

3D Printing Earth Architecture

Project Presentation | Summer Semester 2024

Kathrin Dörfler | Ema Krakovská | Professorship of Digital Fabrication | Technical University of Munich

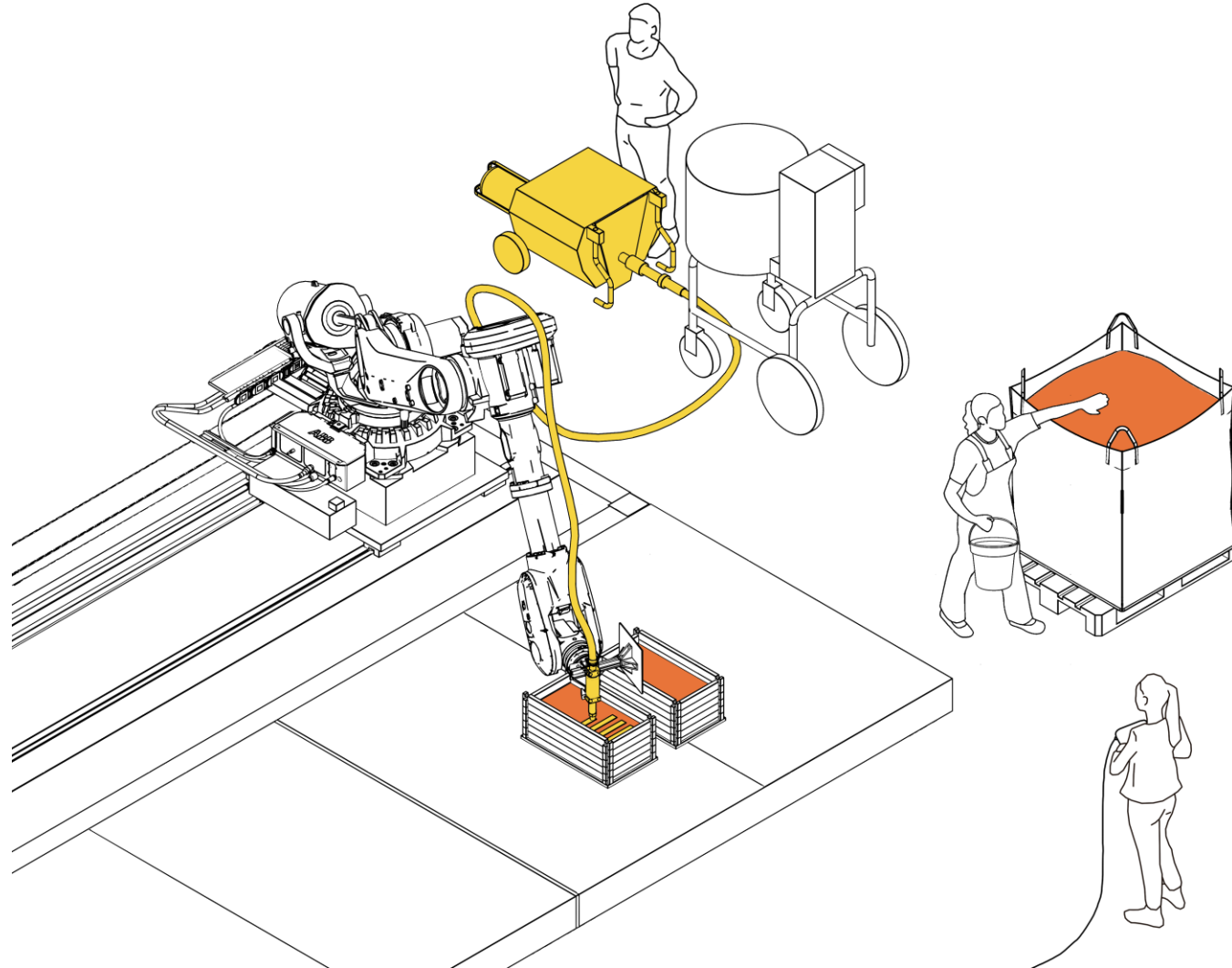




Material Reform: Building for a Post-Carbon Future

Material Cultures, Amica Dall, Charlotte Malterre-Barthes, Jess Gough

