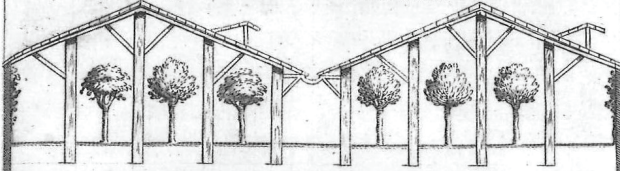


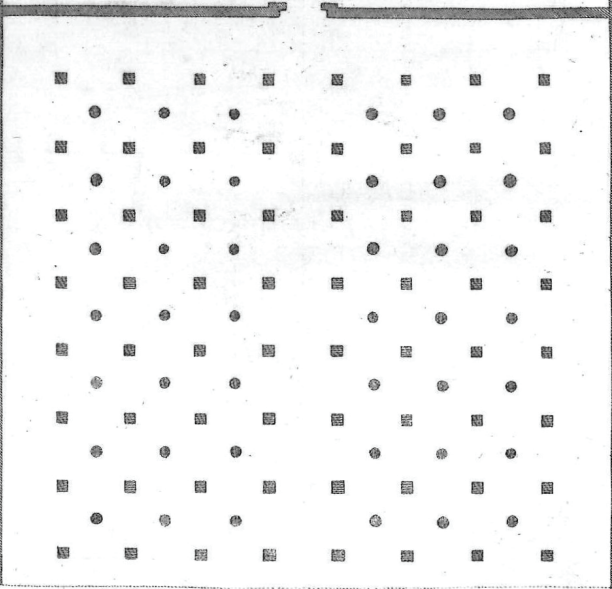
# Greenhouse Studies II & III

Design Studio  
FS25 + SS26  
Laboratory EAST EPFL

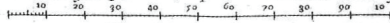
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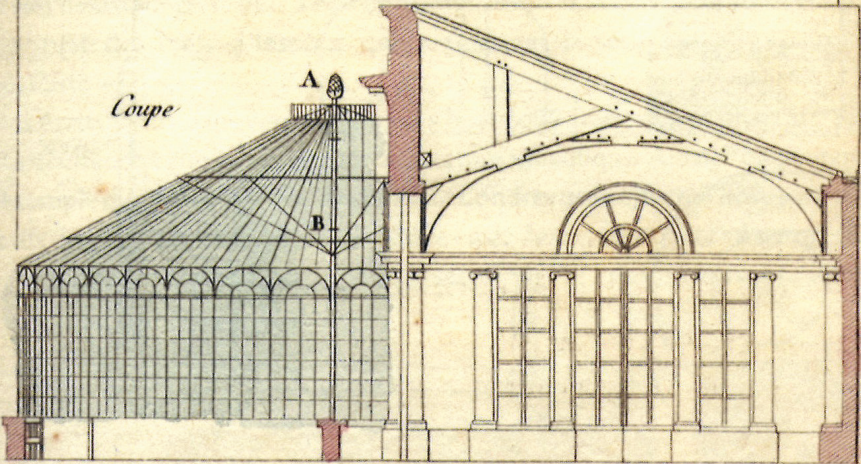


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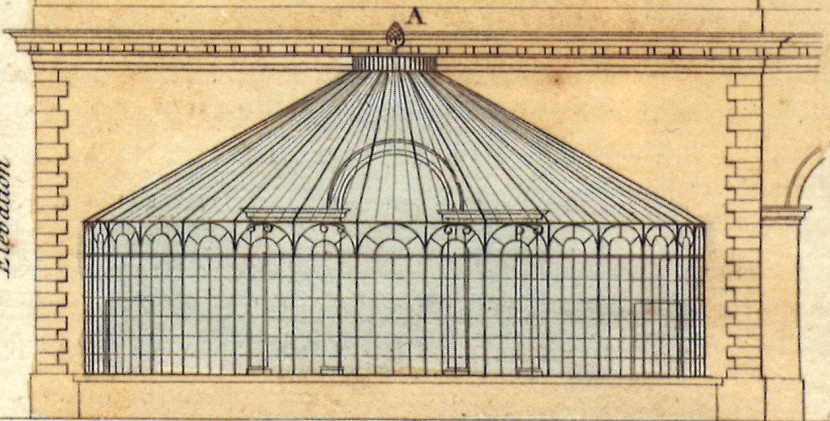
## Overview.

