

**22. & 23.
MAY 2025**

University of Innsbruck, TECH CAMPUS
Department of Experimental Architecture

Towards Integrative Design

Bio-Integrated and Digitally Fabricated

INTEGRATIVE/S DESIGN
EXTREMES



BIO-FUTURES
For Transplanetary Habitats



**universität
innsbruck**

Welcome to the Symposium

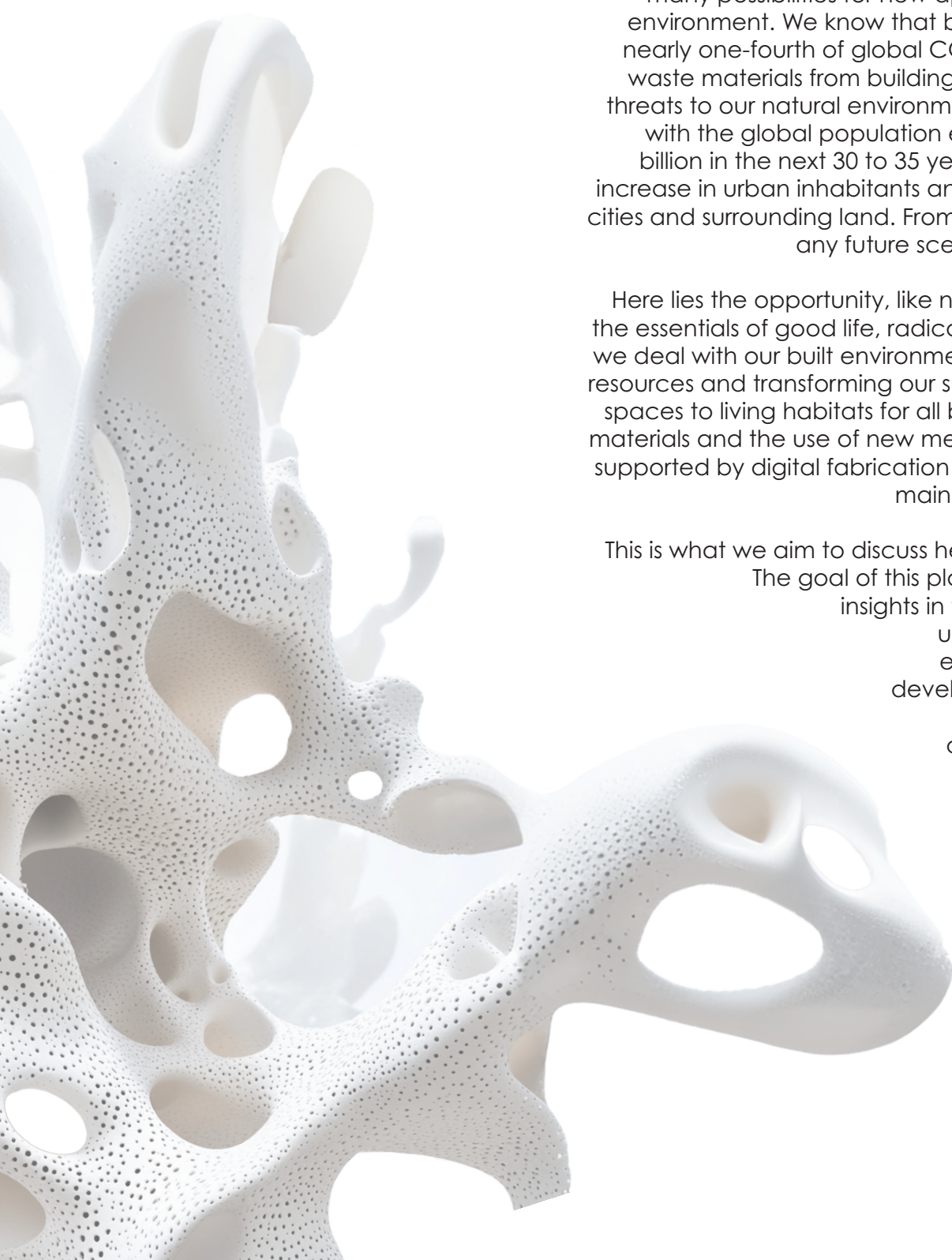
Prof. Dr. Barbara Imhof

Welcome to the symposium "Towards Integrative Design – Bio-Integrated and Digitally Fabricated," which takes place for the first time at the Architecture Faculty of the University of Innsbruck. We are pleased to have you here with us to share and discuss the latest advancements in the field.

