

EPFL BOIS

studio Weinand 2023-24
Wood as a resource,
from territory to material
ép. I : the round wood



Image : pavillon du théâtre de Vidy, Yves Weinand
architecte, photo Ilka Kramer.



**Growth and
cultivation**

Harvesting

Half-products

Products

Design

**Fabrication
and
installation**

**Growth and
cultivation**

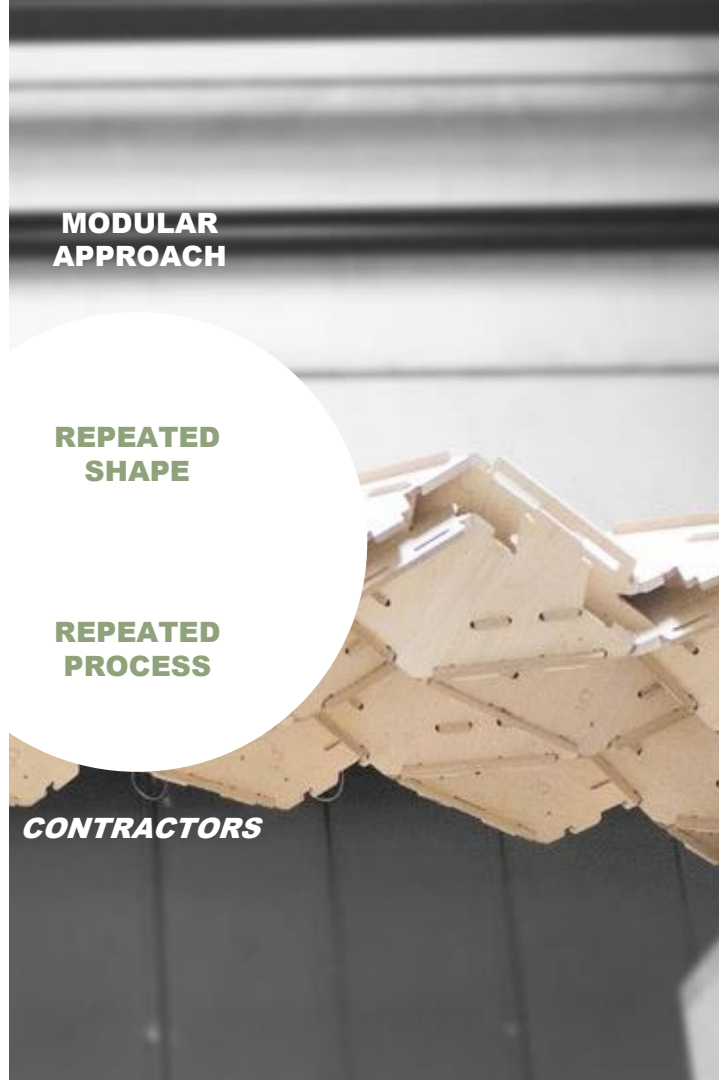
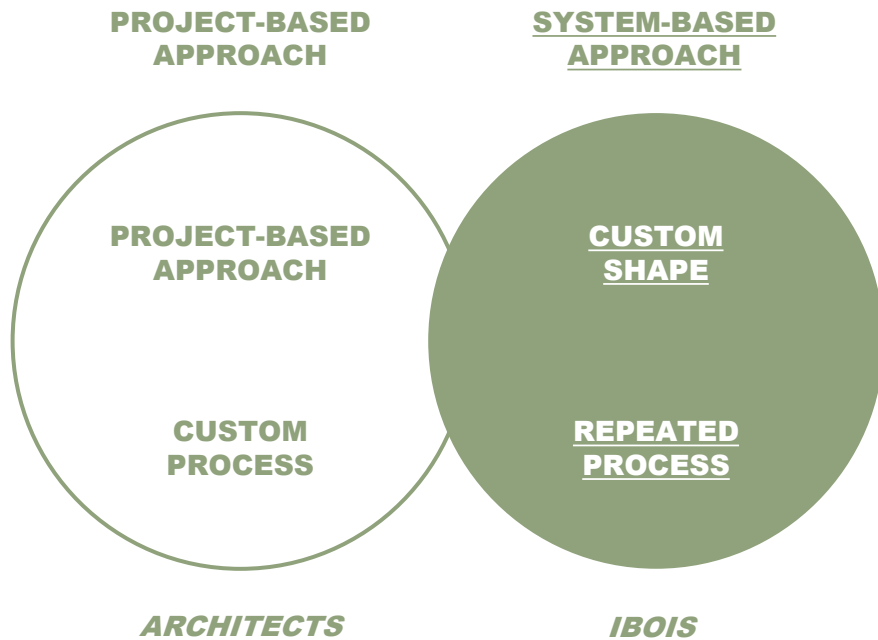
Harvesting

