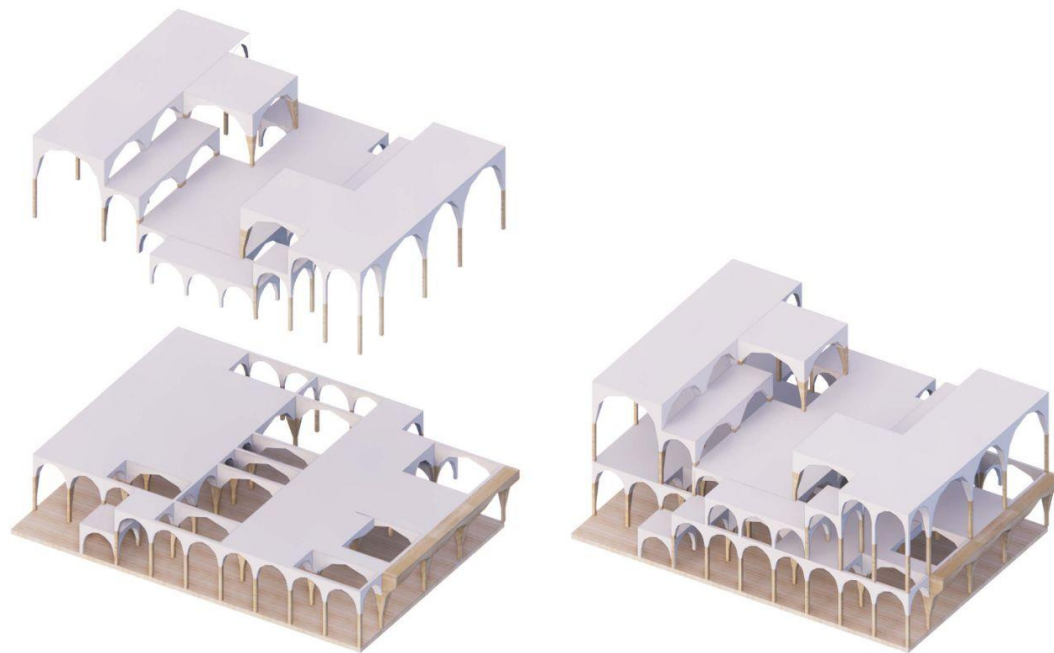
The site | zoomed in



The site | analysis



The structure | isometric



Privacy | terracotta elements



1.3 m wall with an opening with plants



High planters 1.5 m



Low planters 0.9 m

Privacy | terracotta elements

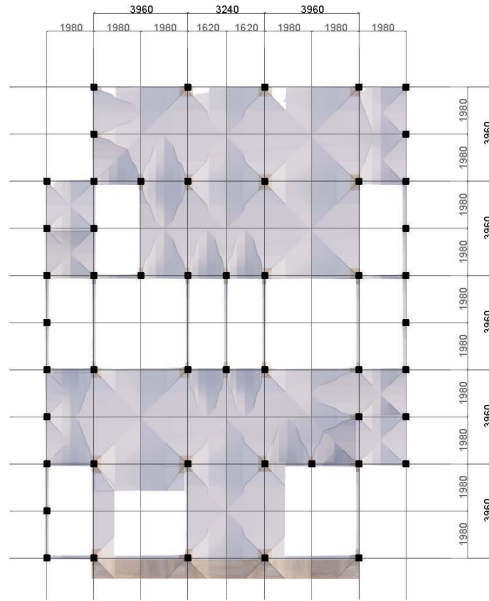


Privacy | terracotta elements

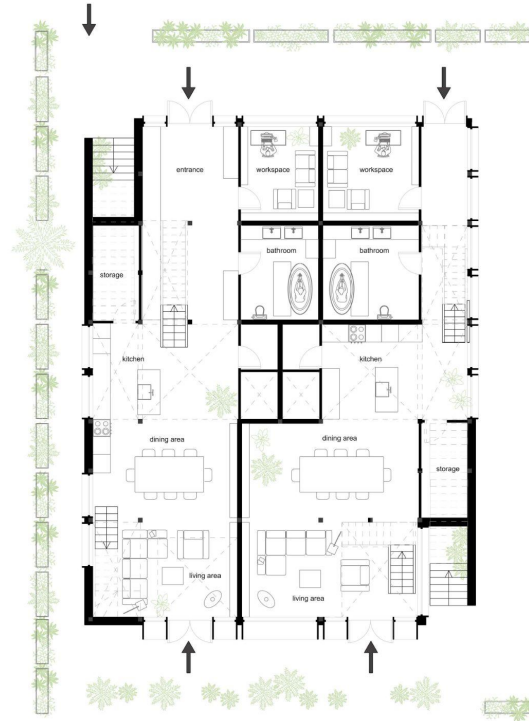


