847306 PJ Entwerfen 1 (Bachelor)

WS 2023/2024

Institut für Gestaltung / Konstruktion und Gestaltung - i.sd Structure and Design

Teaching Language:
German & English

Course Instructors:
Lara Yegenoglu (i.sd / VILAA / AA)
Johannes Schlusche (PhD @ i.sd)
Julian Berger (i.sd / Akademie der Bildenden Künste Wien)

Tutorials:
Wednesday 09:00 - 18:00

Sprechstunde Johannes:
Monday 09:00 - 10:30 (upon agreement): Johannes.Schlusche@uibk.ac.at

ATLAS OF ALPINE CATALYSTS

A Volumetric Approach on Dichotomies of Seasonality within the Orchestrated Landscapes of Kühtai

"If this is a desert, what are all these people doing here?"

– Reyner Banham

BIOS:

Lara Yegenoglu is a director at VILAA, an architectural practice specialising in contemporary design solutions for a given cultural context and the individual experience of the built environment. The practice has developed an international portfolio covering residential, cultural, and public realm interventions. Throughout her architectural discourse Lara worked on projects of various scales and eventually was engaged in the restoration of Battersea Power Station with WilkinsonEyre. She has taught at several institutions in the UK and Germany including the RCA, the Bartlett (UCL) and IU and is a studio master of INTER14 at the AA School of Architecture in London.

Johannes Schlusche studied architecture at the Faculty of Innsbruck and graduated with his master thesis on ML-assisted design workflows at i.sd. He joined the robotic research lab in 2022 and has a pre-doc position in the SFB Computational Design at i.sd. Within his research he was part of a multidisciplinary Big Data project at Media Lab Matadero, Madrid, Spain; led workshops at University of Innsbruck, Austria; TU Graz, Austria; and at the Cluster of Excellence Integrative Computational Design and Construction for Architecture (IntCDC), University of Stuttgart, Germany, which primarily focused on the interface between interactive machine learning design applications and robotic fabrication; and also was part of a video installation for the Venice Biennale 2023, Italy. Johannes is a Computational Designer and collaborated with architecture and fashion design studio JK Design (Julia Körner). Within the architecture discipline the most notable work is a collaboration with the architecture firm SOMA for the Tallinn Architecture Biennale 2019, Estonia, where a video presentation and 1:1 installation was exhibited at the Estonian Museum of Architecture over several months.

Julian Berger studies at the Institute of Art and Architecture at the Academy of Fine Arts in Vienna. He works in between the field of spatial communication, research-led design and filmmaking. His analytic investigations in geopolitical, ecological and technological/infrastructural matters translate in meticulous visual outcomes and strategies. In his master's thesis he is out and about the mountains, hijacking the artificial alpine landscape through decoding the alpinistic infrastructure. By framing those man-made Interventions more as an act of resistance towards climate change, he tries to rethink the role of the architect in this radical changing environment.

ABSTRACT:

The E1 design studio is dedicated to capturing the social and environmental complexity of Kühtai, an Austrian ski resort in the Tyrolean Alps. In this region, we encounter multiple challenges, including seasonal tourism, climate change, appropriation of the landscape, and the far-reaching impacts of large-scale construction sites resulting from the production of green electricity. The basic intention of this design studio is to outline possible interventions and metamorphoses for Kühtai. This is possible by creating an atlas of alpine catalysts, which form the basis for generating volumetric architectural concepts based on synthetic point clouds. Their tectonisation attempts to seamlessly merge with the natural environment and the village, revitalising and activating it culturally, environmentally, and socially throughout the seasons.

INTRO:

"The landscape is never inert, people engage with it, re-work it, appropriate it and contest it."
– Barbara Bender, Landscape: Politics and Perspectives

They are remote, they are dynamic, they are wild, they are breathtaking. Yet they are endangered, and above all, they are exploited. The Alps, one of Europe's richest natural areas, have transformed into a fragile environment that is shaped by a complex network of social and environmental extremes. Being one of the last strongholds of nature that stretch across one of the largest and highest mountain ranges in the world, the alpine regions face multiple threats such as urbanisation, mass tourism, climate change, and energy production through terraforming, to name just a few.

"Landscapes are created by people - through their experience and engagement with the world around them." – Barbara Bender, Landscape: Politics and Perspectives

This semester the E1 studio will investigate the socio-environmental complexities of mountainous landscapes within the context of Kühtai. Known as the highest ski resort in Austria, the small town in the Stubai Alps mainly caters to winter tourism and is the epitome of seasonality par excellence. During the colder months, it attracts many seasonal workers as well as tourists from various nations, cultures, and backgrounds, transforming the area into a temporary leisure circus.