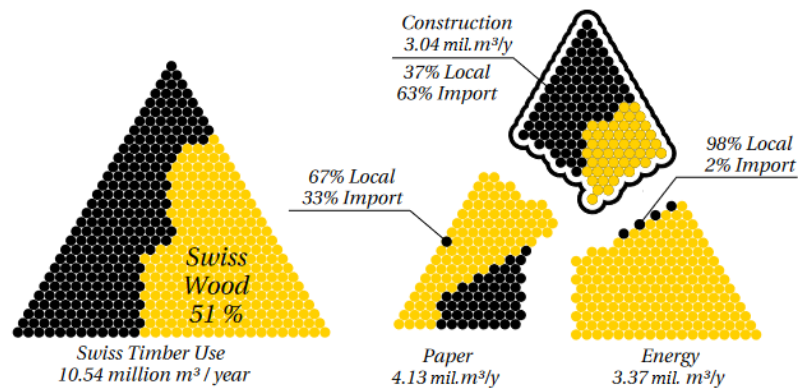
Half-products

Products

Design

**Fabrication
and
installation**

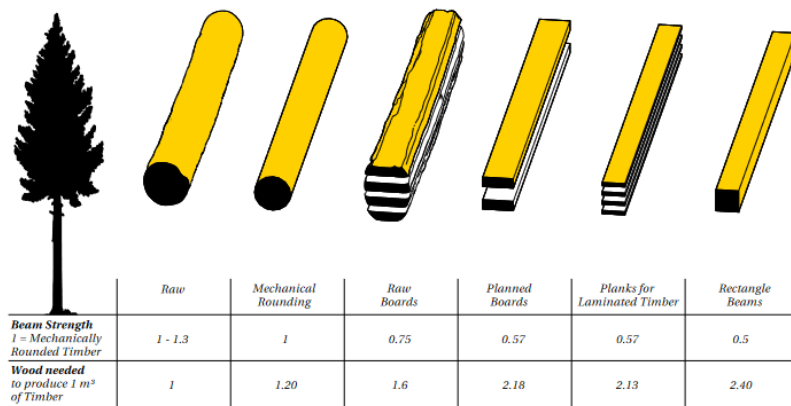




Infographie : Petras Vestartas, "Design-to-Fabrication Workflow for Raw-Sawn-Timber Using Joinery Solver", 2021. Source : Lignum

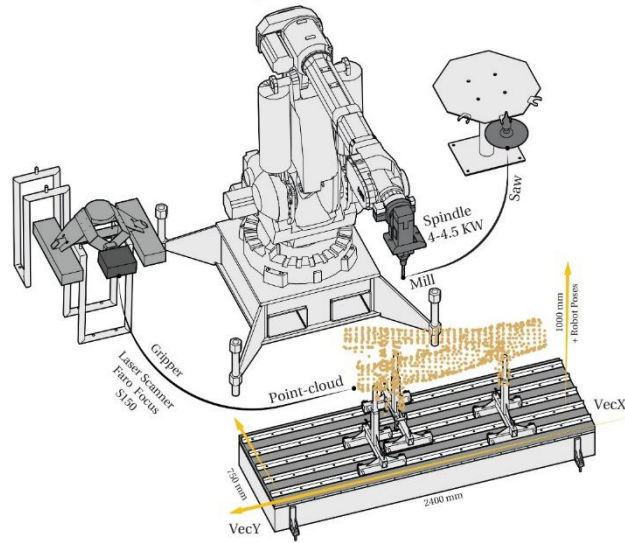


Image : IBOIS, abattage en forêt, Rossinière (CH), 2011.