Motivation





1. Earth printing



2. Aggregate deposition



3. Compacting

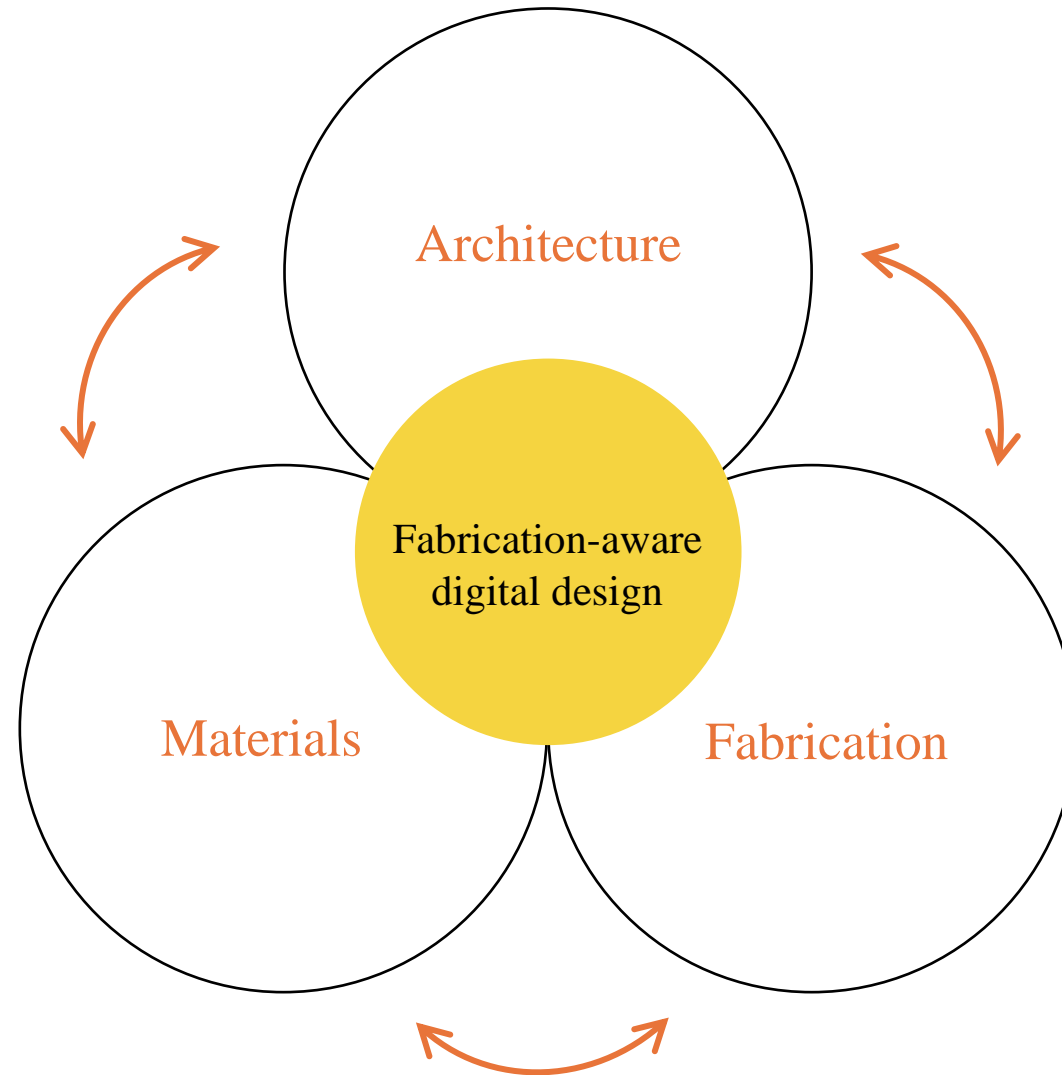


4. Finished layer



5. Unpacked element

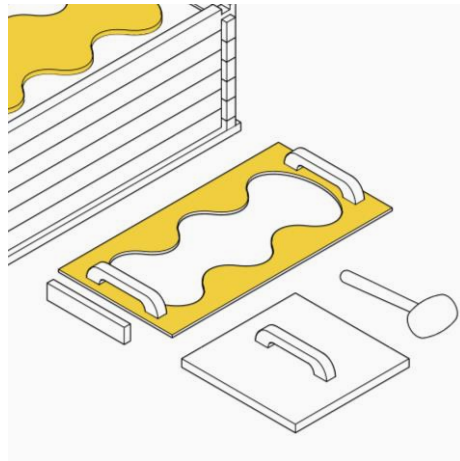
Holistic approach to design



Project structure



1. Research



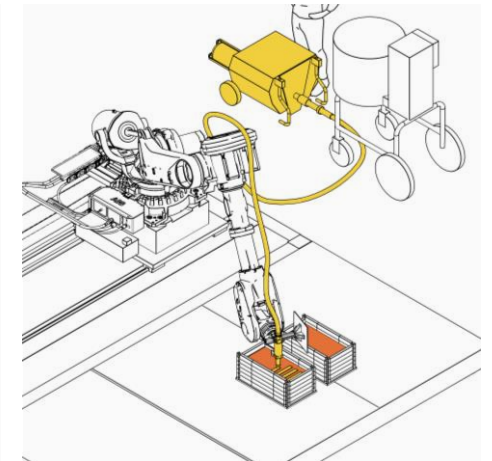
2. Manual material
and fabrication studies