Yet Kühtai's true colours only reveal once the snow line and temperatures are rising and winter comes to an end. Deserted, stalled, and simply surreal. A condition that remains unseen to most visitors but reflects the area's predominant status quo. A proportionately small group of local residents, including farmers, ski resort owners, and hoteliers, as well as regional tourists, stays behind during the low season when the region's resortified landscapes start to reveal. As actors, users, and spectators, they are confronted with the challenges and consequences of seasonal existence. However, both public and private sectors of the resort industry strive for more homogenous and year-round tourism patterns, which becomes evident through projects such as the 'Zukunft Kühtai Sellraintal' initiative.

"These complex and often conflicting landscapes are entanglements of places, subjectivities, actions and bodies - migrant, citizen, traveller, (and) resident." – Ed Wall, Les Paysagistes - expanding, producing, contested fields of landscape; in: AD The Landscapists

Unfortunately, the lack of summer tourism isn't the only asset to be worried about. The locals have recently become witnesses of a devastating landscape operation - the disappearance

of the Längental. Soon to be flooded and hidden behind a 113 metre wall, the valley's unique biodiversity, freshwater habitats, and precious moors, along with 7 million cubic metres of rock, are being excavated to make space for yet another dam(n) reservoir.

SPECULATIVE FUTURE GROUNDS - DESIGN TASK:

Given all these extremes, both socially and environmentally, what could the future of Kühtai look like?

As Kühtai takes on the task of countering the total commitment of winter sports and winter tourism, our E1 studio will take this opportunity to speculate on possible scenarios of transformation and adaptation by developing an atlas of alpine catalysts. Following a narrative approach that addresses the different user groups, a series of adaptive scaled interventions will start to activate and cultivate the area throughout its various seasons. Taking advantage of this rich and diverse environment, projects will explore nature, superimpose with nature and simply embrace nature.

In detail, the studio aims to create narratives starting from volumetric architectural production. At the same time, we focus on diverse design approaches that encourage the students' personal language by critically articulating specific areas. The fragmented narratives are meant to pick up local elements and propose innovative and holistic solutions - namely, how to evoke year-round transformative, adaptive, and multidimensional settings that adopt a sustainable approach and break local conventions while stimulating interdisciplinary architectural typologies.

POINT CLOUD TECTONICS - DESIGN METHODOLOGY:

"Sensuality in architecture - physical or illusionary - has emerged from the discovery of simultaneous correlations / the synchronisation of elements in time and space / defined by the single momentary metamorphosis of object with object / man with man / boundary with boundary / the conflict of kinetic versus static / cold versus hot / dark versus light / perception versus utilisation / performance versus expectation / touch versus vision / solid versus void / sound versus silence." - Raimund Abraham, [UN]BUILT

The core of the design methodology is built upon an atlas containing high-resolution lidar 3D scan point cloud datasets covering the entire Kühtai region. Additionally, during the field trip, efforts will be made to gather firsthand data that enriches the atlas. This enrichment includes a variety of media such as photographs, videos, sketches, sound recordings, interviews, and point clouds generated using photogrammetry technology, with a specific focus on "Kühtai-artifacts." The overarching objective of the design methodology is to harness the potential of point clouds to develop innovative, multi-faceted/-layered, and volumetric design strategies. These strategies are based on the dynamic animation and transformation of the point clouds and their subsequent tectonizations, termed **"Point Cloud Tectonics."**

We see point data as a primary design medium for high-resolution concept models. Point clouds possess unique potential as they finely detail design objects while maintaining visual transparency. Point cloud models encapsulate global and local design information in a diverse distribution and density. This diversity allows for vagueness or adaptable Level of Detail (LoD) on a local scale. The overarching objective is to enhance designer engagement by enabling holistic volumetric modeling across varying zoom levels. This is achieved by

synthesizing the overall boundary of the point cloud system and each individual local component concurrently, serving as a volumetric design criterion.

The aim is to emphasize the formative attributes of point clouds and unfold the concepts, processes, and principles that unlock new avenues of formative potential. Notably, we focus on advancing and expanding volumetric modeling utilizing point clouds by integrating spatial concepts and adaptable resolutions. This involves representing volumetric point clouds in distinct spatial relationships such as void/mass, interior/exterior, shape/structure, and solid/porous.

To overcome the limitations of raw point cloud data, we mix them with traditional surface-based architectural design tools and enable a more exhaustive exploration of volumetric dimensions by augmenting the point cloud by incorporating design collages with diverse media forms, such as animation projections or interactive gaming environments.

The software toolkit employed in this studio contains various applications, including Rhino, Houdini, Blender, Unreal Engine, Illustrator, Photoshop, InDesign, Premiere, and After Effects. These tools collectively facilitate the comprehensive exploration of the interplay between point clouds and design processes, engendering a more profound understanding of the volumetric design realm.