Infographie : Petras Vestartas, "Design-to-Fabrication Workflow for Raw-Sawn-Timber Using Joinery Solver", 2021. Source : Lignum





Design-to-Fabrication Workflow for Raw-Sawn-Timber using Joinery Solver
(completed thesis, 2017-21)
PhD student: Petras Vestartas
Director: Prof. Yves Weinand

*How to minimize wood transformation by using scanned raw logs?
How to cut timber joints in round wood with a robot ?*

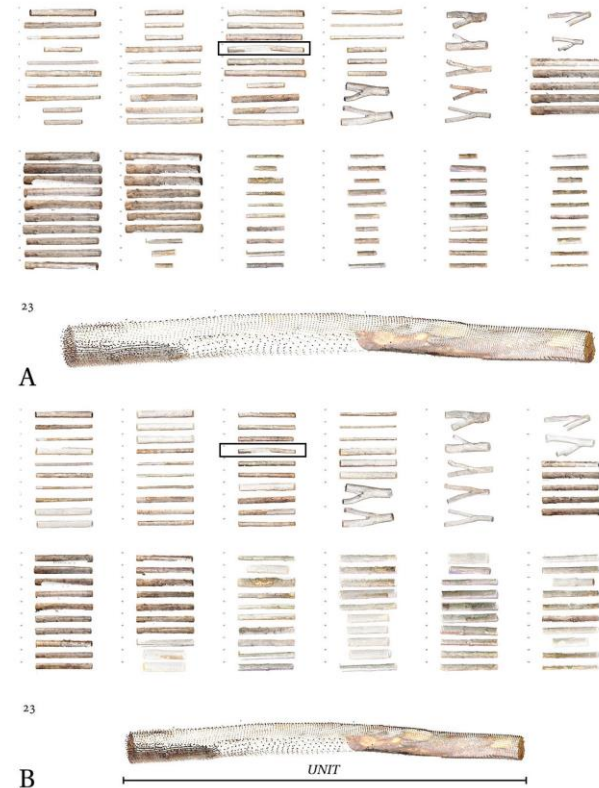




Image : IBOIS,
Petras Vestartas



Image : IBOIS,
Petras Vestartas

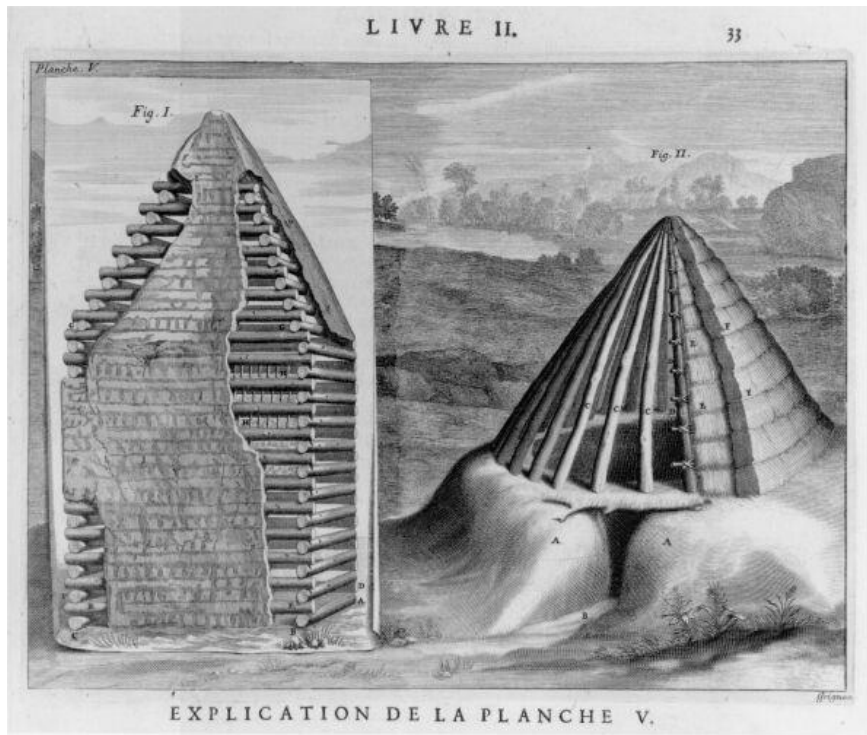
Low-tech / high-tech

benefit from current research and
innovative technologies
for a raw material

Vernacular / Experimental

between tradition and innovation,
defining the contemporary identity
of log construction





Source : huttes primitives, in « Les Dix Livres d'architecture », Vitruve, trad. Claude Perrault, 1673.



