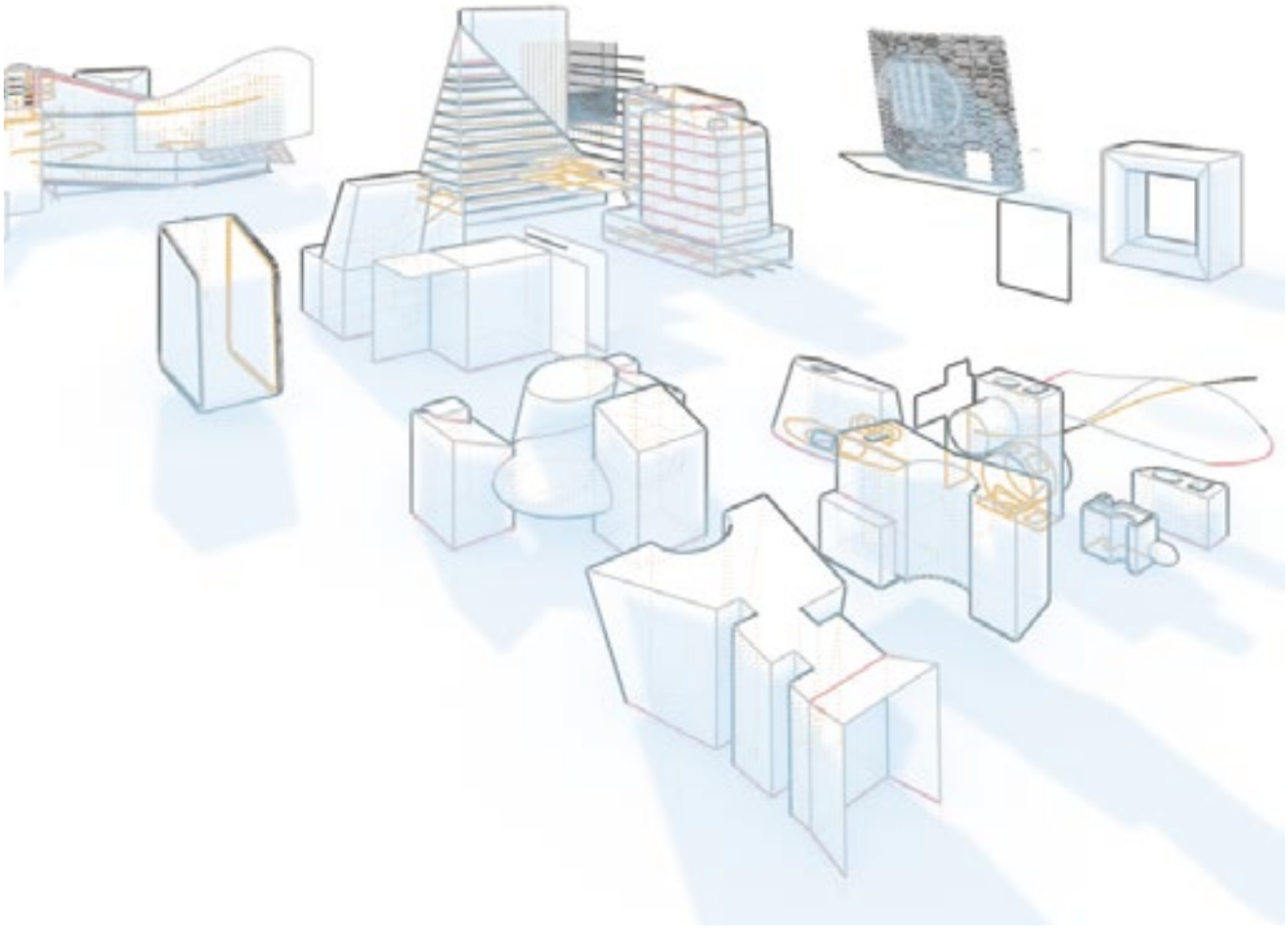
# Portfolio of Works : Jason SACHS 2024

Academic & Research / Technology + Design

ensa Grenoble



## Short Bio

Jason Sachs is an architect and designer who has worked on projects at every scale from the Chicago Spire and the largest women's university campus in the world, to furniture design, and jewelry. He has worked in massively multidisciplinary & multi-national teams and also as solo design/builder.

He has been experimenting with digital fabrication in project installations, since 2001.

He is a graduate of University of Illinois at Chicago Master of Architecture program and has an undergraduate degree in Geography from Boston University. He currently splits his time between teaching and practice based in France. He has taught at The School of the Art Institute of Chicago (AIADO). He currently teaches at école nationale supérieure d'architecture de Grenoble and previously at ensa Paris La Villette and Versailles.



