

REFUGE 2.0 - ARTIFICIAL SWISSNESS



In October 2018, Christie's auctioned "Portrait of Edmond Belamy," a first AI artwork created by an arts collective Obvious, composed of three 25-year-old Parisian students. The painting, ultimately sold for \$432'500 after a protracted bidding war, was generated by a type of machine learning algorithm known as GAN (generative adversarial network).

A manifesto, printed on a small pamphlet, accompanied the artwork: "creativity is not only for humans".

With the recent advances in creative artificial intelligence, machines have been suspected or even proven, to not only play a hand in creating paintings, but also infiltrating contemporary creative culture – e.g. in writing award-winning scripts for blockbuster movies in Bollywood, inventing catchy melodies for billboard topping k-pop music, and generating trend-setting haute-couture fashion for the runways in Paris.

In this studio, we will question the role of artificial intelligence and deep learning in architecture. Is creativity in architecture only exclusive to humans? Can machines automatically learn and generate meaningful architecture? Can they go beyond

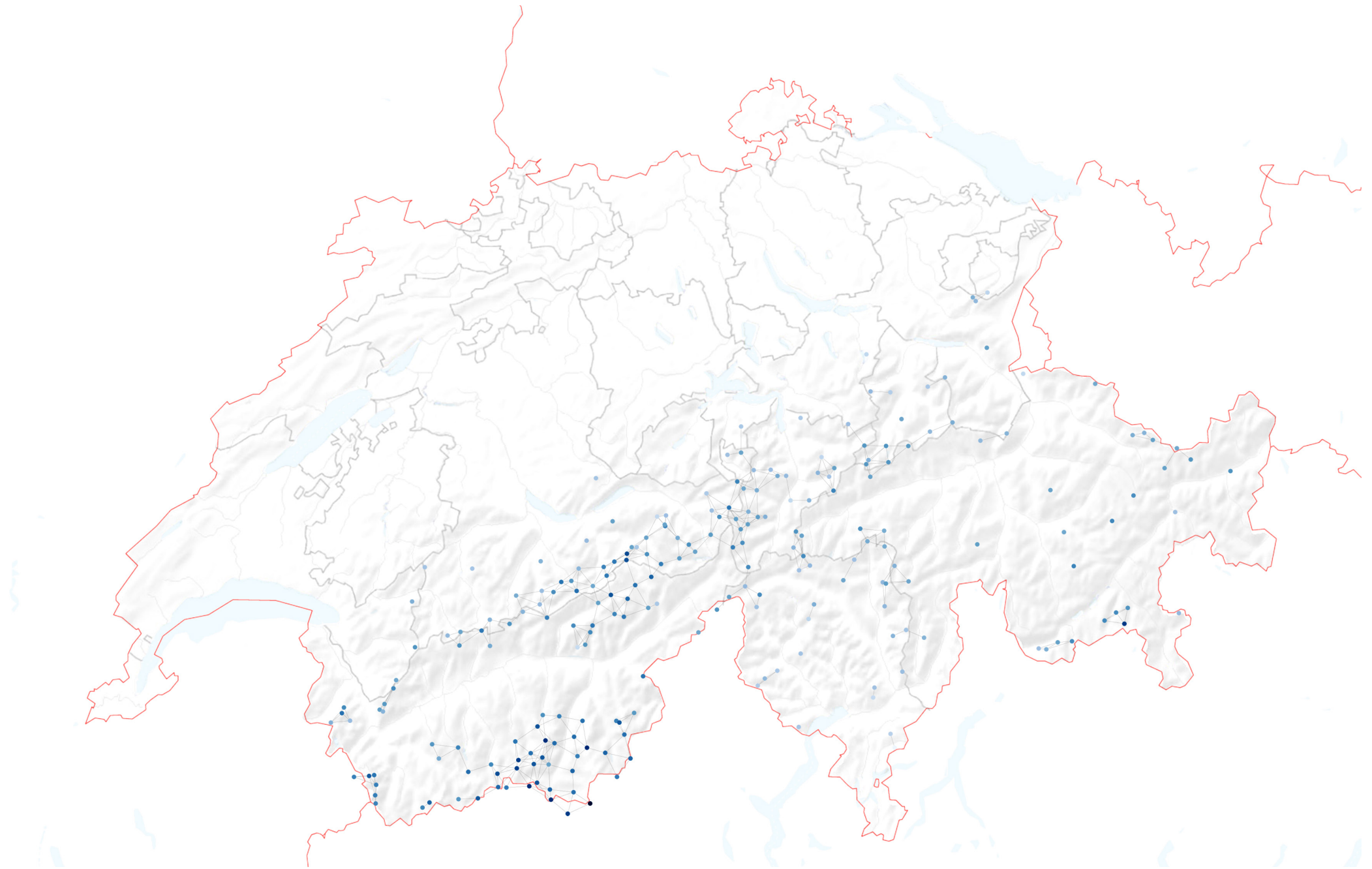
quantifiable data and optimization and enter the realm of architectural quality? Can machines capture and generate something as fragile and elusive as "Swissness" in architecture? What are the dangers and dark sides when we let the machines loose?