What is a greenhouse without the green? Or a jardin d'hiver without winter? As part of the 'Tackle The Type' series, Greenhouse Studies are a series of design studios exploring the potential of greenhouse structures in the context of contemporary challenges. The studios study greenhouses from a typological perspective and explore architecture as a set of climatic conditions beyond its formal and functional characteristics. The studios investigate greenhouses as a climate-responsive architectural type and transformative device. Typology and typological reasoning serve as a framework, encouraging innovation through historical understanding of this building type. Greenhouse Studies studios aim to rethink architecture as flexible, seasonal and atmospheric living environments.

*Coupe*



*Elevation*



*“Clothing as an extension of our skin helps to store and to channel energy, ... If clothing is an extension of our private skins to store and channel our own heat and energy, housing is a collective means of achieving the same end for the family or the group. Housing as shelter is an extension of our bodily heat control mechanisms – a collective skin or garment.”* Marshall McLuhan, *Understanding Media : The Extensions of Man* (Cambridge: MIT Press, 1911).

Following a first design studio on greenhouses, Laboratory EAST presents Greenhouse Studies II – Collective (Fall 2025), and Greenhouse Studies III – Commons (Spring 2026), the laboratory’s second and third interaction with a unique element in the history of architecture. The studio is interested in the multiple uses of greenhouse spaces outside the horticultural context. In Greenhouse Studies I, the design studio took a cross-sectional look at domestic greenhouses as a space for expanding the individual home. The greenhouse served as garden for vegetables, as passive heating device, or extra living room. Through superposition, juxtaposition, or all-over solutions, the greenhouse spatial structure constituted a new thermal buffer zone that interacted differently with the existing volumes. In Greenhouse Studies II and III, the studio will continue the survey, aware of new dimensions: from the individual to the collective, from the collective to the common, from the small villa scale

to the collective housing, from collective housing to common programs. Together we will build on these concepts while exploring greenhouse-like solutions. What are the implications of such change? The results will contribute to an open-source, collaborative database that will grow each semester.

### Type and typology as framework.

Typology is recognised as a fundamental concept for a better understanding of architecture and its history. It serves as a basic framework, a kind of tacit backbone for the organisation of architectural knowledge and can also be a tool for generating new architectural solutions. Some argue that typology is as old as architecture itself, as it involves the reproduction of dominant types and models that are deeply rooted in socio-cultural realities. Alternatively, it can be said that architecture responds to new social and economic needs by inventing or revising existing types. Typology and types traditionally interact with the formal dimension (buildings organised by a common form or element) and the functional dimension (buildings organised by a common function). However, this focus has often overlooked other, less tangible possibilities, such as structural relationships between types and climate in architecture.

### Climatic type

Conservatories, greenhouses, glasshouses, forcing houses, hothouses, invernaderos in Spanish, orange-ries, jardins d' hiver or serres in French - many are

the terms associated with the idea of housing plants. All of these artefacts have a common goal: to create a climate adapted to plant life. Although greenhouses were conceived with a very precise objective, this climatic space quickly became an exhibition space, a social space, and even a space for celebrations before it fell into disuse. In the second half of the 20th century, greenhouse-based solutions made a comeback, fostering solar architecture and reinforcing the foundations of bioclimatic architecture in western societies. During this time, horticulture continued developing greenhouses as productive spaces, and innovations led to intensive fields of production. In absolute terms, it is not the form or function that characterizes the greenhouse but the definition of a space with specific climatic conditions. In most cases, using wood or metal structures and transparent materials such as glass, these structures keep a very low ratio between the material used and the enclosed space, offering the most with the least. The characterization of the greenhouse as an artefact of a climatic nature suggests that the greenhouse as a type does not depend on scale or size. Since its inception, the multiform and multifunctional greenhouse space has been transformed into a social space with very specific microclimatic characteristics.