As we face tremendous challenges related to climate, political, and social change, we also see many possibilities for new approaches in our built environment. We know that buildings contribute to nearly one-fourth of global CO2 emissions and that waste materials from building deconstruction pose threats to our natural environment. On a social level, with the global population expected to reach 10 billion in the next 30 to 35 years, we will witness an increase in urban inhabitants and the densification of cities and surrounding land. From today's perspective, any future scenario seems extreme.

Here lies the opportunity, like never before: focus on the essentials of good life, radical changes in the way we deal with our built environment, turning waste into resources and transforming our surroundings from inert spaces to living habitats for all beings. Bio-integrated materials and the use of new methods of construction supported by digital fabrication are undoubtedly two main pathways to explore.

This is what we aim to discuss here at this symposium. The goal of this platform is to share new insights in these areas, enabling us to collaborate more effectively, accelerate developments, and create positive opportunities amidst the challenges we face.



B. Imhof

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Department of Experimental Architecture

About the Symposium

The department of Integrative/s Design | Extremes and the Bio-Futures for Transplanetary Habitats initiative are pleased to invite you to the "Towards Integrative Design" Symposium, where experts and thinkers will explore the challenges facing our built environment and present innovative responses that lead to long-lasting structures, bio-integrated materials, and inclusive living environments for all beings. We seek contributions from practitioners, researchers and theorists addressing the profound transformations driven by digital technologies, such as 3D printing, robotics, and autonomous systems.

The symposium aims to generate discussions on design-driven, innovative construction for regenerative architecture that integrates biological principles into architectural and material practices, generating positive environmental impacts. It focuses on exploring the intersections between bio-integrated architecture and advanced computational design processes. We are particularly interested in implementation strategies, scaling-up current state-of-the-art, and translating research into practical applications. Additionally, we seek practitioners who adopt an integrated approach, where function, design, fabrication, and computation are seamlessly intertwined into a unified design strategy and workflow.



Thursday 22nd May
Morning 09:00 - 13:00

08:30 | Arrival and Coffee

09:00 | Welcome

Peter Trummer
Welcome by the Dean

Layla van Ellen
Welcome to the Symposium

09:30 | Keynote - Mette Ramsgaard Thomson

“

Moderated by Barbara Imhof

Questions

10:15 - Break

10:30 | Biomaterials Fabrication

Moderated by Monika Brandić-Lipińska

Marjan Colletti et al.

Postplasticism: Spatial Applications of Robotic Fabrication

Kilian Bauer

Exploring Multi-Materiality

Yuliya Sinke et al.

Knitted Bio-based architectural membranes

Tanvi Khurmi et al.

The Architecture of Emergence

11:30 - Break

11:45 | Framing of Bio-Integration

Moderated by Mathias Bank

Andreas Körner et al.
Semper's 'Stoffwechsel' as a conceptual framework

Pilar Bolumburu-Perez
Adapting Structured Literature Reviews for Biodesign Research

Paul Treichl
Designing for Deep Time

12:30 - Lunch

Location: **FOYER**

Thursday 22nd May
Afternoon 14:00 - 19:00

14:00 | Imaginaries

Moderated by Mathias Bank

Carrie Paterson & Luis Guzmán
Micro Forests in Space Habitats

Wendy Wuyts et al.
Science Fiction Prototyping

14:30 - Break

14:45 | Weathering and Resource Cycles

Moderated by Layla van Ellen

Fabian Eidner et al.
Strategies for Adaptive Design and Fabrication

Anete Salmane et al.
A bio-integrated design framework for atmospheric carbon sequestration

Maria Jose Creuheras et al.
Weathering as an Ecological Design Factor

15:45 - Break

16:00 | Metabolisms

Moderated by Layla van Ellen

Hangchuan Wei et al.
Probiotic Design Interventions

J. Sebastian Garcia-Medina et al.
Innovative Approaches to Metabolic Waste Up-cycling

Xiyao Shou et al.*
Bioelectrochemical fiber system

16:45 - Break

18:00 | Keynote - Alexander Bismarck

'Wastes to Composites'
Moderated by Barbara Imhof

Questions

Location: **FOYER**

Thursday 22nd May
Evening

Apéritif with Posters

18:45 - 20:30

Posters, Drinks and Fingerfood

Presenters

Namita Bhatnagar

Living Lattices -

Merging Craft, Material Science, and Regenerative Design

Eliza Biala et al.