The object of the studio is the alpine refuge, an architectural typology located in the high mountains, accessible only by foot/ski or by air, ordinarily to provide shelter, food and accommodation. The Swiss Alpine Club (SAC) currently operates 153 alpine refuges around various peaks and mountain paths. We will use machines to capture, collect, and learn the architectural DNA of the vernacular characteristic, in our case the "Swissness" of alpine refuges – and critically engage AI to design a new alpine refuge that embodies the quality of that very Swissness.

The first part of the semester will consist of curating data and manipulating a GAN (or equivalent deep learning network) to create variations of artificially generated alpine refuges with the quality of "Swissness". The collection of facades of Swiss alpine architecture will serve as samples

for the algorithms. During the second part of the semester, students will select and interpret the output generated by the algorithm, and, through a process of inverse geometric projection, transform the machine-generated images into 3D architectural forms. The final part will assess and refine the results in relation with the extreme climatic factors prevalent in the alpine context. Students will be asked to define the size, location and precise program during the semester, and may consider the use of drones for various purposes including the delivery of supplies.

The studio will culminate in a personal interpretation of the Alpine Refuge as a final project: a privileged, self-sufficient space of retreat and shelter, a moment of peace and serenity, amidst a changing world and confused ecology.





Pontresina, Graubünden
Jakob Eschenmoser, *Coazhütte*, 1964. Photo: Beat Bühler



Sumvitg, Graubünden
Terrihütte, 1973.