S C A L E & C U S T O M I Z A T I O N

SCALE & CUSTOMIZATION



Ceiling plan



Ground floorplan

S C A L E

&

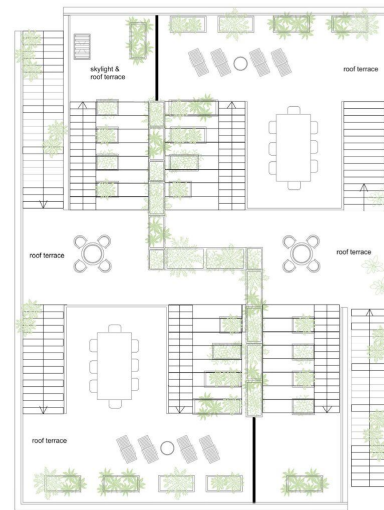
C U S T O M I Z A T I O N



First floor

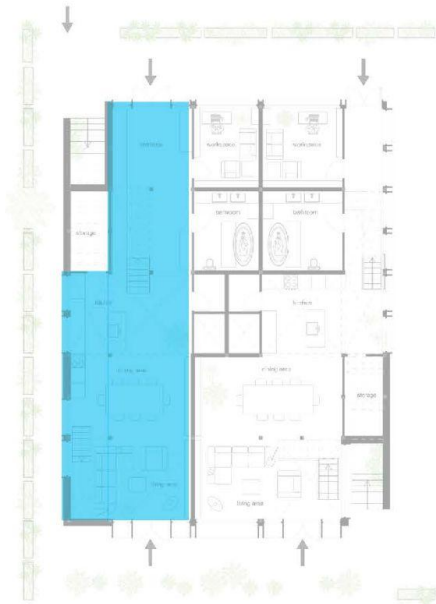


Roof cut



Roof plan

SCALE & CUSTOMIZATION

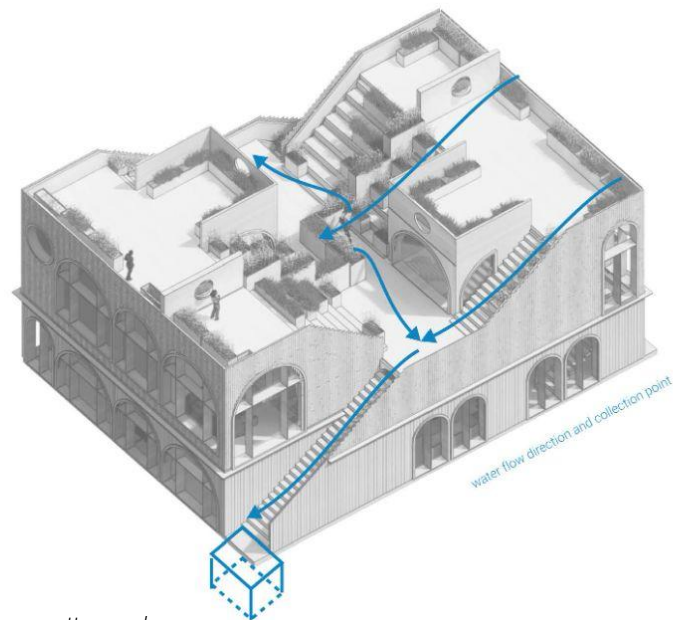
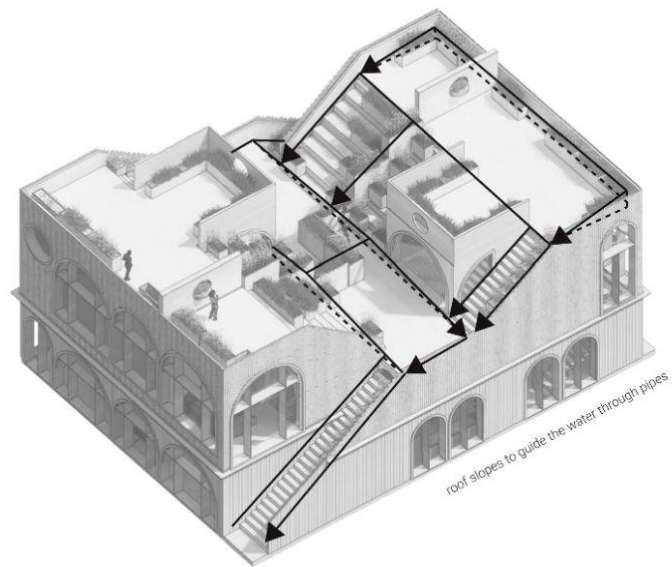