3. Component design



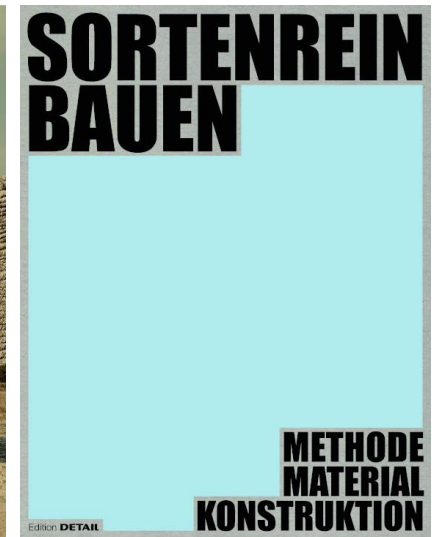
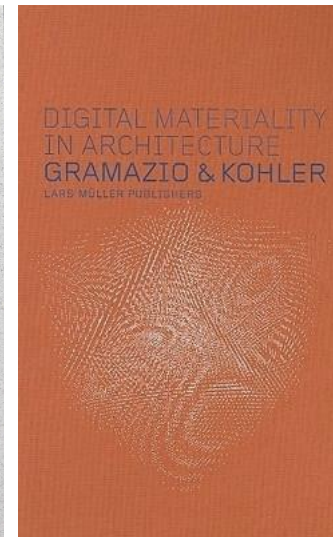
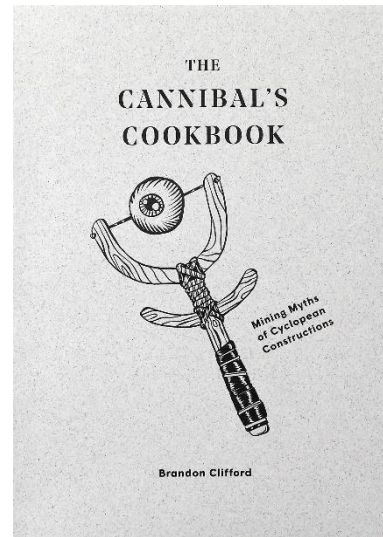
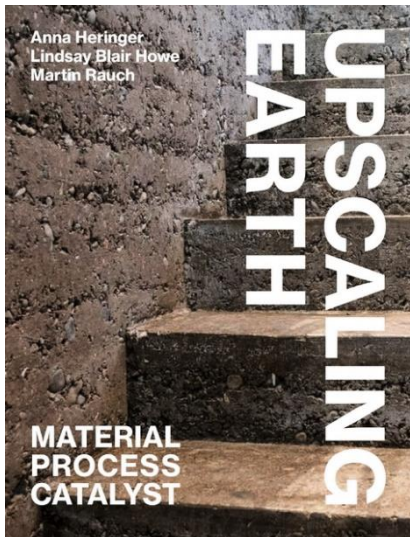
4. Building design



