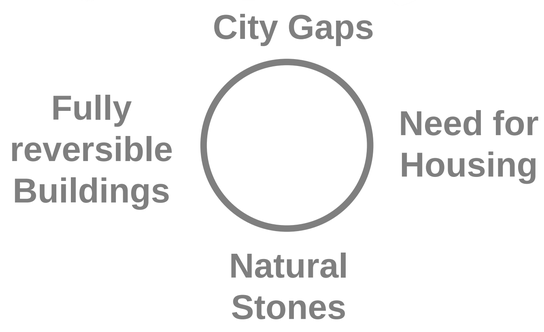
Technische Universität München

Heritage for a Sustainable Future (REBUS)
REversible BUildings for Sustainable and temporary cities

Roberta Fonti, *Chair of Conservation-Restoration, Art Technologies and Conservation Science (Prof. T. Danzl)*

Societal Challenge

Decarbonization of the **building industry** and **population growth** by **revisiting sustainable** building systems able to respect our planet.



- watching in retrospect at our past for progressing in the future -

Research

Introducing a new **generation of buildings, sustainable, affordable, flexible, recyclable**. These are made out of **natural stones** set in rows of interlocking blocks having **dry joints** and stable **footings upon** the **ground** (no excavation). These are designed in a form of a stone platform able to accommodate primary infrastructures and infinite configurations of volumes, forms and spaces that are **fully reversible.**

Theoretical application of the reversible buildings at the city gap - **historic slaughterhouse of Munich**.

- timeless and mobile buildings able to perform into the eternal loop of time -

Impact of the research

Acting at different levels in the society

- **Collaboration with the industry** *Firm Tufo Etrusco in Viterbo, Italy*
- **Collaboration with state institutions** *the city of Munich*
- **Education** *University*

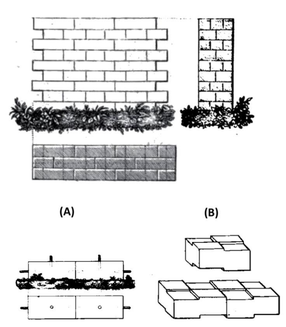
Interdisciplinary Project-based teaching & learning

Theoretical part | Learning from History

Target Group

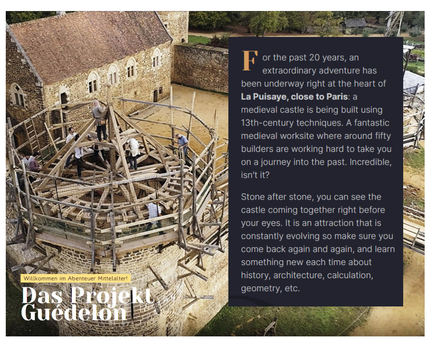
Participants statistics

ID of studies	Name of programme	count	percentage
Teilnehmer			
1630 30 350	Architektur (kA)	30	37.5%
1630 98 350	Architektur (kA)	14	17.5%
1630 29 350	Architektur (kA)	13	16.3%
1630 16 310	Bauingenieurwese (kA)	8	10.0%
1630 16 459	Environmental Engineering (kA)	8	10.0%
1630 16 321	Ressourceneffiz. und Nachhaltiges Baue (kA)	3	3.8%
1630 16 117	Technology of Biogenic Resource (kA)	1	1.3%
1630 16 268	Management (Hauptstandort: Heilbronn) (kA)	1	1.3%
1630 16 457	Umweltingenieurwese (kA)	1	1.3%
1630 98 310	Bauingenieurwese (kA)	1	1.3%
Total participants		80	