Source : représentation de la cabane primitive, in «Essais sur l'architecture» (frontispice), Marc-Antoine Laugier, 1755.



Image : Sam McGee's
Cabin Whitehorse Yukon,
carte postale, non datée.
Source : Hippocard.com

Image : « Prototype house », Richard Burton, Frei Otto, Hooke Park, 1987. Source : Hookepark.aaschool.ac.uk

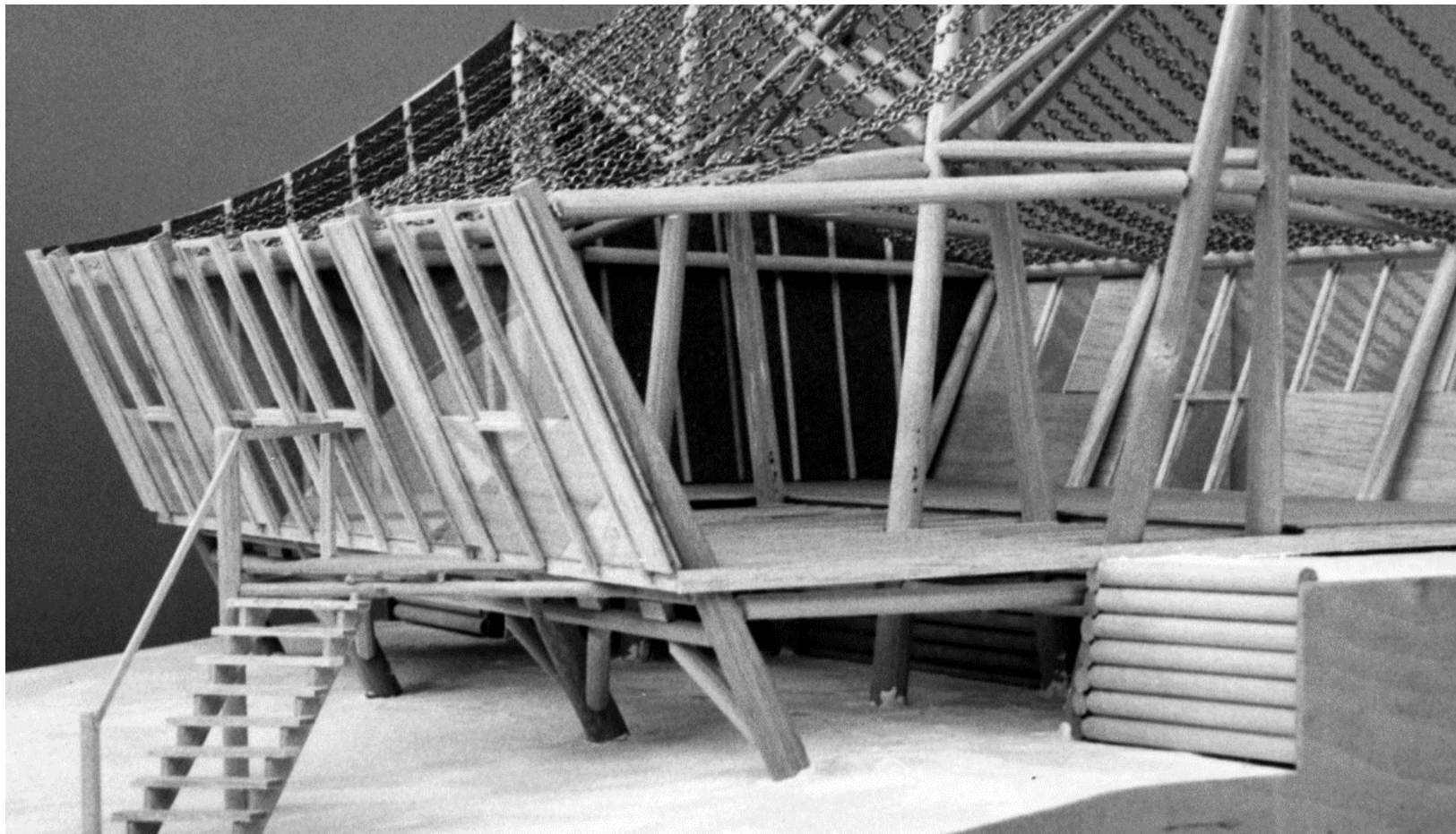




Image : « Field station », Hooke Park, 2023.
Source : Twitter.com

Essence : nc
Origine : Hooke Park (UK)