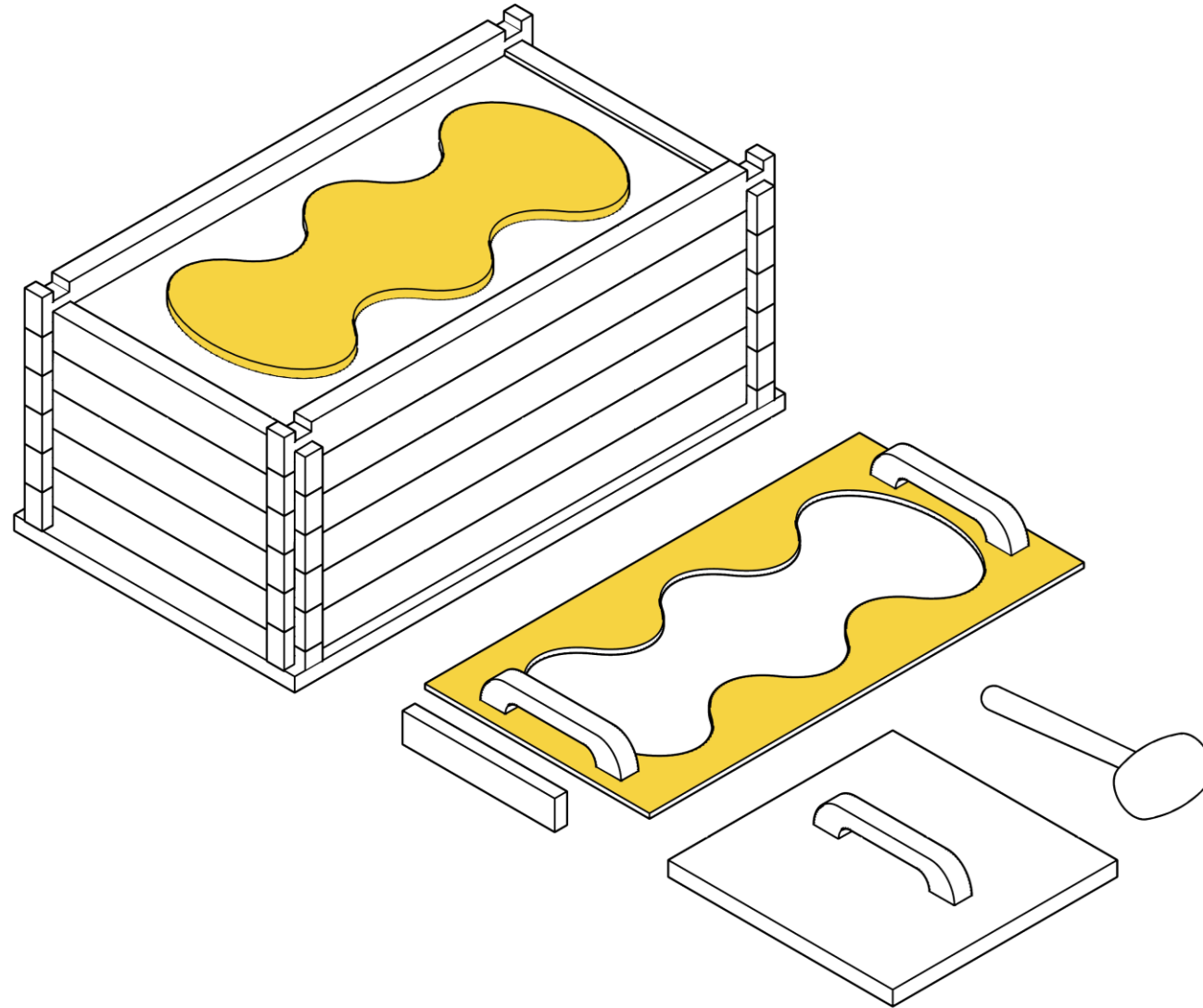
5. Robotic fabrication

1. Research

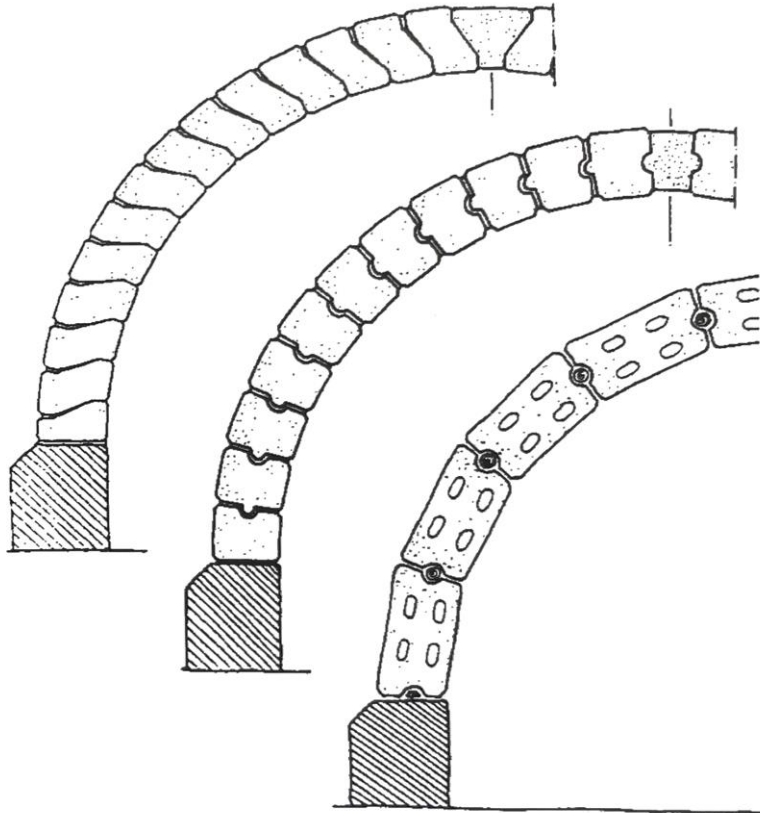
Integrated seminar (3ECTS)