Design'n'Grow Studio - explorations in upscaled biofabrication

Andreas Biront

Growth propagation of liquid spawn on non-woven hemp mats

Monika Brandić-Lipińska

Alien Technology for Alien Worlds

Rafaela Cecconi et al.

AlgaeHalo: Light as a Spectrum

Layla van Ellen

Rhythmic Buildings - towards living adaptable architecture

Fran Liu et al.

From Static to Living: Computational strategies

Paula Andrea Molina

Exploring Photosynthetic Surfaces Printing Herbarium

Rachel Pearl

Project Archipelago: Enhancing Decommissioned oil rigs

Penn Ryan et al.

MycoAir: Mycelium Air Filtration for the London Underground

Natalia Piórecka et al.

3M Microbial Material Matter

Miruna Porosnicu et al.

Design with Dynamics of Bio-materials

Shylaja Regunathan et al.

Knit, Swell, Actuate: Exploring moisture responsive actuation and retention

Richa Saini

Mycelium Meets Waste: A Review of Paper-Based Mycelium Composites

Simon Schnittker et al.

Digital and material intelligence for an adaptive city

Aisa Shams et al.

Enhancing the Performance of Acoustic Components

Can Yardimci et al.

Mycelium Corbelling: Utilizing Environmental-Driven Design and Machine Learning

Yin Yu

Soft Tectonics: Morphologies of Elastic Structure for Coral Reef Environment

Shu Zhang et al.

Biomaterial Tending: Sensing and Repairing Bio-integrated Architecture



Friday 23rd May
Morning 09:00 - 13:00

08:30 | Arrival and Coffee

09:00 | Introduction

Karolin Schmidbaur

Welcome by the Dean of Studies

Barbara Imhof

Through the Lens of Extremes

09:30 | Mycelium Based Composites

Moderated by Monika Brandić-Lipińska

Kalaivanan Amudhan et al.

Living Tex'Celium: Exploring Sustainable Architectural Practices

Andrea Rossi et al.

Myco-Lock: Enabling Topological Interlocking Assemblies

10:00 - Break

10:15 | Biomaterials Digital Fabrication

Moderated by Andreas Körner

Lynn Hyun Kieffer et al.

Printing Mycelium-Bacteria Bound Composites

Nadja Gaudillière-Jami et al.

RotoForm blue biomass

Alale Mohseni et al.

Advanced Acoustic Architectural Design

11:15 | Modelling of Biological Behaviour

Moderated by Andreas Körner

11:00 - Break

María Claudia Valverde Rojas et al.

Rethinking Urban Surfaces: Geometry-Driven Thermal Solutions

Ataberk Kahraman et al.

Decoding Ivy Behavior for a Performative Flow Model

Demet Öztekinçi et al.

Interscalar Prototype Modeling of Root Formations

Petra Gruber et al.

Root learnings for architecture

12:30 - Lunch

Location: **FOYER**



Friday 23rd May
Afternoon 14:00 - 17:00

14:00 | Keynote - Fabio Gramazio

'Digital Materiality in Architecture'

Moderated by Barbara Imhof

Questions

14:45 Break

15:00 | Lab and Department Tour

**Guided tour of facilities, laboratories, and
different departments on the TECH Campus**

16:30 | Closing

Location: **FOYER**

Saturday 24th May

Social day

10:00 | Panorama walk up the Nordkette

Meeting Point: **Hungerburg at 10:00**

Closest bus stop: **Innsbruck Nordkette (bus J)**
or take the **Hungerburgbahn** designed by Zaha Hadid

We will take the Seegrubenbahn together and there
walk the accessible Perspektivenweg (2,8 km)

Symposium attendees get a 25% discount for the
Seegrubenbahn & Hafelekarbahn

Students: 35,90€

Regular: 39,00€

13:00 | Lunch at Seegrube

14:00 | Top of Innsbruck

We will take the Hafelekarbahn together
and explore the Top of Innsbruck.