Open floorplan



Cross ventilation

SCALE & CUSTOMIZATION



Water drainage with slopes, gutters and water collection point at the bottom

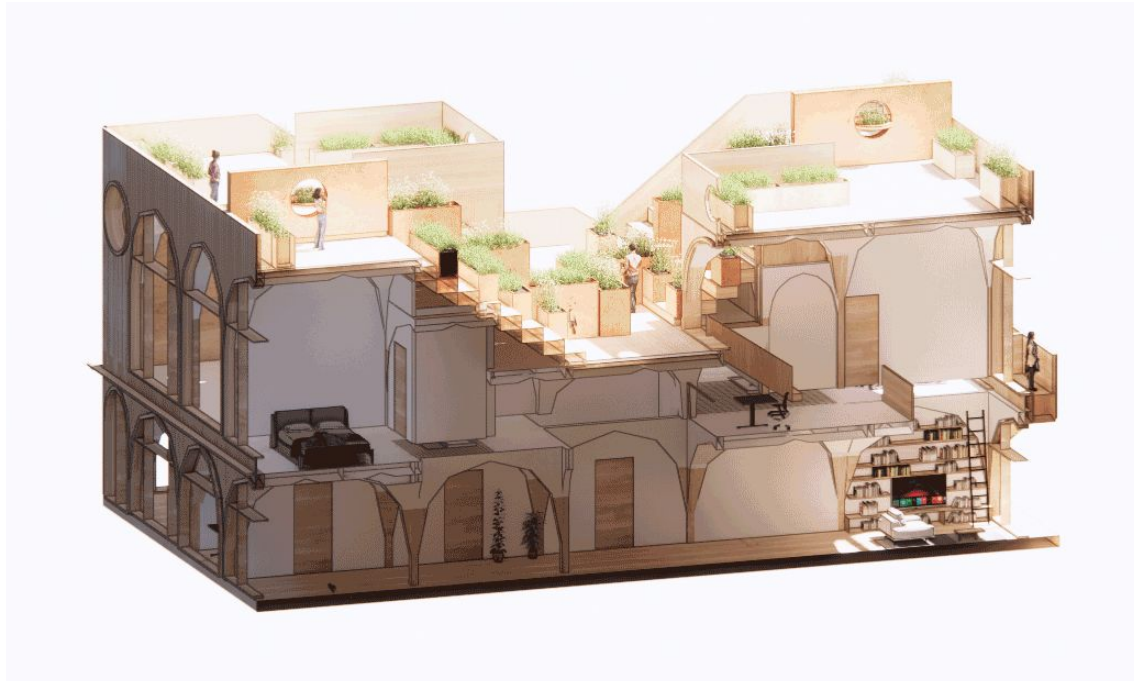


S C A L E & C U S T O M I Z A T I O N



S C A L E & C U S T O M I Z A T I O N