2. Manual material and fabrication studies



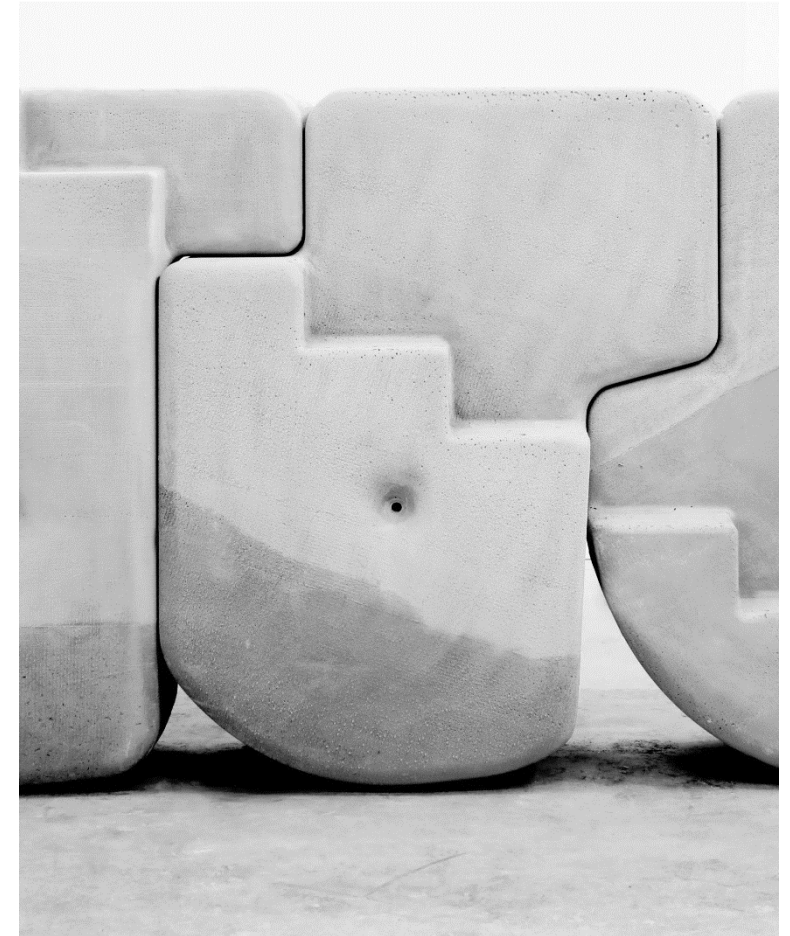
3. Component design



from Building with Earth / Gernot Minke / p. 68