16:00 | AUT Architecture Center

Architectural Exhibition
The dawn of modern architecture in El Salvador

Originally a Sud House for the Adamsbräu
now repurposed as an Exhibition Space

Meeting Point: **AUT Innsbruck**

Closest bus/tram stop:
Innsbruck Hauptbahnhof
Innsbruck Heiligegeiststraße

17:30 | Drinks with a View

Meeting Point: **Adler Hotel Terrace**

Closest bus/tram stop:
Innsbruck Sillpark
Innsbruck Hauptbahnhof

Keynote Information

Mette Ramsgaard Thomson -

Professor and Founder of the Center for IT and Architecture (CITA)
at the Royal Danish Academy of Fine Arts

Bio:

A renowned expert in architectural theory and practice, Prof. Ramsgaard Thomsen is known for her innovative approach to design, with a particular focus on integrating technology and human experience. As a professor at the Royal Danish Academy of Fine Art and founder and head of the Centre for IT and Architecture (CITA), she has contributed significantly to the discourse surrounding digital fabrication, environmental sustainability, and architectural ergonomics. Her work explores the intersection of form, function, and technology, shaping the future of architecture.



Keynote Thursday 22nd at 09:30 in the FOYER

Alexander Bismarck - Waste to Composites

Professor and Head of the Institute of Materials Chemistry and Research
at Vienna University

Bio:



Alexander Bismarck currently holds a joint appointment at the Faculty of Chemistry of the University of Vienna, Austria and the Department of Chemical Engineering at Imperial College London as Professor in Materials Chemistry in Vienna and Professor of Polymer Materials. He took up his Chair of Materials Chemistry at the University of Vienna in Sept. 2012. AB heads the Polymer and Composite Engineering (PaCE) Group and the Institute of Materials Chemistry & Research. Prior to joining Imperial as a lecturer he held a permanent position as R&D engineer and project leader at Sulzer Innotec/Sulzer Composites (later Gurit Suprem) Winterthur, Switzerland. His research is focusing on various aspects of polymer materials, interface design and manufacturing aspects of advanced composites, renewable materials and porous polymers. His research was and is supported by UK research council (EPSRC), EU FP7, Innovate UK, MoD grants, directly by industry and FWF. He is the Co-PI of the only EPSRC Programme grant in Composites Engineering.

Keynote Thursday 22nd at 18:00 in the FOYER

Fabio Gramazio - Digital Materiality in Architecture

Professor and Head of Gramazio Kohler Group at ETH Zurich

Bio:

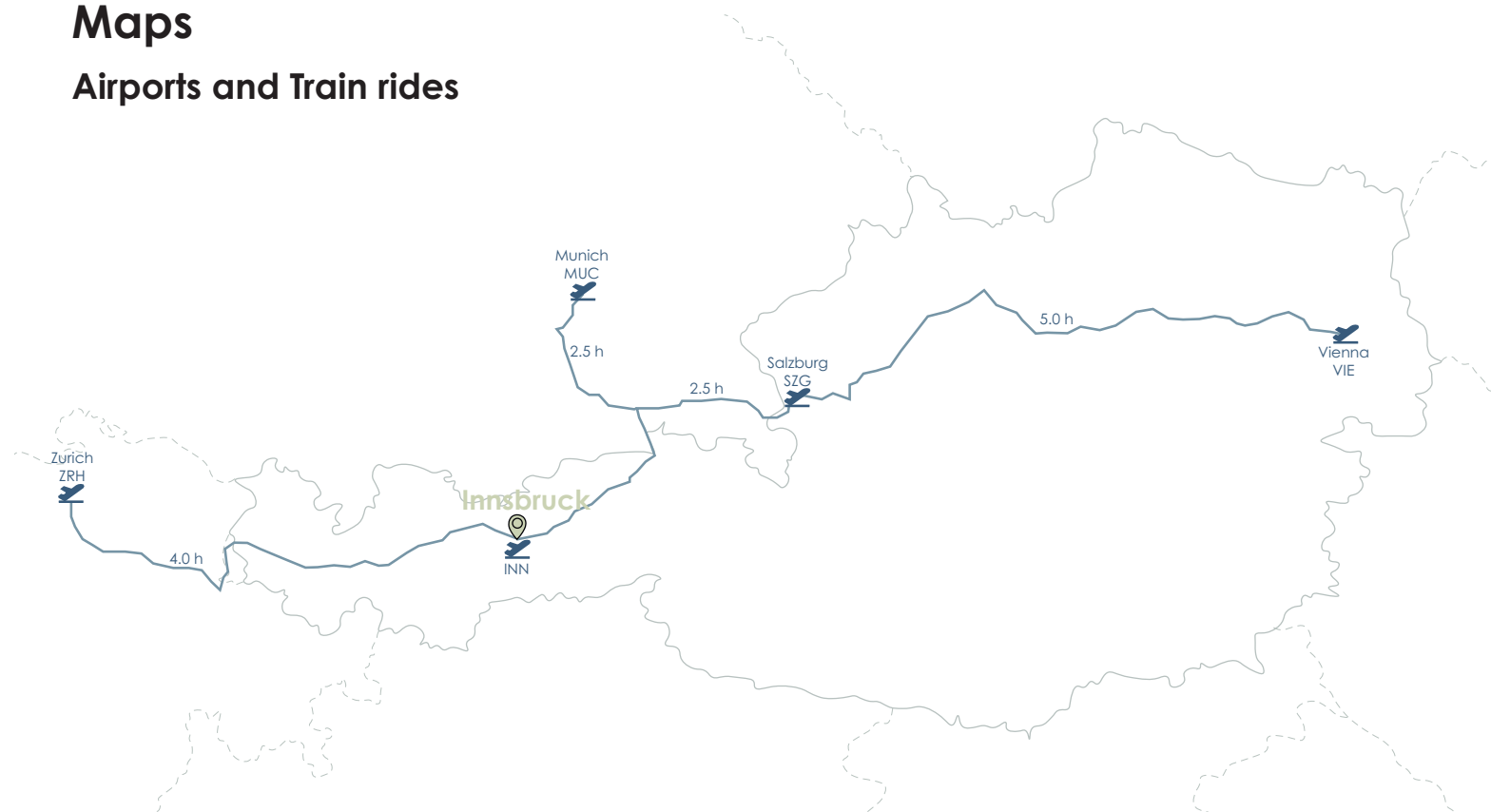
Fabio Gramazio is an architect with multidisciplinary interests ranging from computational design and robotic fabrication to material innovation. In 2000, he co-founded the architecture practice Gramazio Kohler Architects, where numerous award-winning designs have been realised. Opening the world's first architectural robotic laboratory at ETH Zurich, Gramazio Kohler's research has been formative in the field of digital architecture, setting precedence and de facto creating a new research field merging advanced architectural design and additive fabrication processes through the customised use of industrial robots. The research is outlined and theoretically framed in the book "The Robotic Touch: How Robots Change Architecture" (Park Books, 2014).