H E I G H T S



H E I G H T S



H E I G H T S



H E I G H T S



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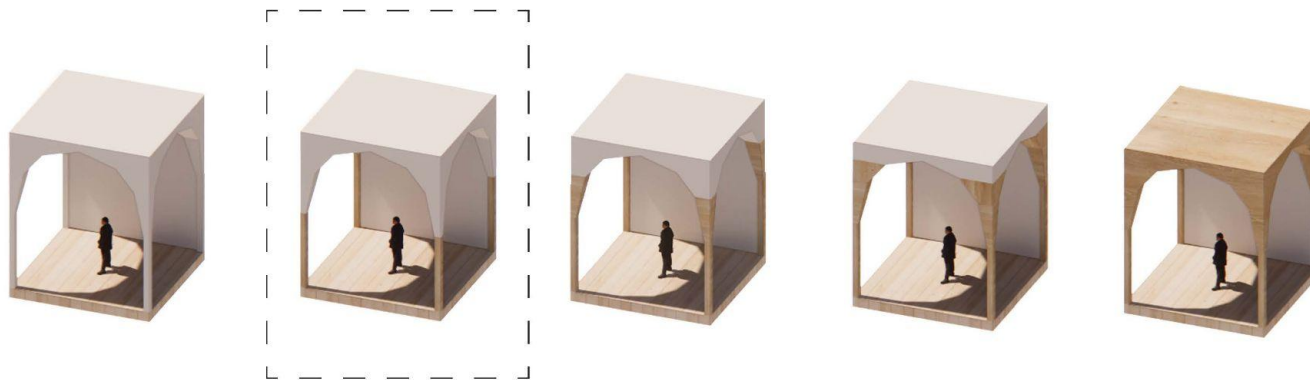
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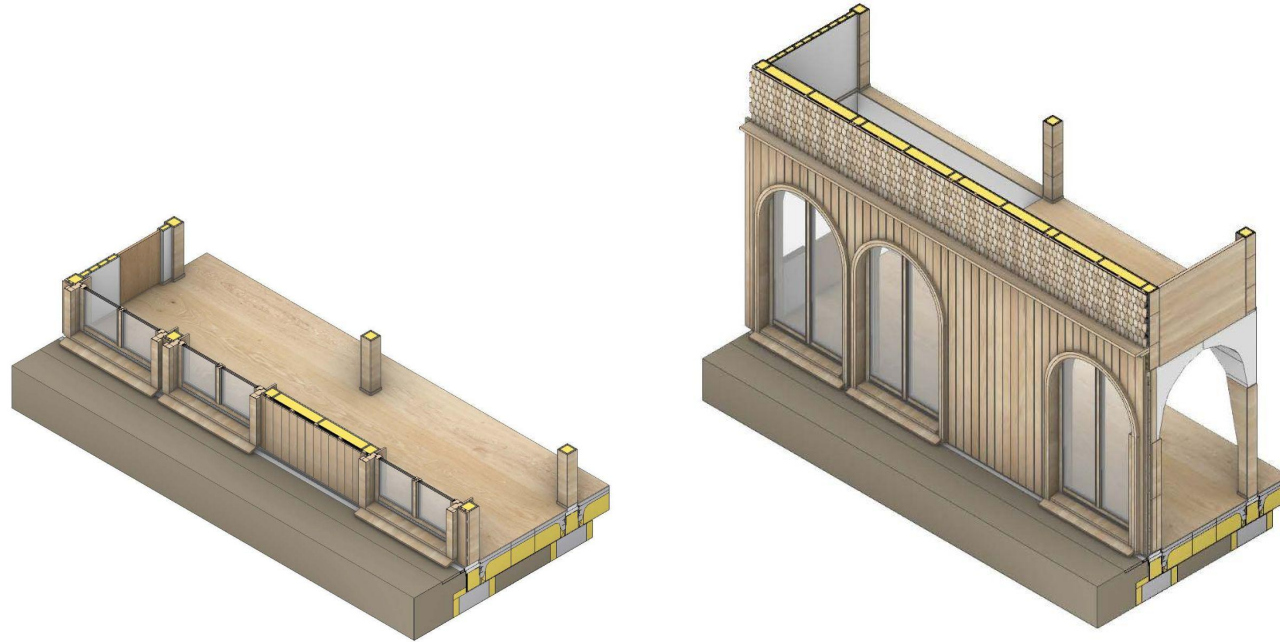
S