FORMAT / DELIVERABLES:
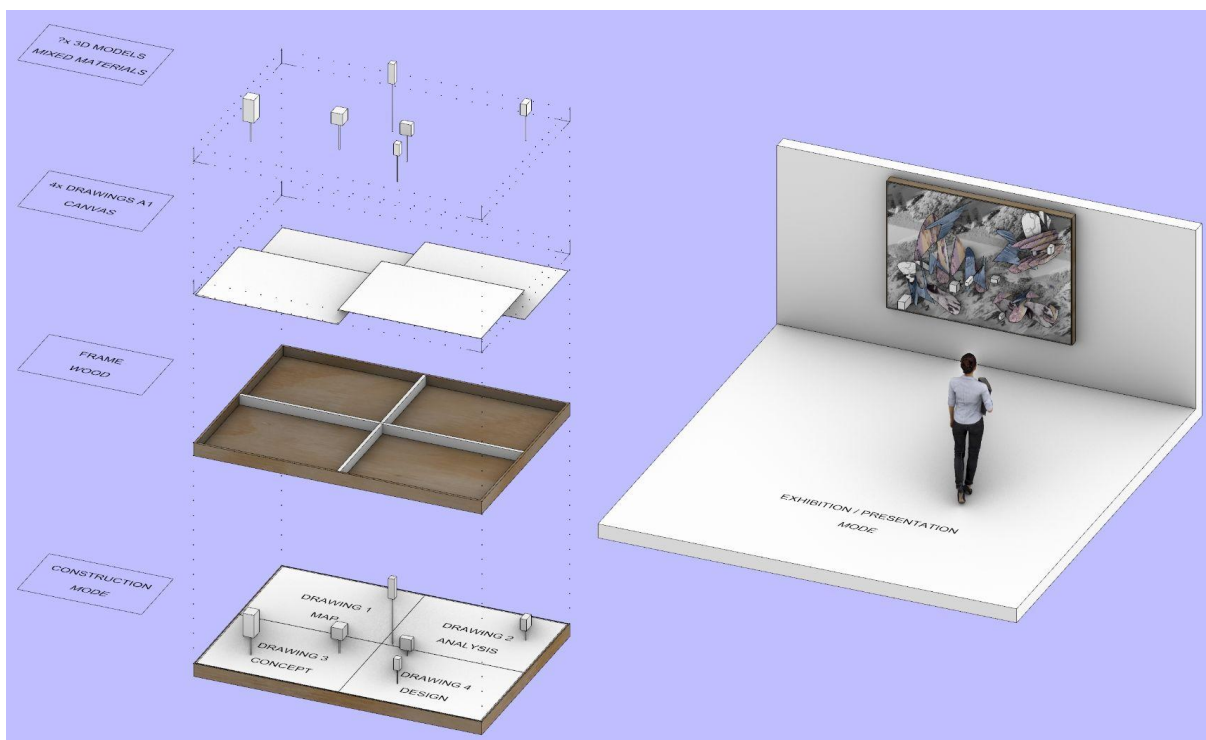
The studio project challenges students to engage in a dynamic exploration of architectural and artistic expression and volumetric design thinking by creating four distinct A1-size drawings. Each drawing should encapsulate a specific theme – Mapping, Concept, Analysis, and Design – and contribute to developing a coherent, multi-dimensional composite artwork. By synthesising traditional and modern techniques, students will construct a series of drawings that integrate line drawings, renderings, physical models, and mixed-media elements. Required techniques for this are line drawings consisting of maps, sections, floor

plans, and explanatory diagrams; renderings of three-dimensional volumetric designs; physical model building techniques such as laser cutting, casting, and 3D printing. In addition, it is necessary to create a wooden framework that becomes the basis of the conceptual multidimensional model drawing.

<u>Project Scope and Deliverables:</u>

1. **Mapping Drawing:** Create line drawings incorporating maps and explanatory diagrams. Explore a chosen location or concept through intricate visual representation.
2. **Analysis Drawing:** Design a detailed analysis drawing using charts, graphs, or visual aids to convey information. Communicate data-driven insights through a visually engaging composition.
3. **Concept Drawing:** Develop a drawing that visually captures an abstract or symbolic conceptual idea. Experiment with artistic elements to evoke and communicate the chosen concept.
4. **Design Drawing:** Construct a three-dimensional volumetric representation of an object or space. Employ techniques like laser cutting, casting, and 3D printing to create a physical model; develop interior and exterior renderings and drawings like sections, floor plans, and diagrams.
5. **Multi-Dimensional Composite Design:** Seamlessly integrate the sub-tasks from each drawing into a cohesive, multi-layered composite design. Build a wooden framework to serve as the foundation for the conceptual multidimensional model drawing.
6. **Mixed-Media Approach:** Utilise a variety of artistic mediums and materials to enhance textures and visual depth. Experiment with innovative techniques to enrich the overall visual experience.
7. **Presentation and Evaluation:** Present the final drawings and models for evaluation. Articulate design choices and the rationale behind each element. Engage in constructive discussions about the successful integration of design principles.