**> precedents : structural experimentation and
aesthetic research**



> precedents : structural experimentation and aesthetic research

Image : « Mock Up Sportoren», Ibois

Image : « Wooden chapel », John Pawson, 2018.
Source : 7kapellen.de

Essence : Douglas
Origine du bois : Bade-Wurtemberg, Rhénanie-Palatinat (DE)



> precedents

A corpus of work, documented as exhaustively as possible, will be the subject of an architectural, constructive and quantitative analysis specific to log construction.

For the presentation of this first part, which will be organized in the form of a critique and an exhibition of the work, the following documents will be expected: a complete 3D Rhino model produced according to a predefined model; a physical model of a fragment at 1/10 scale; an exploded isometric representation (scale to be defined); a quantitative analysis according to a given table.

The creation of these documents will also provide an opportunity, in the studio, to familiarize oneself with the representation of a material that is not commonly handled. Research and experimentation in 2D, 3D and scale models will be part of this first phase of study on the theme of round wood.

- > 3D Rhino model
- > fragment model at 1/10
- > isometric exploded view
- > quantitative analysis

| | | | |
|----------------|-----|---|---|
| 19.09 | (1) | Presentation of IBOIS research Introduction > precedents | Round table presentation Choice of case studies; formation of groups |
| 25.09 26.09 | (2) | Tour de table of selected case studies Review of analysis hypotheses | Primary analysis (context, operating diagram) 3D sketches, drawings and models |
| 02.10 03.10 | (3) | Unlearning Center Review of work with prof. Y. Weinand | In-depth analysis (construction and details) 3D sketches, drawings and models |
| 09.10 10.10 | (4) | Pre-presentation and validation of productions Introduction to quantitative analysis documents | Development of presentation material Completing analysis documents |
| 16.10 | (5) | Critique > precedents (prof. Y. Weinand + guest) | Document archiving > precedents |