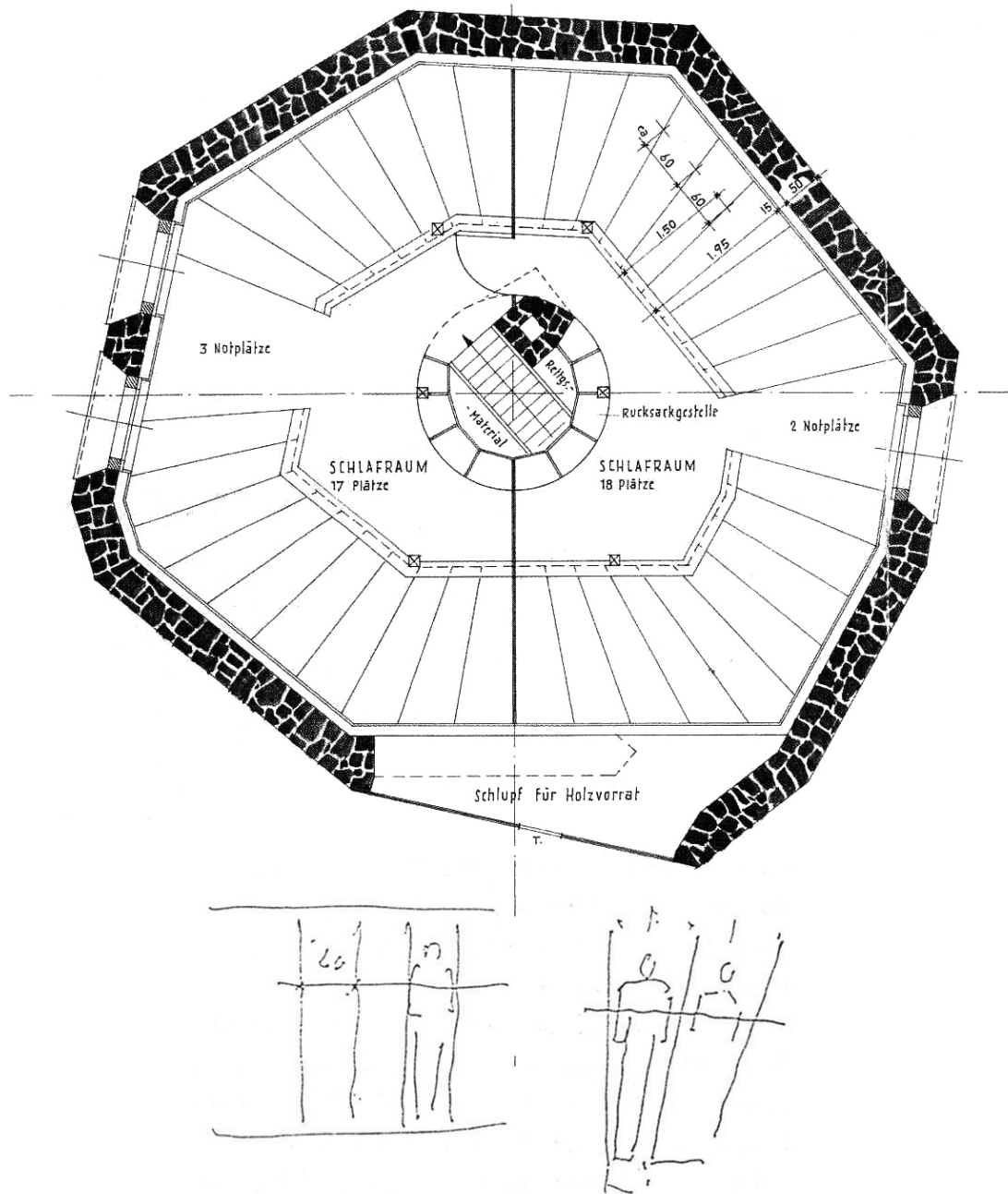
Zermatt, Valais
Bearth & Deplazes, *Monte Rosa Hütte*, 2009. Photo: David Schweizer



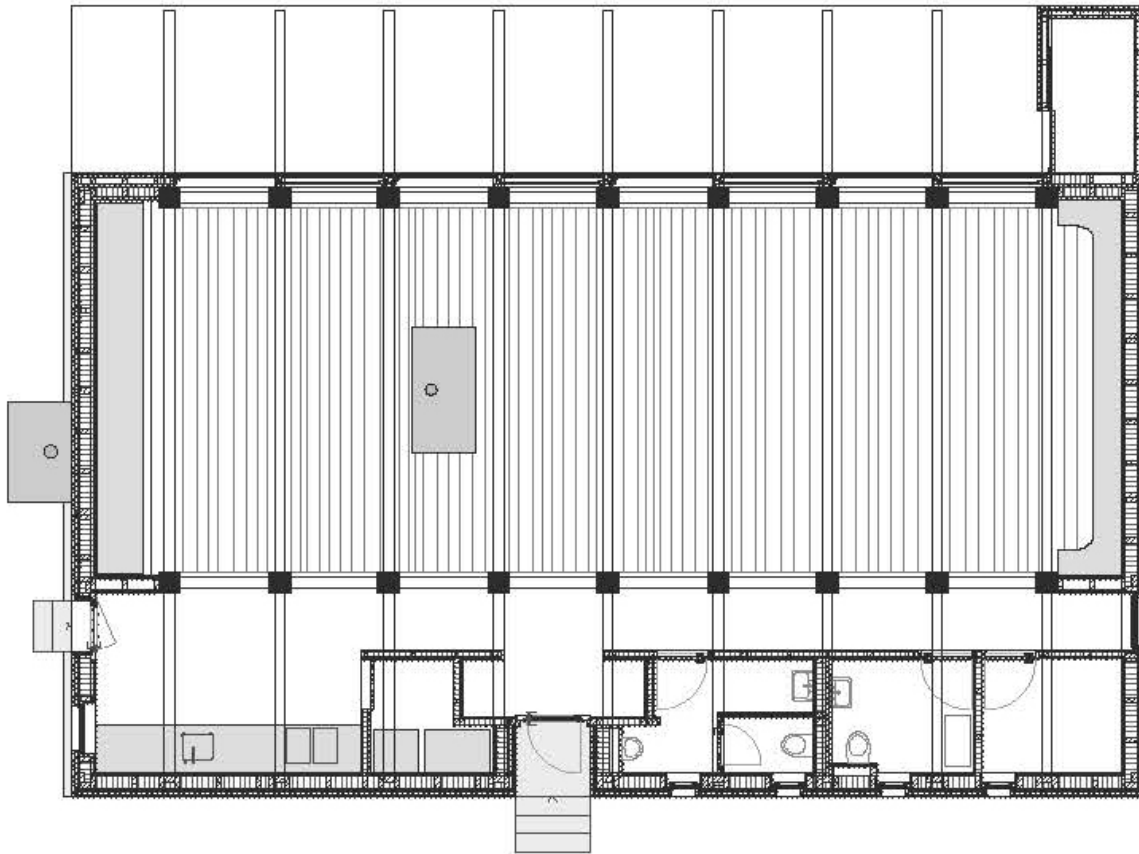
Randa, Valais
Jakob Eschenmoser, *Domhütte*, 1957.