Saloua Raouda Choucair / Poem



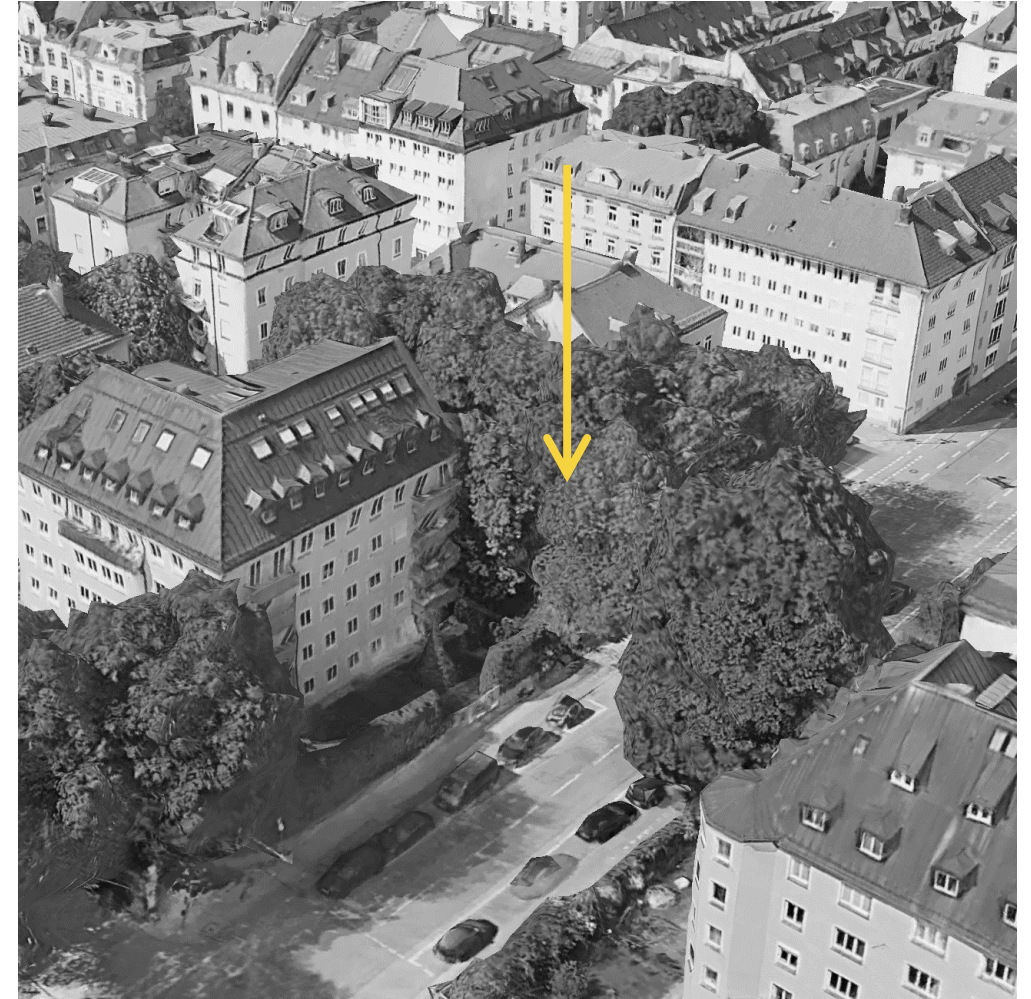
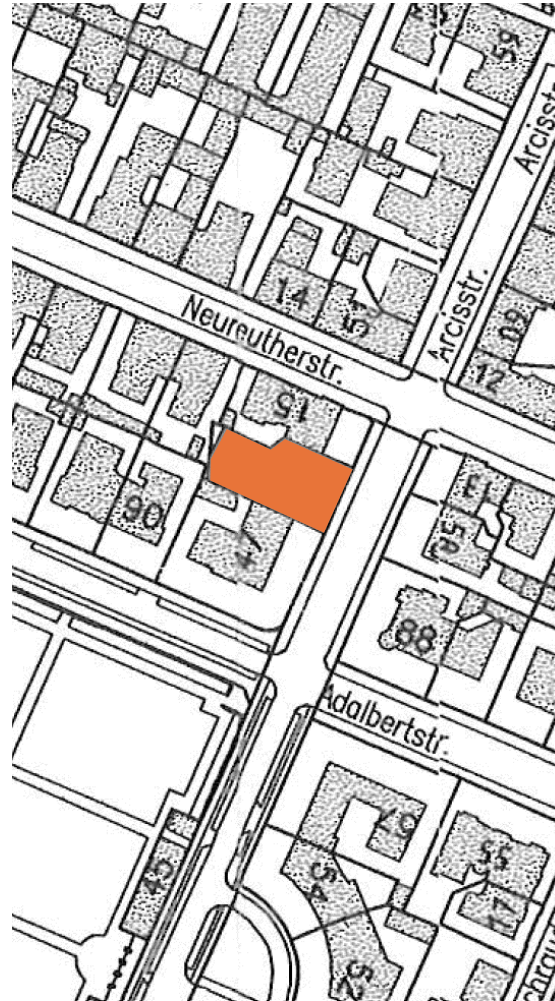
Brandon Clifford / Matter design