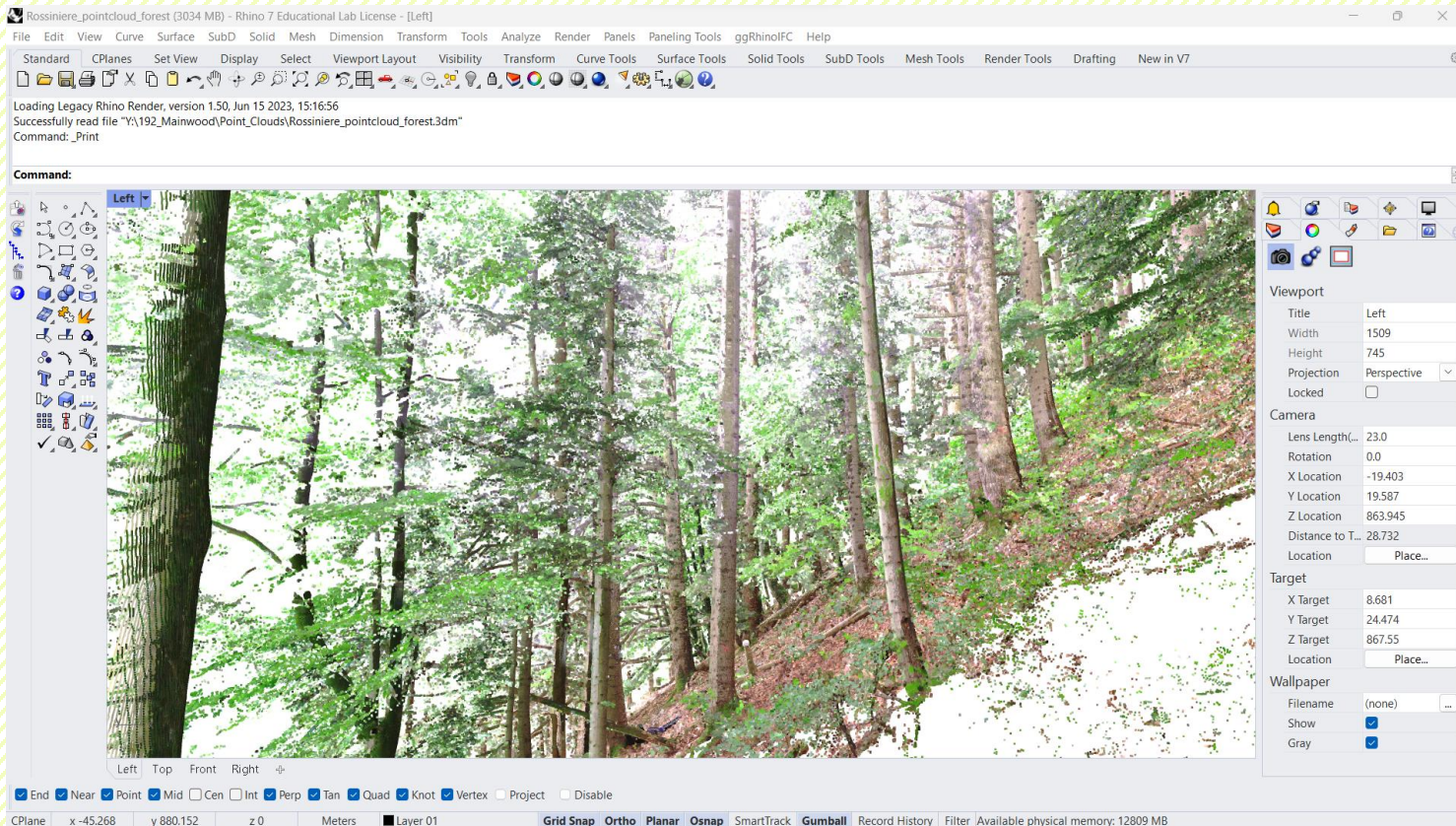
> tree points cloud workshop

Prior to the project phase (> mock-up), a four-day group workshop will be held between 17 and 31 October. Supervised by Damien Gilliard and Andrea Settimi, researchers at the IBOIS laboratory, the workshop will involve creating digital models of trees using 3D scans of a plot of forest land. From capturing point clouds on site to sequencing the data using Rhinoceros 3D software and the Cockroach plug-in (developed by the IBOIS laboratory, Petras Vestartas and Andrea Settimi), this workshop will provide an opportunity to familiarize oneself with 3D scanning technology and the processing of this type of information with a view to implementing it in a design process.

- > points cloud in a wooded area
- > 3D inventory of identified logs
- > 2D representation of digitized elements

| | | | |
|----------------|-----|--------------------------------------|--------------------------|
| 17.10 | (5) | Introduction > points cloud workshop | - |
| 23.10 24.10 | (6) | (program in progress) | - |
| 30.10 | (7) | Review of work with prof. Y. Weinand | Creation of the database |

Image : IBOIS, points cloud, Rossinière (CH).





Source : atlasofplaces.com

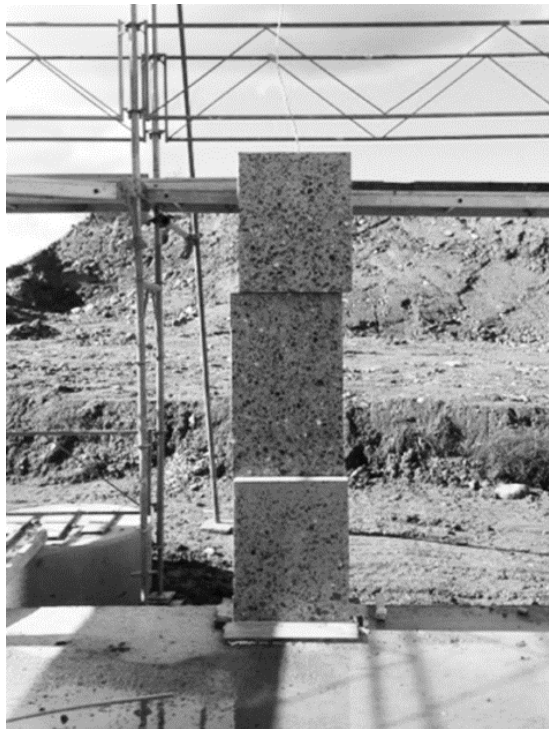


Image : Ecole à Orsonnens (CH), TE'd'A architectes, 2014.
Source : tedaarquitectes.com

« Archetypes », David K. Ross, 2016.
David K. Ross et al., *Archetypes - David K. Ross*, A Standpunkte publication
(Zurich: Park Books, 2021).



