DNB HOUSE

Dark Arktitekter

Institute for advanced architecture of Catalonia

Hanna Lepperød

DNB HOUSE

Dark Arkitekter

This building is a part of the
Barcode Project in Oslo, Norway.

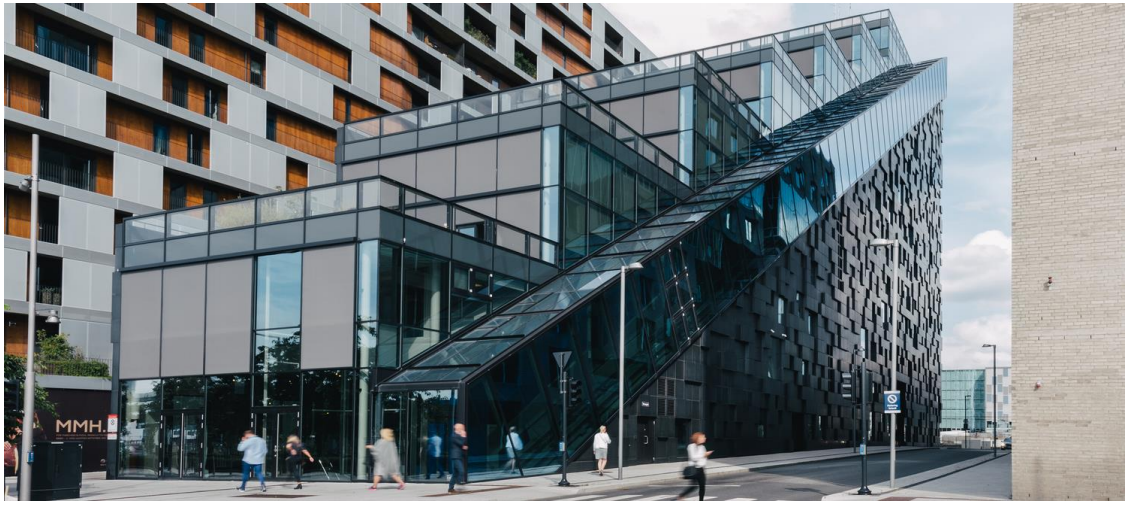


Image 1: Kon, O. (n.d.). *View from Dronning Eufemias gate*. [image] Available at: https://darkarkitekter.no/projects/dnb-vest [Accessed 2 Nov. 2019].

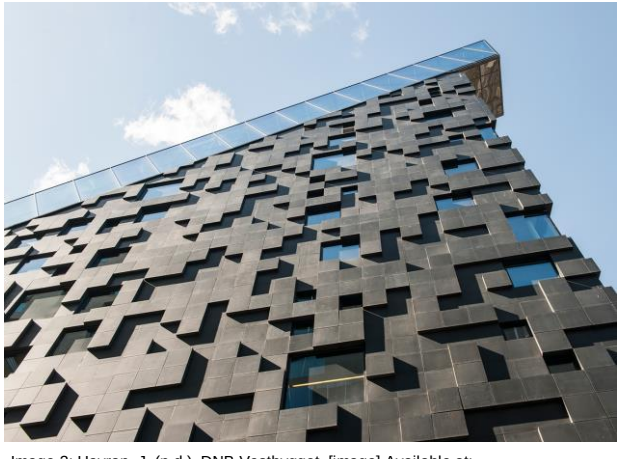


Image 2: Havran, J. (n.d.). DNB Vestbygget. [image] Available at: https://darkarkitekter.no/projects/dnb-vest [Accessed 2 Nov. 2019].



Image 3: Havran, J. (n.d.). DNB Vestbygget. [image] Available at: https://darkarkitekter.no/projects/dnb-vest [Accessed 2 Nov. 2019].

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Dark Arkitekter

The main criteria of the design was to create seemingly random patterns for openings and extrusions on a square grid.