4. Building design

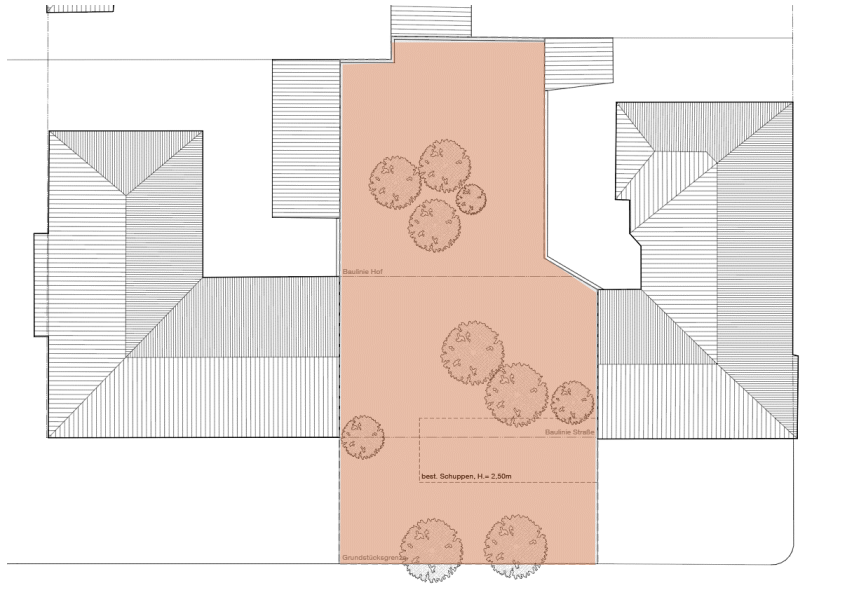
Design of a guest house

Building gap in Neureutherstrasse, corner of Arcisstrasse

Designed, planned and constructed with, and through, the use of EAM technologies



4. Building design



5. Robotic fabrication

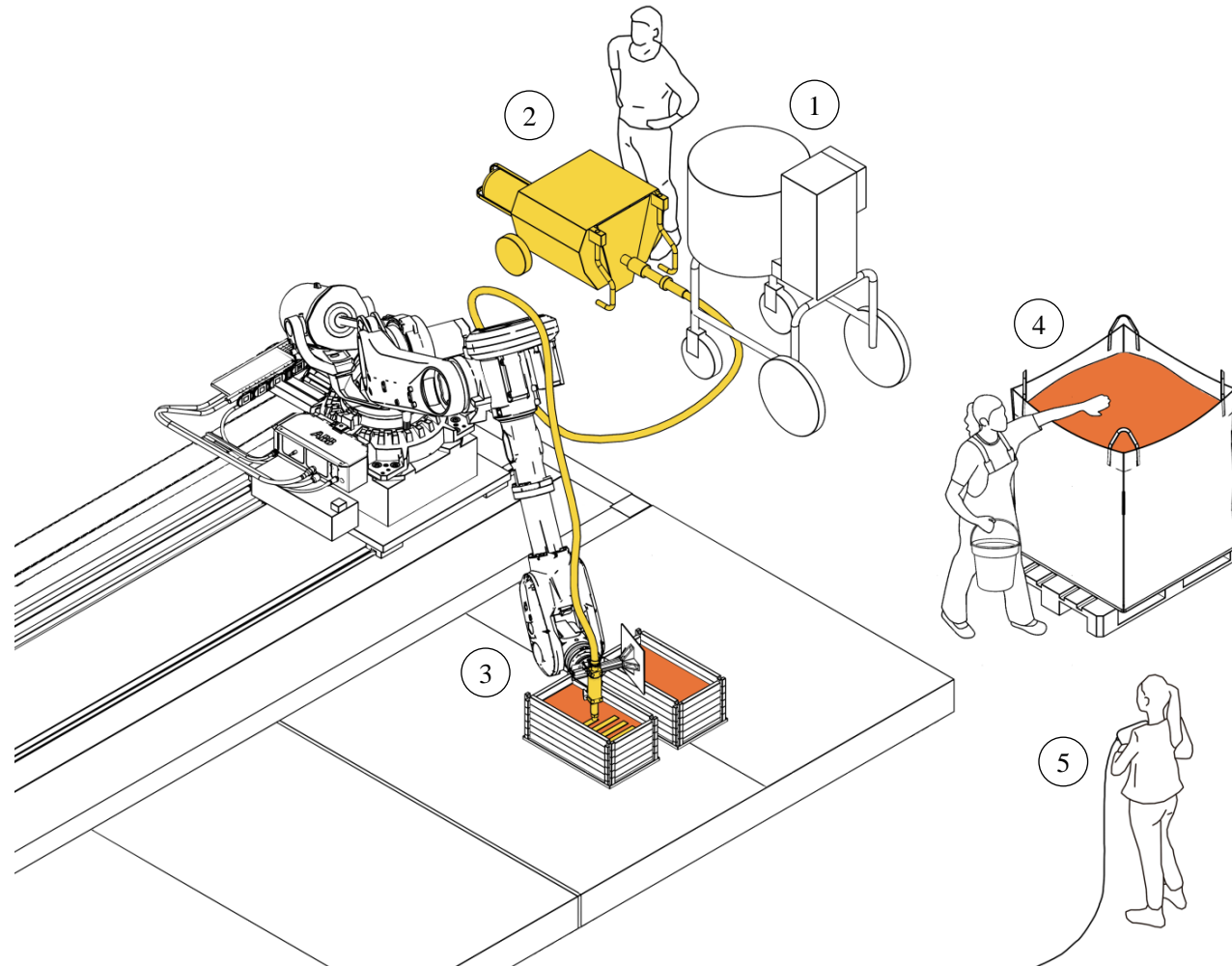
1 / Mixing

2 / Pumping

3 / Extrusion

4 / Aggregate deposition

5 / Robot control



Input lectures and guest crits



Sacha Cutajar / Earth formworks
USI (Fabrication- and Material-Aware Architecture)



Petrus Aejmelaesus-Lindström / Rock print
ETH (Gramazio Kohler Research)



Patrick Bedarf / Foam printing
ETH (Digital Building Technologies)