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Patrick Geddes / Edward Burtynsky / Christophe Girot

Films:

Alpenland, Ein Film von Robert Schabus, A 2022.

▶ Edward Burtynsky: Manufactured landscapes

▶ Edward Burtynsky presents: Nature transformed through water at Arup

▶ Powers of Ten™ (1977)

Bergauf-Bergab: Wie intensiv darf der Mensch in die Natur eingreifen? | ARD Mediathek

▶ Stopp Ausbau Kraftwerk Kaunertal

▶ Klimarettung aus den Sümpfen | ARTE Re:

▶ Welchen Beitrag können Moore als Klimaretter und Co2-Speicher leisten? | Gut zu wis…

▶ Pumpspeicher statt Tal? Warum der Ausbau vom Kraftwerk Kaunertal nicht "grün" ist / …

▶ Kraftwerk Kühtai: Das Längental wird zum Speichersee | Bergauf-Bergab | Doku | Berg…

SCHEDULE: *Dates and times are subject to change!*

OCT	1	4/10/2023	wed	**COURSE INTRO, WELCOME & WORKSHOP** 1. Workshop Mapping *(Rhino, Illustrator, Photoshop, Houdini)*	*Intros, agenda, teams & workshop* *> Start 1st Drawing* *> Start Framework*
	2	11/10/2023	wed	**PROGRESS TUTORIAL, EXCURSION KÜHTAI & WORKSHOP** 2. Workshop Point Cloud Scanning + Editing *(Smartphone, Houdini)* **DEADLINE** *FRAME*	*Site, mapping, scanning, documentation & workshop* *< End Framework*
	3	18/10/2023	wed	**DEADLINE** *1st Drawing MAP A1* *MIXED MEDIA: 2D, 3D, line drawing, video, rendering, collage, photo, text, model, …*	*Presentation* *< End 1st Drawing* *> Start 2nd Drawing*
	4	25/10/2023	wed	**PROGRESS TUTORIAL**	
NOV	5	1/11/2023	wed	Holiday	
	6	8/11/2023	wed	**REVIEW** with Prof. Kristina Schinegger + Prof. Stefan Rutzinger: Pin-Up Week **DEADLINE** *2nd Drawing ANALYSIS A1* *MIXED MEDIA: 2D, 3D, line drawing, video, rendering, collage, model...*	*Presentation* *< End 2nd Drawing* *> Start 3rd Drawing*
	7	15/11/2023	wed	**PROGRESS TUTORIAL & WORKSHOP** 3. Workshop Point Cloud Tectonics *(Unreal Engine, Houdini)*	Workshop
	8	22/11/2023	wed	**PROGRESS TUTORIAL**	
	9	29/11/2023	wed	**MID-REVIEW** with Prof. Kristina Schinegger + Prof. Stefan Rutzinger + invited guests **DEADLINE** *3rd Drawing CONCEPT A1* *MIXED MEDIA: 2D, 3D, line drawing, video, rendering, collage, model...*	*Presentation* *< End 3rd Drawing* *> Start 4th Drawing*
DEC	10	6/12/2023	wed	**PROGRESS TUTORIAL & WORKSHOP** 4. Workshop Point Cloud Tectonics Interactive Visualization *(Unreal Engine, Houdini, Touchdesigner, Adobe)*	*Workshop*
	11	13/12/2023	wed	**PROGRESS TUTORIAL**	*Design Implementation on 1st - 3rd Drawing*
	12	20/12/2023	wed	Holiday	
	13	27/12/2023	wed	Holiday	
JAN	14	3/1/2024	wed	Holiday	
	15	10/1/2024	wed	**REVIEW** with Prof. Kristina Schinegger + Prof. Stefan Rutzinger: Pin-Up Week **DEADLINE** *4th Drawing DESIGN A1* *MIXED MEDIA: 2D, 3D, line drawing, video, rendering, collage, model...*	*Presentation* *< End 4th Drawing* *> Start Mega Drawing (Finalization)*
	16	17/1/2024	wed	**PROGRESS TUTORIAL**	
	17	24/1/2024	wed	**PROGRESS TUTORIAL**	
	18	31/1/2024	wed	**FINAL-REVIEW** with Prof. Kristina Schinegger + Prof. Stefan Rutzinger + invited guests **DEADLINE** *Mega Drawing FRAMEWORK*	*Presentation* *< End Mega Drawing*