Andermatt, Uri
Swiss Bunker, 2016. Photo: Arnd Wiegmann



Randa, Valais
Jakob Eschenmoser, *Domhütte*, 1957. Source: Archivio CAS



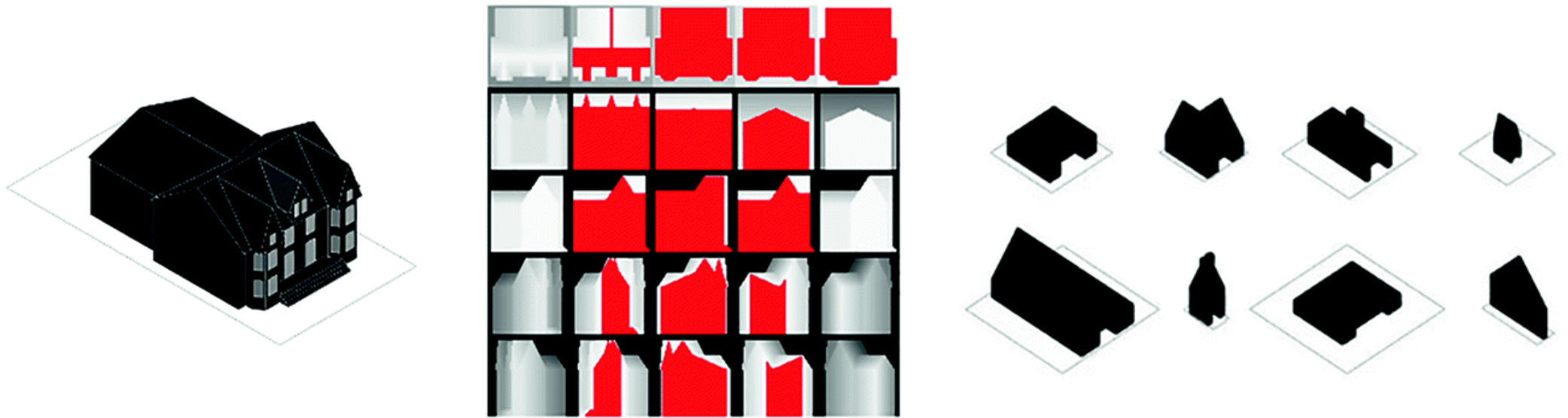
Domat/Ems, Graubünden
Gion A. Caminada, *Waldhütte*, 2013.



Graubünden, Switzerland
Mikael Blomfelt & Sandro Straube, *Urner Boden: Lawinenhaus*, 2018.



Graubünden, Switzerland
Mikael Blomfelt & Sandro Straube, *Urner Boden: Das Wohnhaus*, 2018.