M A T E R I A L I T Y

M A T E R I A L I T Y

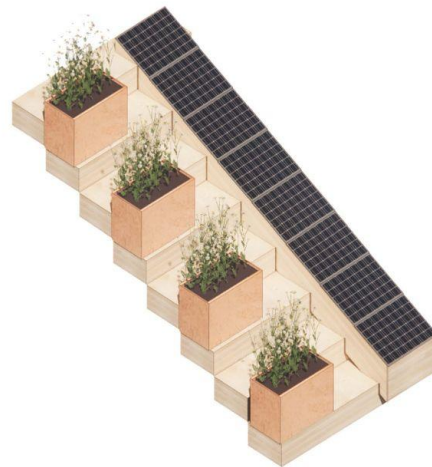
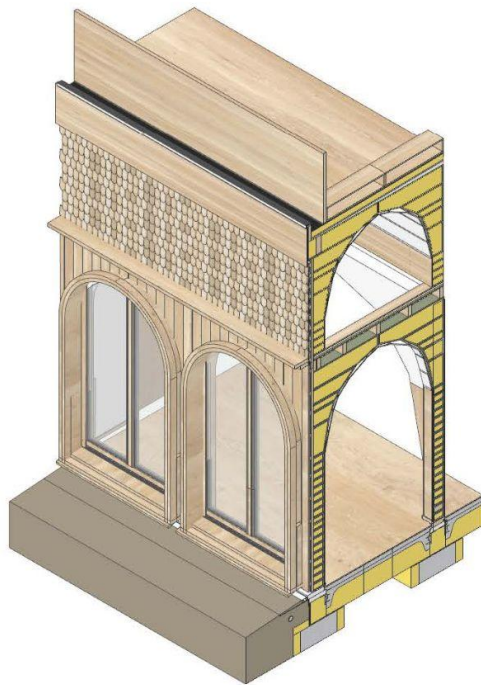


M A T E R I A L I T Y



M A T E R I A L I T Y

56/71



M A T E R I A L I T Y



Passerby experience

F R A M I N G



F R A M I N G



F R A M I N G



F R A M I N G



S C U L P T U R A L I T Y

H O N E S T S T R U C T U R E



S C U L P T U R A L I T Y

Leticija Aleksandra Petrova

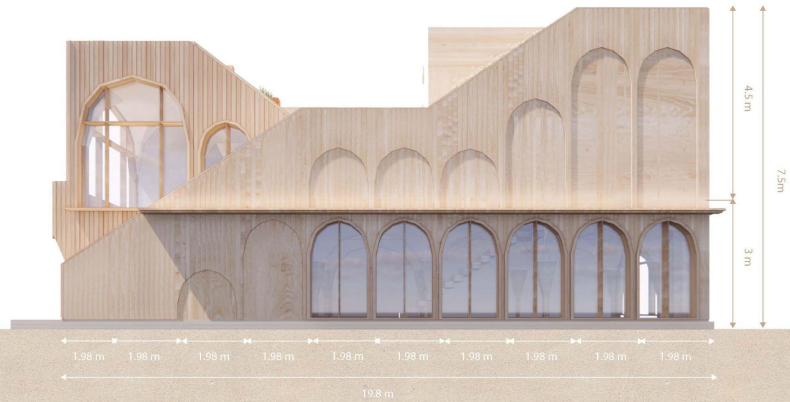


H O N E S T S T R U C T U R E

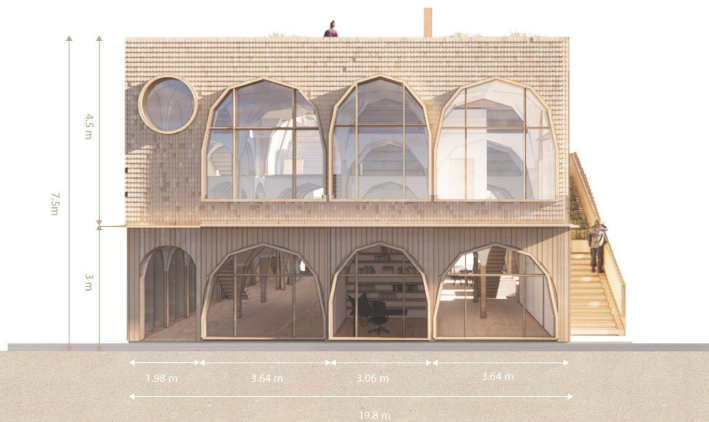
Delft university of technology | Explore lab 2021-2022, P5



SCULPTURALITY



HONEST STRUCTURE



S C U L P T U R A L I T Y



H O N E S T S T R U C T U R E



S C U L P T U R A L I T Y



H O N E S T S T R U C T U R E



H O N E S T S T R U C T U R E



L I G H T S