INTERIORS



## Practicalities

Unfolding over the course of two semesters, both design studios will explore the dynamics between greenhouses, greenhouse components or greenhouse functions and existing building structures as architectural forms, climatic spaces and temporary uses of space:

### Fall semester 2025 Collective

*“The luxury of unused space! This was also an attempt to test an idea. The space changes independently. Rooms change in space through the growing and dying of plants. It should be attractive for the interior designer to experience such autonomous spatial changes.”* In LOG ID (ed.), *Grüne Archen*, (Frankfurt am Main: Fricke Verlag, 1983)

Greenhouse Studies II – The collective, the design studio will focus on the renovation of collective residential architecture in the Romandie. When renovating existing monotonous buildings from the construction boom of the 1970s, the potential for conversion is overlaid with the climate aspect of the greenhouse. The goal is to renovate the building, enhance its existing features, explore scenarios of densification, expand existing programmes or introduce new ones, enrich living comfort, and consider passive heating and cooling solutions. The design should prioritise the collective dimension, and wherever possible, test greenhouse-like solutions by focusing on concepts such as

seasonal living, microclimatic diversity, and synergy of living spaces. Extending the building's lifespan involves considering materials, as well as exploring typological structures capable of accommodating change and a range of use cases. The development of both phases will be undertaken in groups consisting of two or three students, and a Seminar Day will comprise a series of multidisciplinary theoretical contributions from external experts.

### Spring semester 2026 Commons

*“2.10.76. The office is set up; it rains lightly but gets steady inside the office.*

*11.10.76. Today is my first day of work at the office; everything works.*

*4.10.76. The moisture problem has not yet been solved, the drawing paper is curling; the flowers are growing.*

*14.4.77. The greenhouse is not ventilated, the sun is shining, the inside temperature is 48 degrees Celsius at 12 o'clock, opening the ventilation flaps immediately reduces it to 24 degrees.”* From Log Id's logbook. In LOG ID (ed.), *Grüne Archen*, (Frankfurt am Main: Fricke Verlag, 1983)

Unfolding over the course of two semesters, both design studios will explore the dynamics between greenhouses, greenhouse components or greenhouse functions and existing building structures as architectural forms, climatic spaces and temporary uses of space: In the spring semester, Greenhouse studies III – Commons, we focus exclusively on the communal dimen-

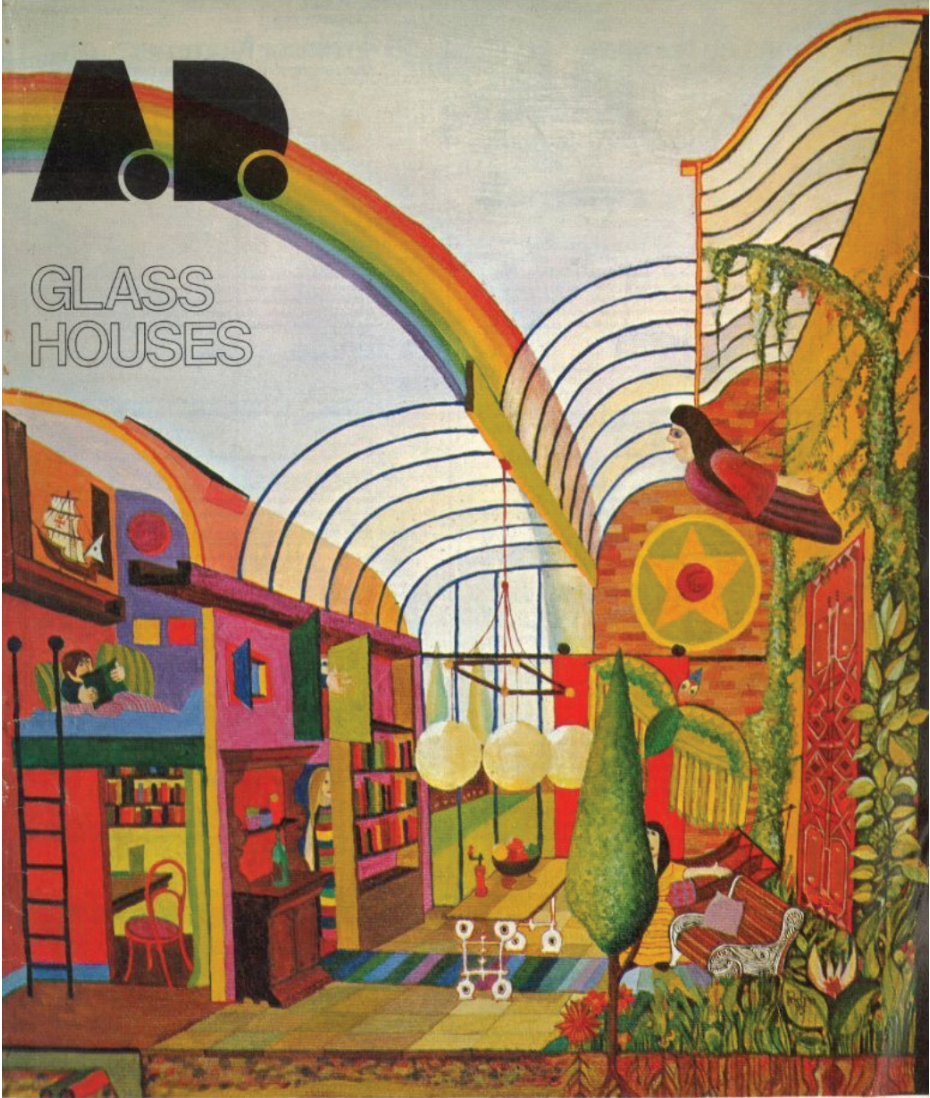
sions of the greenhouse as a place for work and social interaction. The design studio will investigate how climate-based architecture can be implemented by designing a student house at EPFL Campus. The common space should be the centre of the student community and a critical review of contemporary space utilisation. The development of both phases will be undertaken in groups consisting of two or three students, and a Seminar Day will comprise a series of multidisciplinary theoretical contributions from external experts.