Keynote Friday 23rd at 14:00 in the FOYER

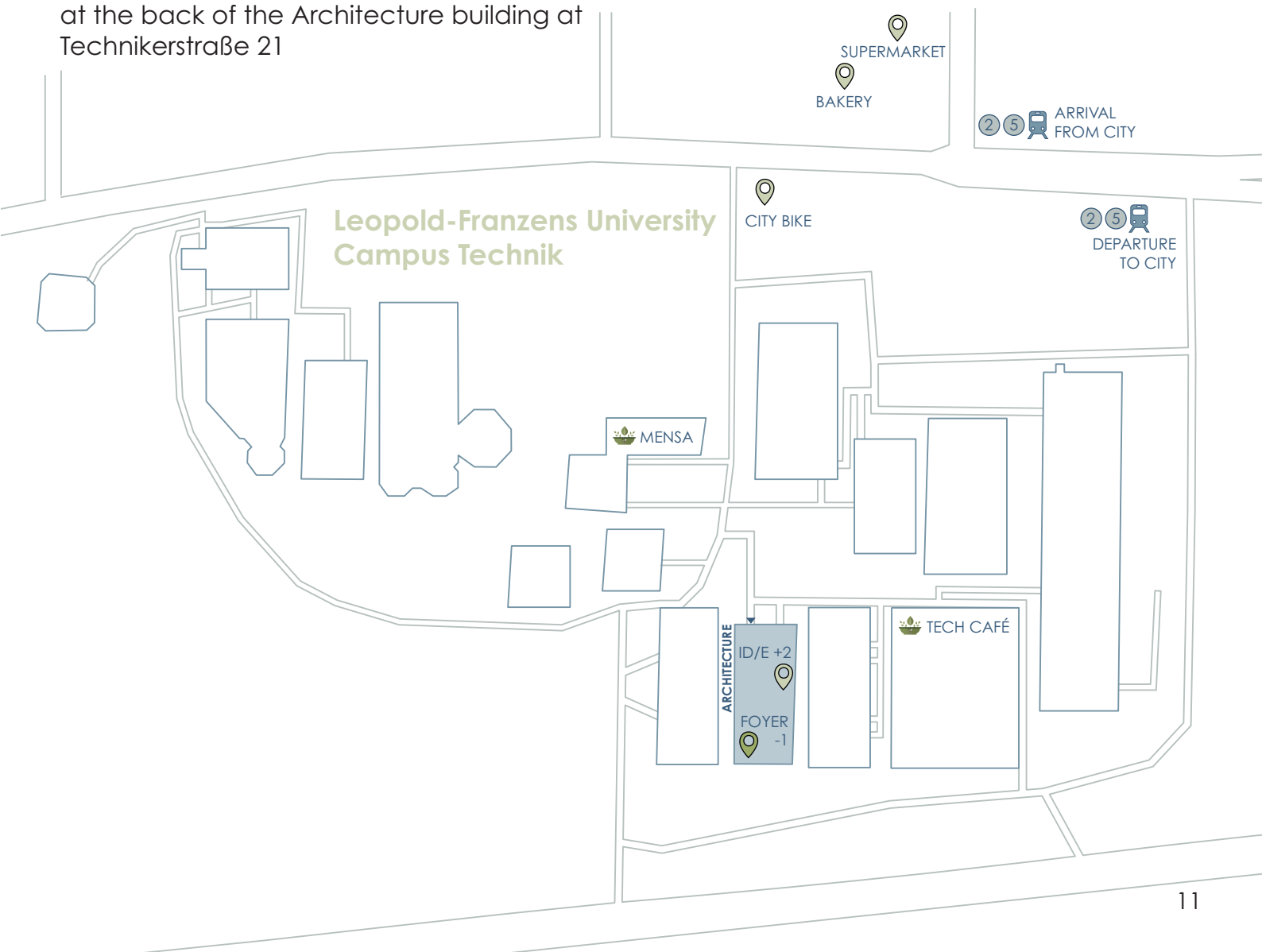
Maps

Airports and Train rides



Campus Guide

Symposium will take place in the Foyer (-1) at the back of the Architecture building at Technikerstraße 21



Information about Innsbruck

Public Transportation

Tram and Bus available in Innsbruck

Tickets can be bought at every stop and need to be validated inside public transportation

Otherwise tickets can be obtained at Trafik shops or online:

IVB Scout App or Wegfinder

(shows Timetables and Connection Information)

Bike

Innsbruck has great bike paths

Bikes can be rented via the App across the city and returned at every City Bike location:

Wegfinder App

Car

Parking Spots need to be paid for either onsite or online:

EasyPark App

Times:

Mon-Frid 09:00–21:00

Sat 09:00–13:00

for 90–180 min

Longer Parking Periods require Parking Garages



Enjoying Innsbruck

Our recommendations

Restaurants:

Arabisk Innsbruck

Great syrian food

Tomasselli

Traditional ice cream - various locations accross the city

Stiftskeller

Local food in a classic 'Stube'

Meow

Vegan pizza close to TECH campus

RAED

Best pizza in town "with a mean cheesecake"

Pizzeria A Casa

Arguably second best pizza in town, with a sunny terrace

Cafés:

Brennpunkt Coffee

Work café and bar

Hocus Pocus

Cute café/pub with a terrace

Bars:

Moustache

Café & bar loved by students

Treibhaus

Our faculty's go-to for drinks, events and pizzas

Lichtblik 360 Bar

Best views in town and best amaretto sours

Fuchs & Hase

Fancy cocktails in town

Die Wäscherei

Darts bar with views of the city

Others:

Umbrüggler Alm

Beautiful spot after a hike up the mountain

Lansersee

Hike and dip outside of town (50min by bus)

Baggersee

For a dip within town

Note:

Bring cash as most places only accept cash

Accomodations:

Websites:

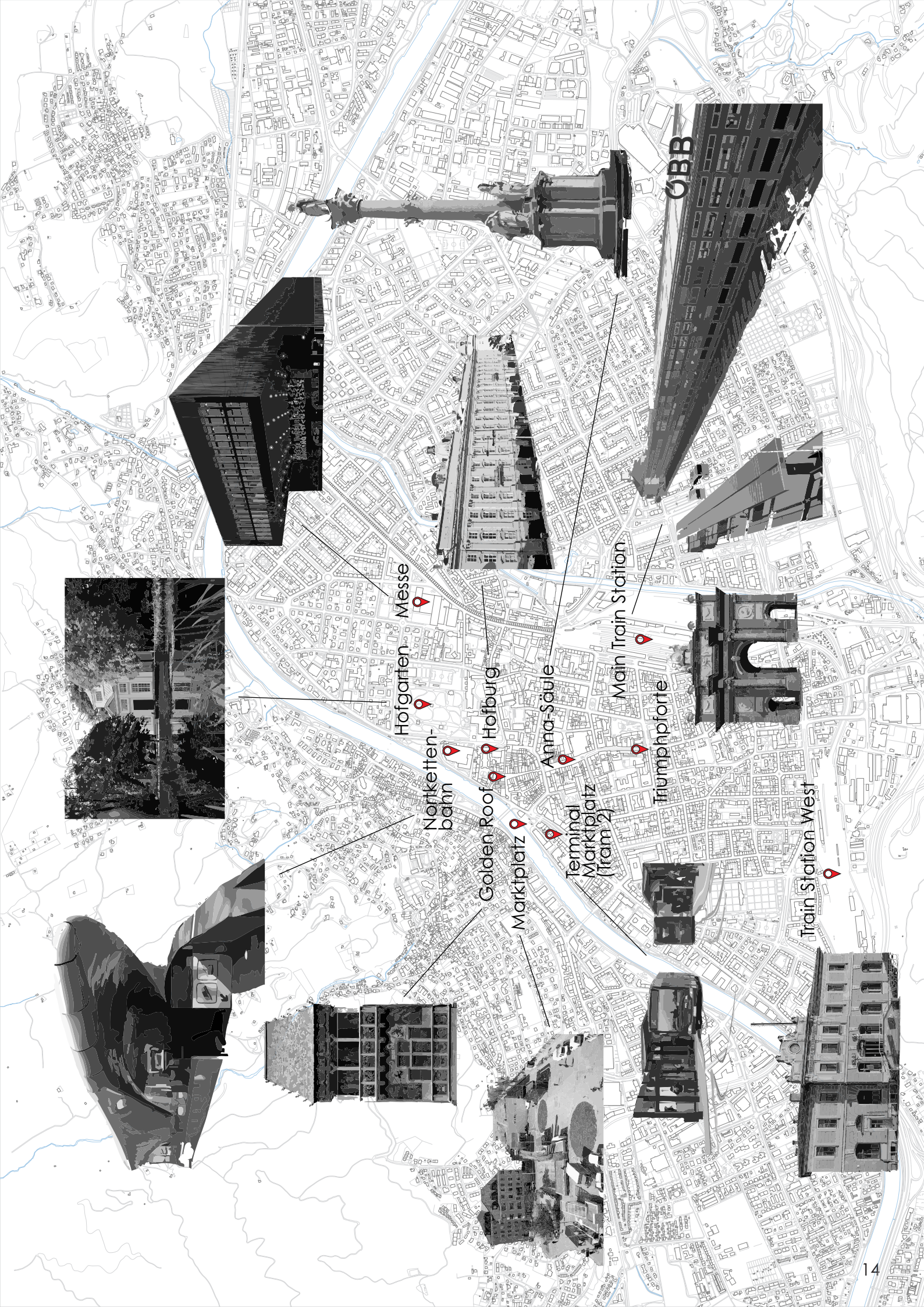
[booking.com](https://www.booking.com)

[Airbnb.com](https://www.airbnb.com)

Info:

Innsbruck is very accessible, any places would be great, we recommend the Höttingen or the city centre neighbourhood to be closeby the University and highlights

When you book 3 nights in a row you get a discount for public transportation



Hofgarten
Messe





























































































































































































































































































































































Contact Details

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Police 133

Emergency ambulance 144



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