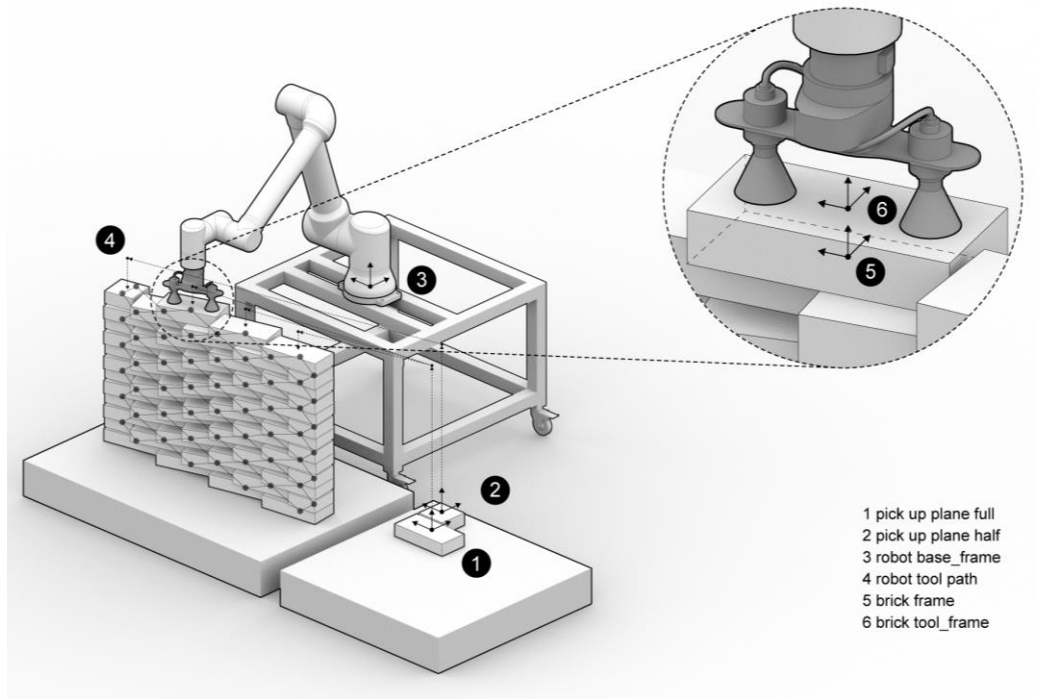
Joschua Gossler / Robotic rammed earth
TU Braunschweig (Institute of Structural Design)

Recommended seminar

Robotic Fabrication in Architecture

6 ECTS

Wednesdays 9:00 – 12:00



Excursion

Tuesday, 30.04.2024

LehmTonErde / Schlins, Österreich

95 € fee



Erden

Organization

Teaching

Professorship of Digital Fabrication

Prof. Dr. Kathrin Dörfler

Ema Krakovská, M.A.

Consulting

Professorship of Structural Design

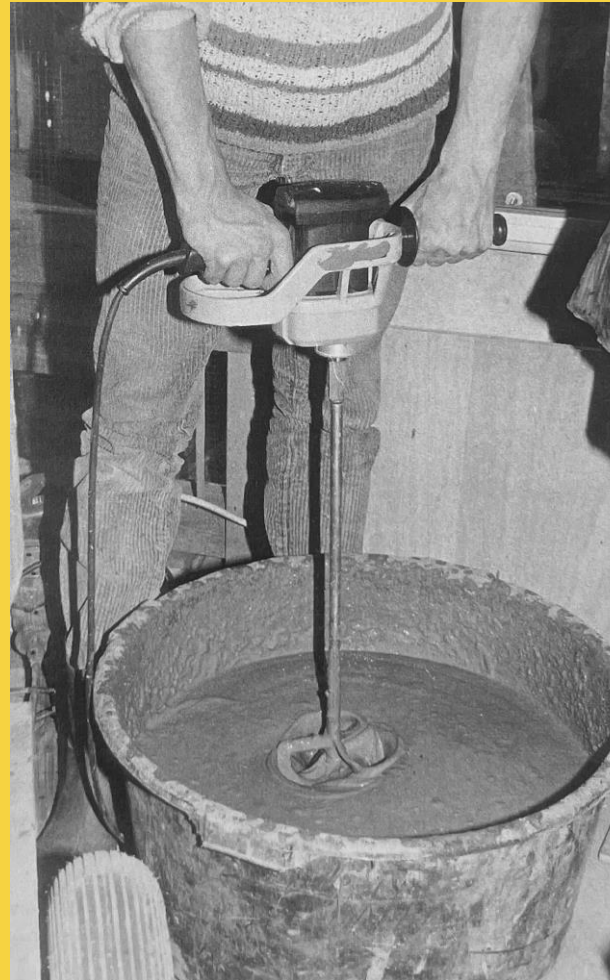
Prof. Dr. Pierluigi D'Acunto

In collaboration with

Leipfinger Bader Ziegelwerke

Meetings

Tuesdays, 10:00 - 17:00



from Building with Earth / Gernot Minke / p. 35

Kick-off

23.04.2024

Materials workshop

26.04.2024

Excursion

30.04.2024

Midterm presentations

28.05.2024 & 18.06.2024

Final presentation

09.07.2024