We will investigate the possible interactions between two different architectural spaces, and gain a better understanding of the typological transfers and climatic synergies between them. Greenhouse-like structures offer the opportunity to investigate prefabricated systems, test designs for deconstruction and reversibility in design thinking, and ultimately find a 'lighter' way to redesign existing buildings.

By looking at greenhouses as specific built environments, the studio will formulate solutions based on the concept of architecture as atmosphere, while exploring its transformative potential. In addition, the studio will examine greenhouses as climate-responsive artefacts, exploring how seasons can change spaces, or, in other words, what it means to inhabit spaces seasonally. If we change clothes according to the seasons, should our buildings change too?



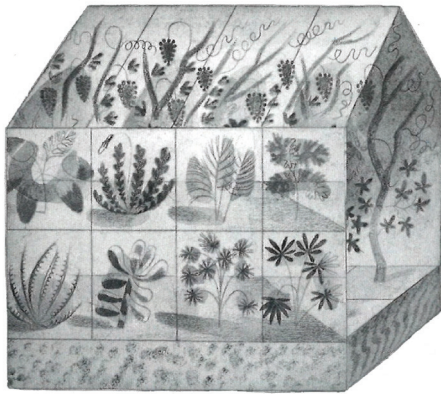
# GLASS HOUSES



Each semester will be composed of two parts. The first part – Research on precedents – will be developed individually to expand the corpus of references and help us learn from existing buildings. The studio will collectively build a visual atlas made of peculiar, strange or remarkable case-studies. The design study will analyse the characteristics of the case studies, like: flexible use of space, evaluate their thermal behaviour throughout the seasons, formmaking aspects, thermal airflow and mechanics of openings. The key findings from this body of references will inform the design phase. In the second part, Design Studio, participants will develop their own design in groups of two or three.

### Study trip

The design studio includes a study visit focused on collective housing projects. The tour includes works by Rolf Schoch, Atelier 5, Log Id, Lacaton & Vassal, Clauss Kahl Merz Atelier and Esch Sintzel. The proposed itinerary covers Lausanne – Bern – Basel – Mulhouse (FR) – Rixheim (FR) – Niffer (FR) – Bien – Lausanne. The study trip will take place between september 20th to 23rd. Please check the course description for more informations.



Design Studio Presentation booklet

Tackle the Type

Greenhouse Studies II + III

Design Studio, Fall semester 2025 and Spring semester 2026

Laboratory EAST - EPFL

Teaching team:

Tiago P. Borges, Martin Fröhlich and Luciano Antonietti

A reader to complement the course will be distributed to all participants.

The course is held in English and French. Please check the official course description sheet.

Top: Eric Ravilious, Pattern design proposal to Wedgwood, 1938.