- Window sizes are 1, 4 or 9 squares
- The extrusion pattern consists of single squares with 1 to 8 neighbours

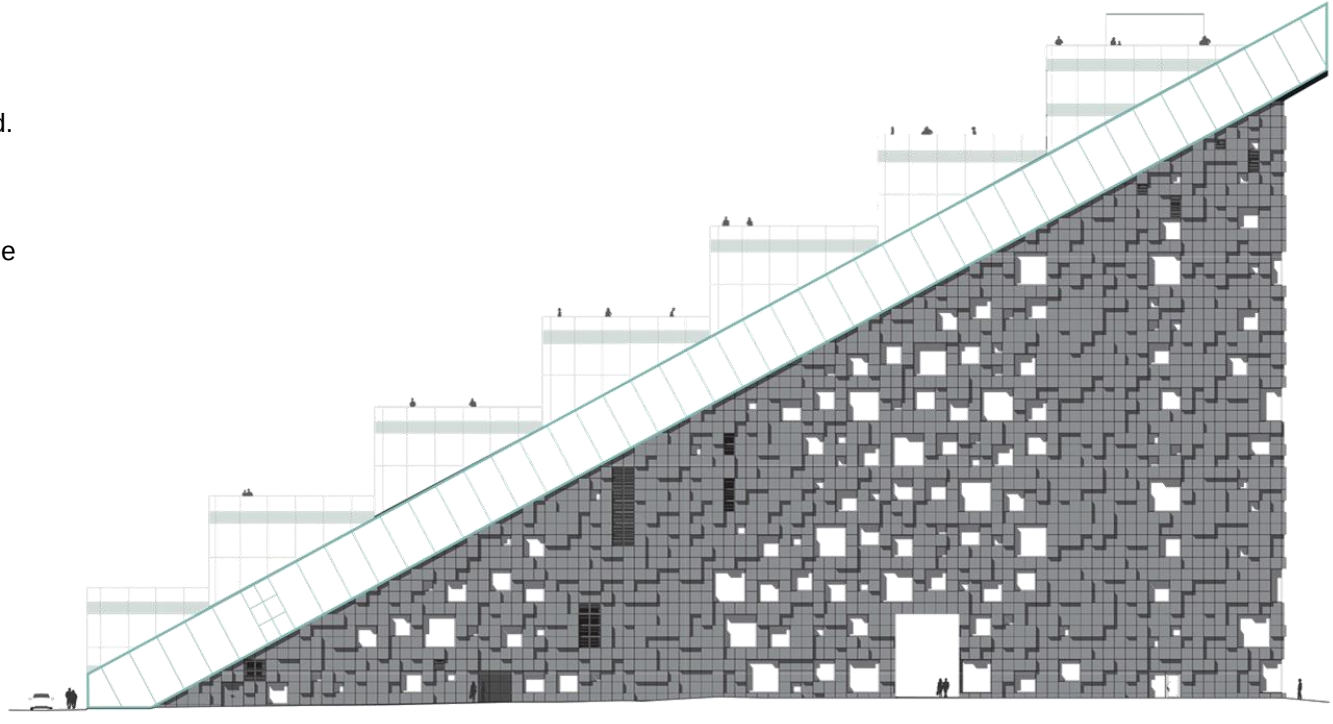


Image 4: Dark Arkitekter (n.d.). *East façade*. [image] Available at: https://darkarkitekter.no/projects/dnb-vest [Accessed 2 Nov. 2019].

East façade

Pseudo Code

1: Create Facade Outline

2: Create Square Grid

3: Define Pattern

4: Define Window Area

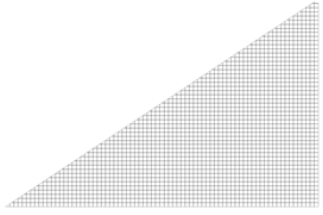
5: Remove Windows

6: Extrude Pattern

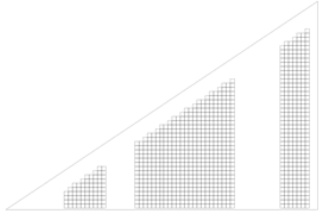
Parameters:
- Grid Size
- Opening Placements
- Opening Sizes
- Façade Pattern Cull
- Extruding Distance