> mock-up

By comparing one of the fragments analyzed in the case study with the 3D trees obtained during the workshop, the aim of the exercise will be to compose, in the theoretical form of a mock-up, a section of log architecture using innovative details. This composition will be the result of an in-depth study of the different assemblies, but also of a mastery of the overall constitution of the whole created.

The assessment criteria will therefore cover both the technical development and the understanding of the symbolic significance of the project. The second part of the project will be presented in the form of a critique and exhibition of all the work produced during the semester. The exhibits will consist of 2D and 3D representations, scale models and, where appropriate, 1/1 scale prototypes.

> presentation materials to be defined

| | | | |
|----------------|------|--|---|
| 19.09 | (1) | Presentation of IBOIS research Introduction > precedents | Round table presentation Choice of case studies; formation of groups |
| 25.09 26.09 | (2) | Tour de table of selected case studies Review of analysis hypotheses | Primary analysis (context, operating diagram) 3D sketches, drawings and models |
| 02.10 03.10 | (3) | Unlearning Center Review of work with prof. Y. Weinand | In-depth analysis (construction and details) 3D sketches, drawings and models |
| 09.10 10.10 | (4) | Pre-presentation and validation of productions Introduction to quantitative analysis documents | Development of presentation material Completing analysis documents |
| 16.10 17.10 | (5) | Critique > precedents (prof. Y. Weinand + guest) Introduction > points cloud workshop | Document archiving > precedents - |
| 23.10 24.10 | (6) | (program in progress) | - - |
| 30.10 31.10 | (7) | Review of work with prof. Y. Weinand Introduction > mock-up | Creation of the database 3D sketches, drawings and models |
| 06.11 07.11 | (8) | Lecture / conference Studio work / individual critique | Project development 3D sketches, drawings and models |
| 13.11 14.11 | (9) | Studio work / individual critique Review of work with prof. Y. Weinand | Project development 3D sketches, drawings and models |
| 20.11 21.11 | (10) | Lecture / conference Studio work / individual critique | Project development 3D sketches, drawings and models |
| 27.11 28.11 | (11) | Studio work / individual critique Review of work with prof. Y. Weinand | Project development 3D sketches, drawings and models |
| 04.12 05.12 | (12) | Lecture / conference Studio work / individual critique | Project finalization 3D sketches, drawings and models |
| 11-15.12 | (13) | Pre-presentation and validation of productions | Development of presentation material |
| 19.12 | (14) | Critique > mock-up (prof. Y. Weinand + guest) | Document archiving > mock-up |

Wood as a resource, from territory to material

Ep. II : a woodworking school in the french alps

> program

"The Haute Ecole du Bois et de la Forêt (HEBF) will support the transition of the forestry and wood-building sectors by developing the skills that will underpin the strategic thinking of tomorrow's companies and managers.

Three points of interest:

1. European dimension: project backed and supported by a European association made up of institutional/industrial/prescriber/research center/training center members and partners.
2. Multi-disciplinary training courses on site: 'wood' and 'forest', links with architecture and construction schools in Europe;
3. Site located at the heart of the Alpine-Mediterranean resource: proximity to natural and economic resources, culture/identity, high development stakes for the industry.

HEBF aims to support the forestry sector's need for higher skills; to diversify and energize the industrial/territorial economy; and to create enriching collaboration with the countries of the Alpine arc in order to participate in the development of the Alpine-Mediterranean forestry-wood industry."

Communiqué de presse, 2022.

The second-semester project exercise will focus on the design of one of the buildings on the HEBF campus. The knowledge acquired during the first semester in the form of mock-ups will form the technical and architectural basis for the development of an exemplary and innovative log project.



team :

Professor Dr. Yves Weinand

Damien Gilliard (arch.-ing., PhD candidate)

Agathe Mignon (arch., PhD, scientific coll.)

Andrea Settimi (arch., PhD candidate)

EPFL ENAC IIC IBOIS

GC H2 711 (Bâtiment GC)

Station 18

CH-1015 Lausanne

contact : agathe.mignon@epfl.ch