Oberegg, Schwyz
Chalet #1, 2016. Photo: Patrick Lambertz



Rothenthurm, Schwyz
Chalet #26, 2018. Photo: Patrick Lambertz



Tuggen, Schwyz
Chalet #25, 2018. Photo: Patrick Lambertz



Uznach, St. Gallen
Chalet #17, 2017. Photo: Patrick Lambertz



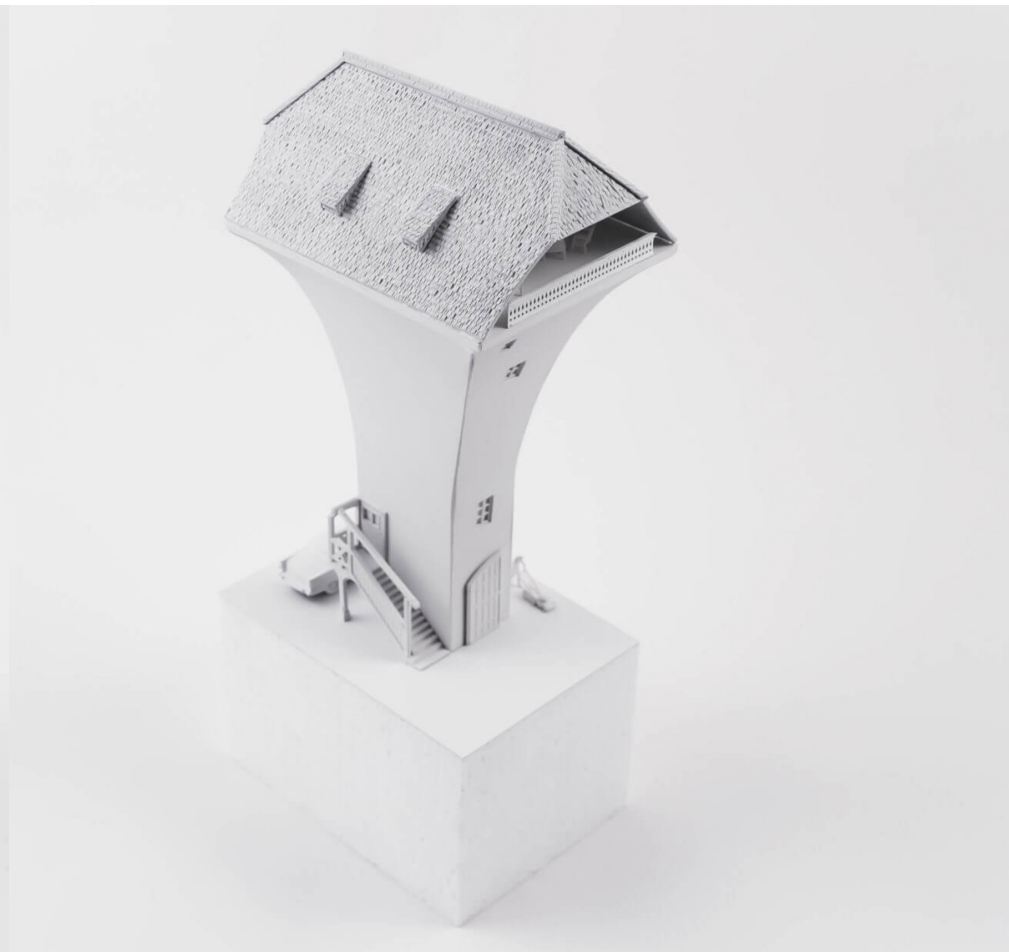
MxD, EPFL
Mikhael Johanes, *Machine generated Swiss chalets*, 2020.