Code Development

A.1: Create Facade Outline



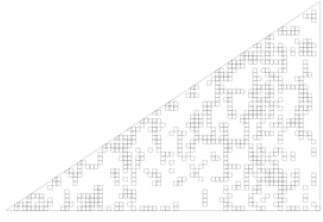
2: Create Square Grid



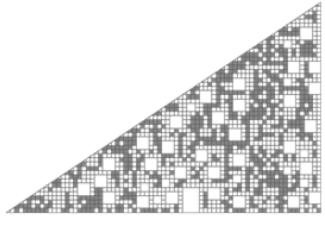
3: Define Window Area



4: Remove Windows



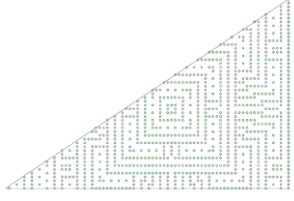
B: Define Pattern



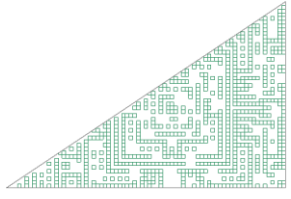
C: Extrude Pattern

Cellular Automata

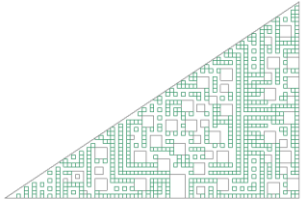
Rabbit



Points



Closest Square



Windows Removed

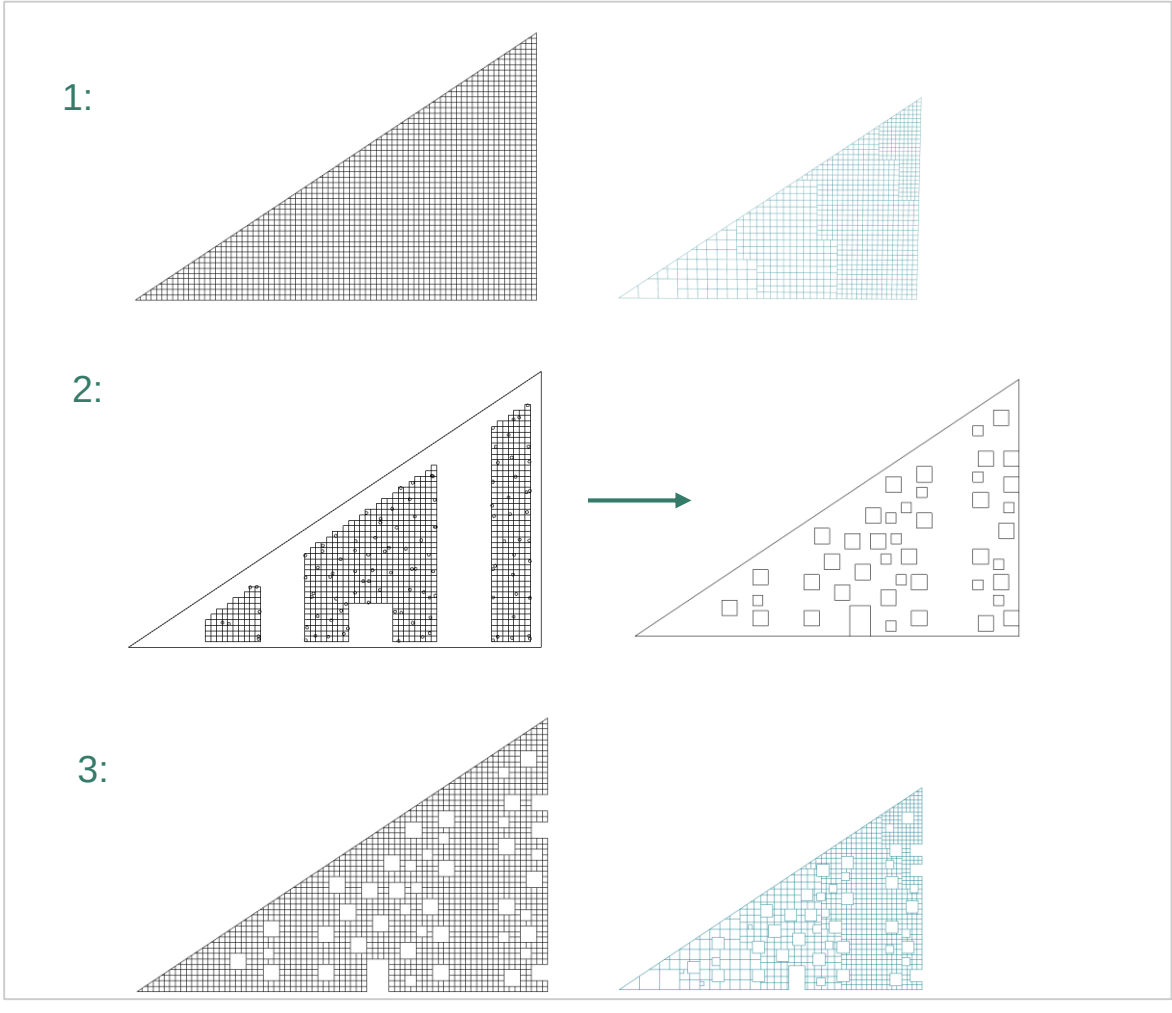
Parameters:

- Grid Size
- Window Placements
- Window Sizes
- Born/Survive Rules
- Cell Initial State
- Evolutions
- Extruding Distance

Facade array

The basis of the façade element was a square grid.
For iteration 1, a subdivided grid was created from a dividing the cells boundary surfaces based on the distance from the origin point.

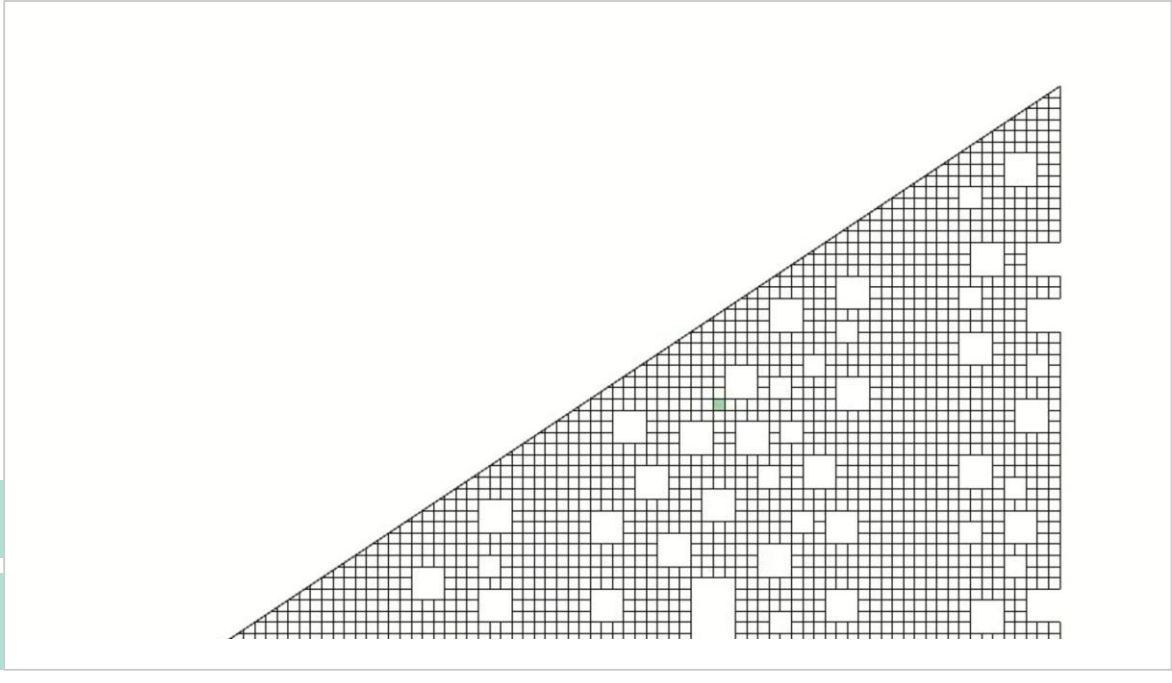
An area for the window start points was chosen and the area was populated with points.
The square containing each point was scaled to 1, 2 or 3 times its size. These squares were then checked for collision and subtracted from the grid.



