

Computational Topology Optimization for Designing Compression-Only Masonry/Earthy Buildings

Background and aim:

Masonry/Earthy structures can be made with sustainable materials while offering strong structural properties, especially if designed as compression-only structures. Optimal masonry structures might take complex geometric shapes that present architectural design and structural validation challenges. We aim to develop computational methods & tools for automatic generation of valid structural forms.

Research question:

How to computationally generate valid designs for compression-only brick/masonry structures?

Design objective:

To design and prototype a topology optimization tool for designing masonry structures.

Methods:

- Topology Optimization (req. Calculus, Linear Algebra, etc.)
- Computational Topology & Geometry
- Finite Element Method
- Computer Programming (Python)

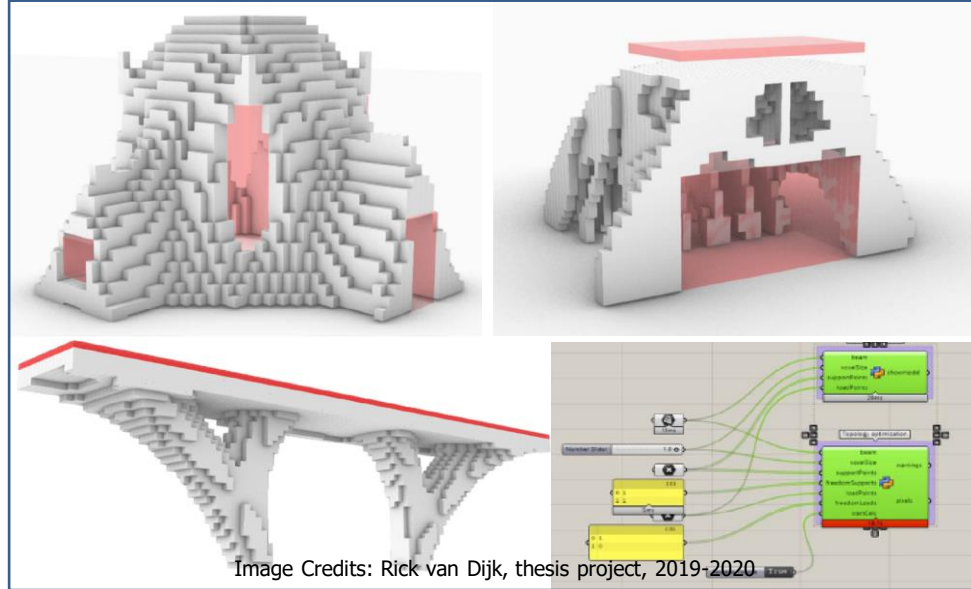


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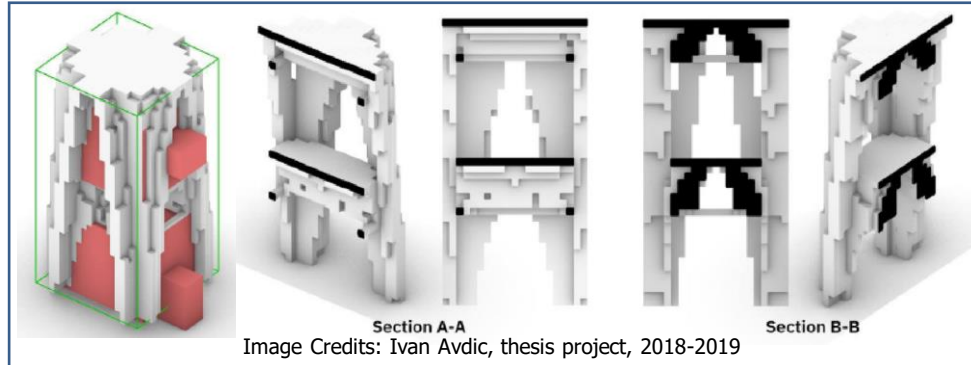


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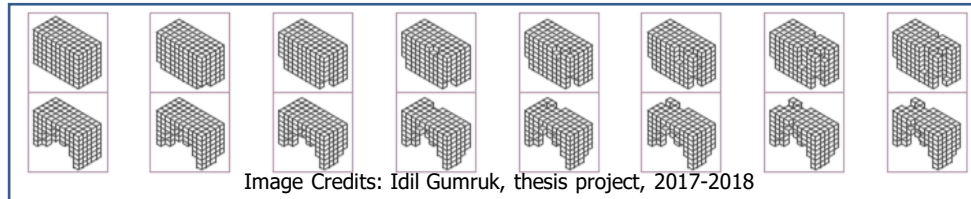


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Building Technology Graduation

Theme: Computational Design/Generative Design

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