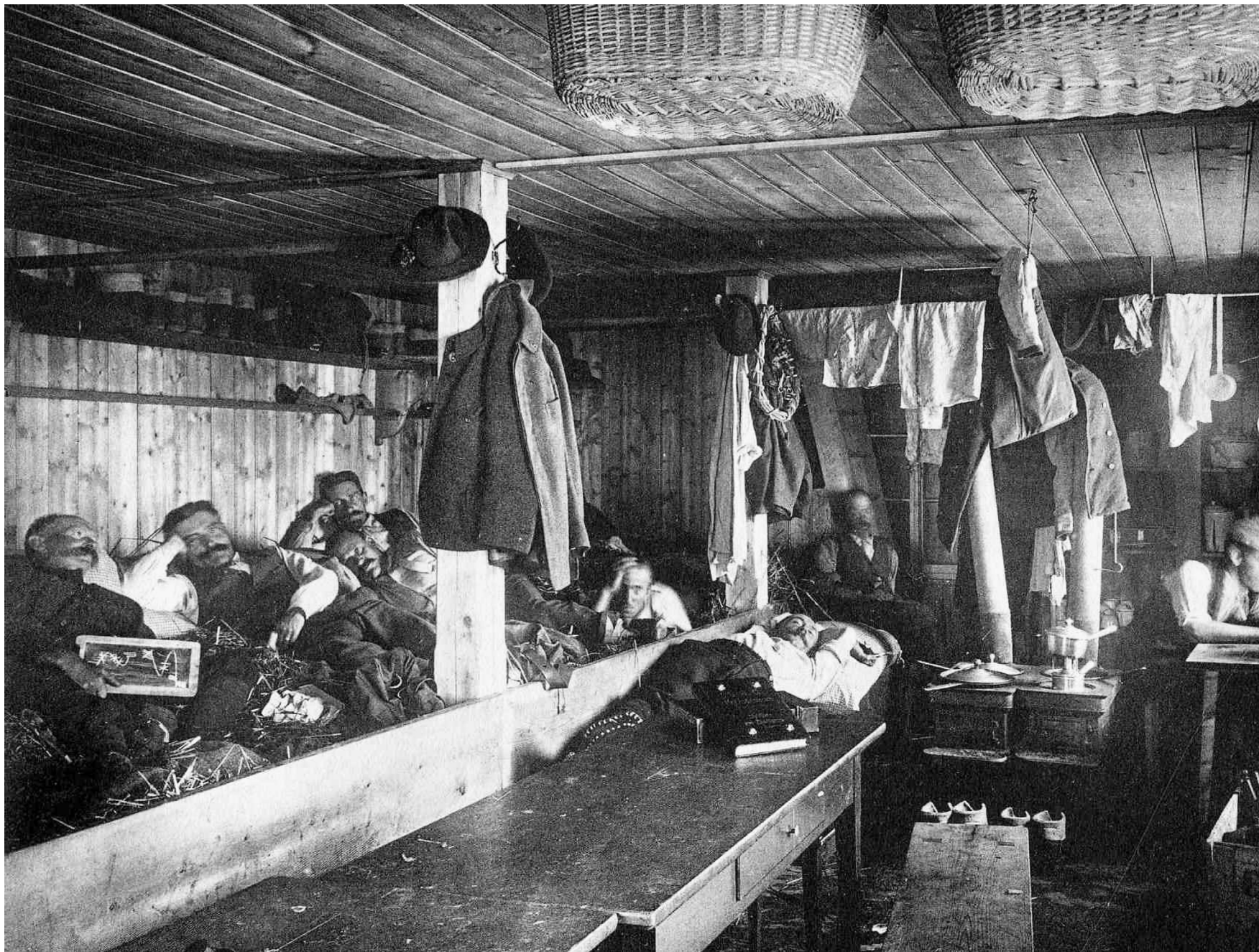
MxD, EPFL
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MxD, EPFL
Mikhael Johanes, *Machine generated Swiss chalets*, 2020.



New Glarus, Wisconsin
Nicole McIntosh, *Swissness Applied*, 2019.



Innertkirchen, Bern
Trifthütte, 1906. Source: Archivio CAS

Important Dates

Spring, 2019

Studio Introduction

Feb 17

Refuge Sampling

Feb 18-23

Phase I: Learning Swissness

Feb 24-Mar 16

Phase II: Spatial Translation

Mar 17-Apr 5

Midreview in Mountain hut

Apr 6-7

Phase III: Design Proposal

Apr 8-May 5

Phase IV: Representation

May 5-24

Final review

May 25

The studio theme spans the entire academic year of 2019/20.

Accordingly, there will be continuity between the fall and spring semester, but each semester can be followed independently.

Dates are subject to change.

Prior programming experience is not required.

Team

Media x Design Laboratory

Prof. Jeffrey Huang

Christina Doumptoti, Christoph Holz,

Frederick Kim, Mikhael Johanes

Partner

Swiss Alpine Club SAC