Facade main element

The façade pattern was created from applying Conway's Game of Life to the grid points. The squares containing the living cells were extruded out from the base surface.

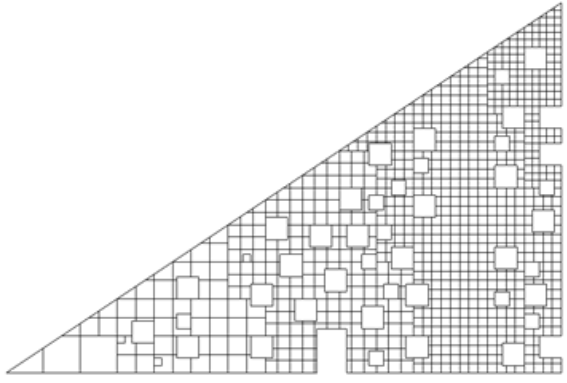
Video: Cellular Automaton Pattern Growth



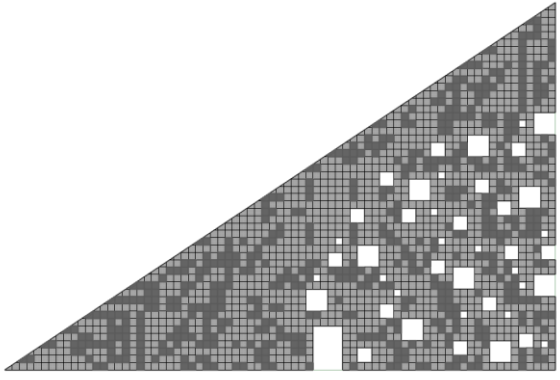
Born Rule:
2
3

Survive Rule:
3
4
5

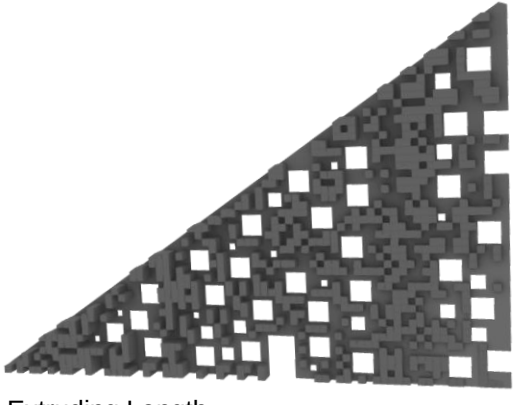
Facade iterations



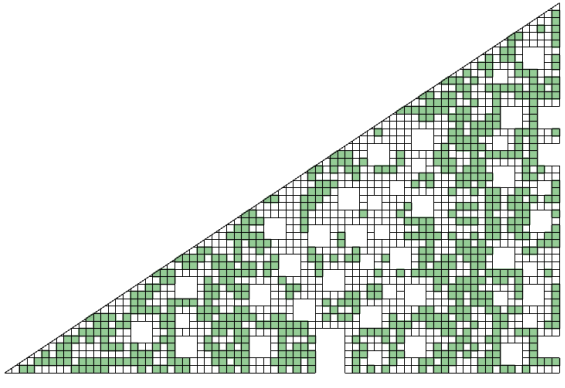