G.A. Borgnis (1842), Elementi di Statica Architettonica, Libro II

October Excursion to Paris

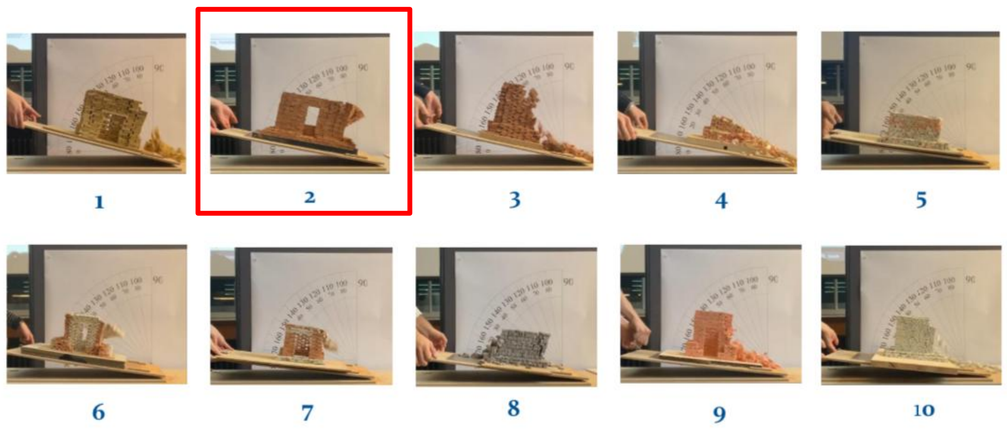


November Workshop in Raitenhaslach

December

Practical part | Learning by Doing

Student Competition on Scale models (in-plane and out-of-plane stability)



Winning Design

Winning Design

Selection criteria
- Applicability (practicality)

Students Schreiner, Elias | Bothe, Simon | Pianetti, Filippo Enea | Olle Viking Morgan

Full scale Physical model

January

Final Outcomes Prototyping & Circular economy

SS 25

A new Future for the Stones

February – March

Villa Albers Project by Prof. F. Nagler

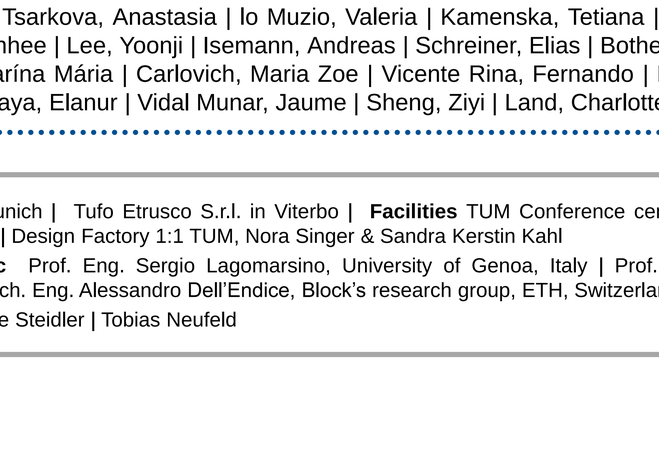
Dismantling and Packing in about 4 hours and without the help of heavy machineries

Creating Clay and Adobe from Dirt

Schreiner, Elias | Bothe, Simon

1:1 Full Scale Model, TUM Design Factory

dry joint masonry, two-week building site, 45 students working in groups of 9 subdivided in teams of 3 students per shift (4 hours)



Project Week

Follow us up

Students Jochum, Philip | Makram, Sara | Mahran, Randa | Mandl, Celina | Keßler, Lena | Clausen-Schaumann, Lisa | Cazan, Teodor-Andrei | Tsarkova, Anastasia | Io Muzio, Valeria | Kamenska, Tetiana | Mieles, Mateo | Köhler, Gina Luisa | Nick, Julia | Langenhagen, Ken Louis | Goeke, Louis Felipe | Calisan, Betül | Ernek, Defne | Walter, Celeste | Ko, Geonhee | Lee, Yoonji | Isemann, Andreas | Schreiner, Elias | Bothe, Simon | Kudriavceva, Uljana | Gwada, Maxine Sayuri | Kick, Linda | Li, Jiayi | Wang, Mingyan | Giannakopoulou, Athina | Gao, Shiyu | Dujsíková, Katarína Mária | Carlovich, Maria Zoe | Vicente Rina, Fernando | Pianetti, Filippo Enea | Malivuk, Ana | Anđelović, Lucija | Mazuraite, Agniete | Jeyaratnam, Januya | Nordin, Olle Viking Morgan | Martinez Picazo, Laura | Maya, Elanur | Vidal Munar, Jaume | Sheng, Ziyi | Land, Charlotte

Technische Universität München
TUM School of Mustertechnik
Lehrstuhl für Musterverfahren

In partnership with The city of Munich | Tufo Etrusco S.r.l. in Viterbo | **Facilities** TUM Conference centre of Raitenhaslach, Julia Oberhaizinger | Design Factory 1:1 TUM, Nora Singer & Sandra Kerstin Kahl
Invited Guest lectures and Critic Prof. Eng. Sergio Lagomarsino, University of Genoa, Italy | Prof. Arch. Elisabeth Merk, TUM, Germany | Arch. Eng. Alessandro Dell'Endice, Block's research group, ETH, Switzerland
Tutors Cazan, Teodor-Andrei | Maike Steidler | Tobias Neufeld