Grid Size



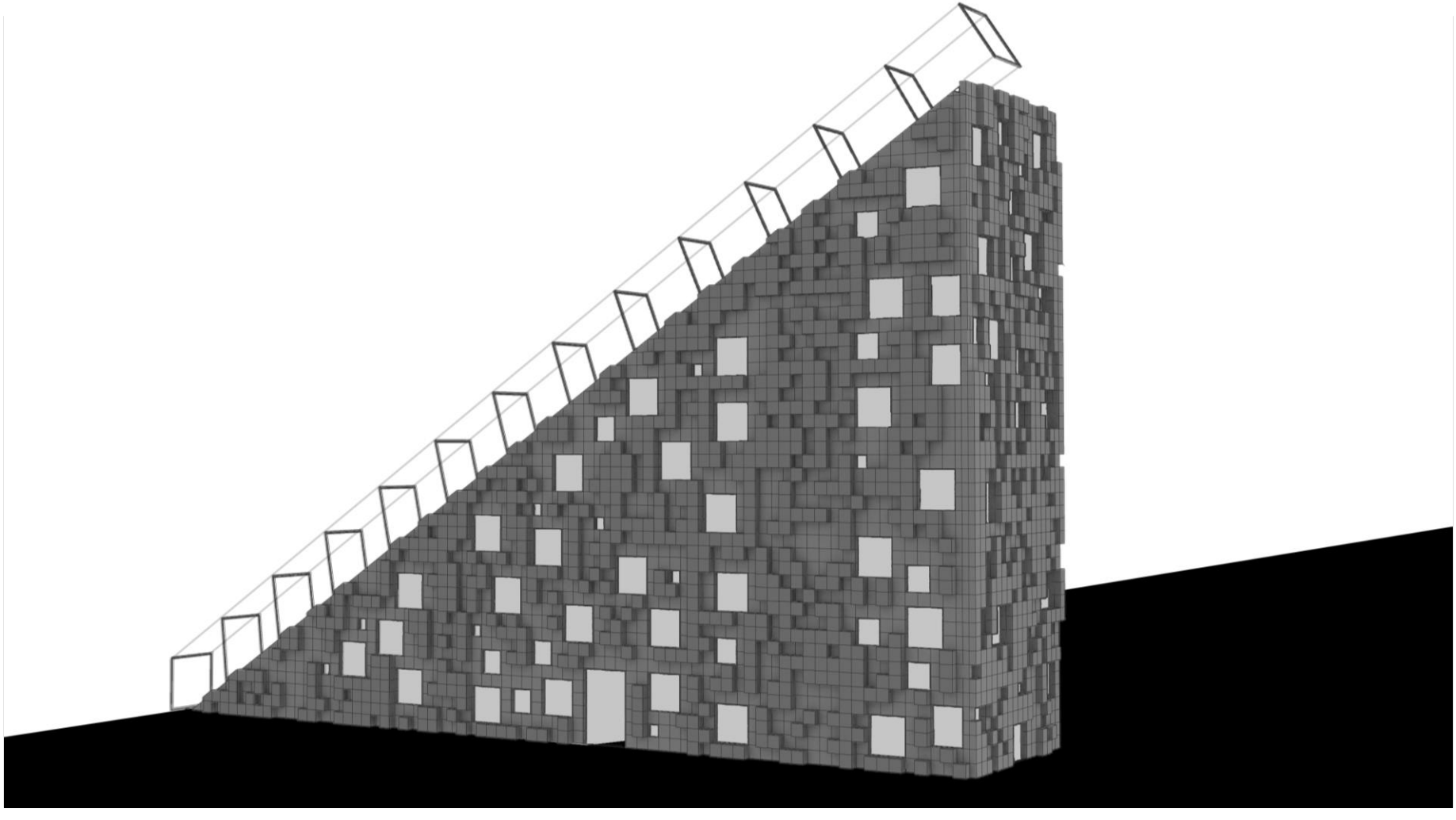
Window Placement



Extruding Length



Born/Survive Rules



Iaac

TUTORS: RODRIGO AGUIRRE, MOHAMAD ELATAB

ASSISTANT: IVAN MARCHUK, OANA TAUT

DNB HOUSE FACADE

Hanna Lepperød



Image: Kon, O. (n.d.). On the top floor a publicly acessible restaurant is installed, accessible through the tilted elevator. [image] Available at: https://darkarkitekter.no/projects/dnb-vest [Accessed 2 Nov. 2019].