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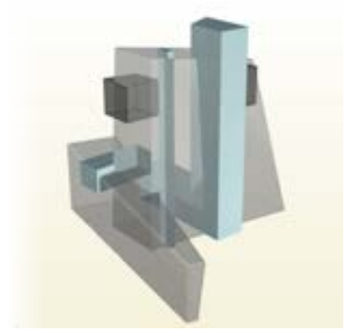
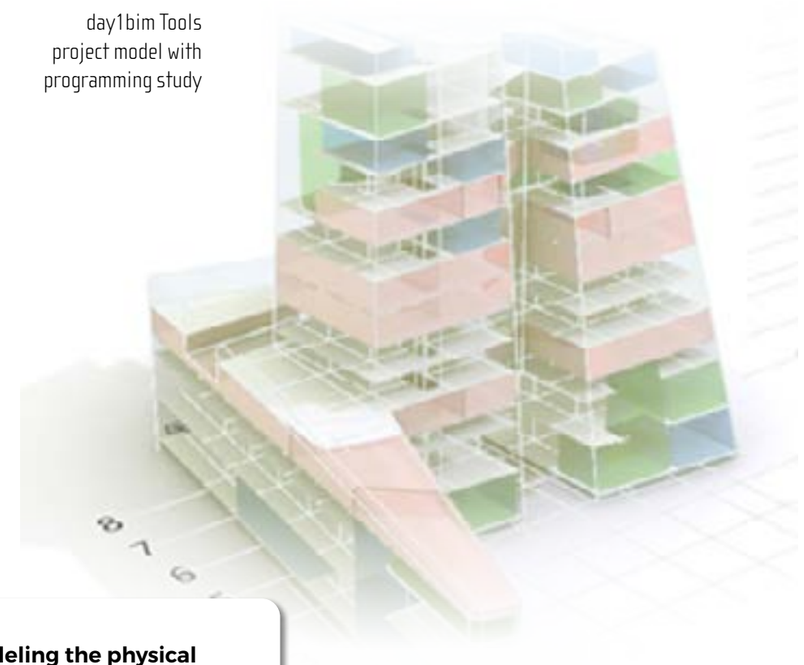
Construction Fabrication Site Ecology Design

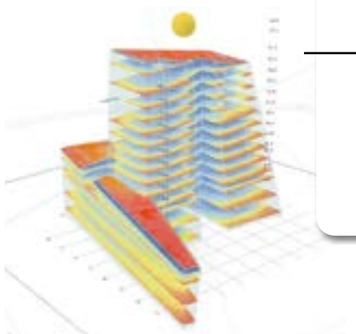


day1bim Tools
project model with
programming study

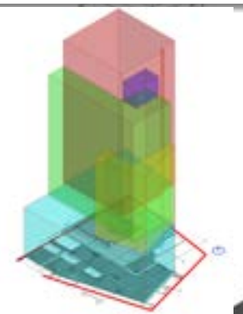


**Modeling the physical material, the enclosure , the limits, the control geometry.**

**This introductory section is an overview of how I apply my experience to teaching systems & moreover teaching conceiving architecture.**



S6RN Year 3 Undergrad



From volumetric model to
articulated BIM model.

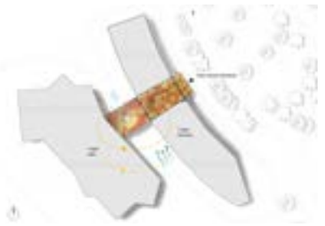
Development of the facade
from massing
Pauline Carrao 2021

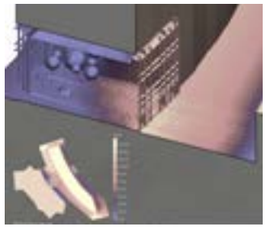


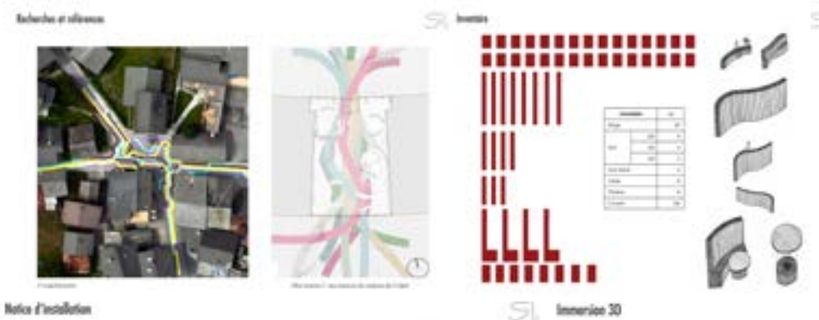
# Integration: Simulation Tectonic & Design

S901 Masters Year 2

Conception numérique MAILLE TRAVERSANTE GROUPE 4: HASHIMZAI Silsila Bebi, MOHAMMADI Fatemah, MUGISHA Jimmy, TERRAB Soufiane





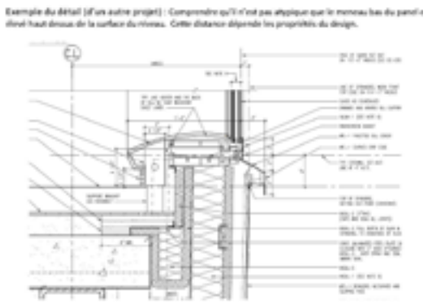

**Articulating the tectonic; what is its real form?**

**How do we experience it?**

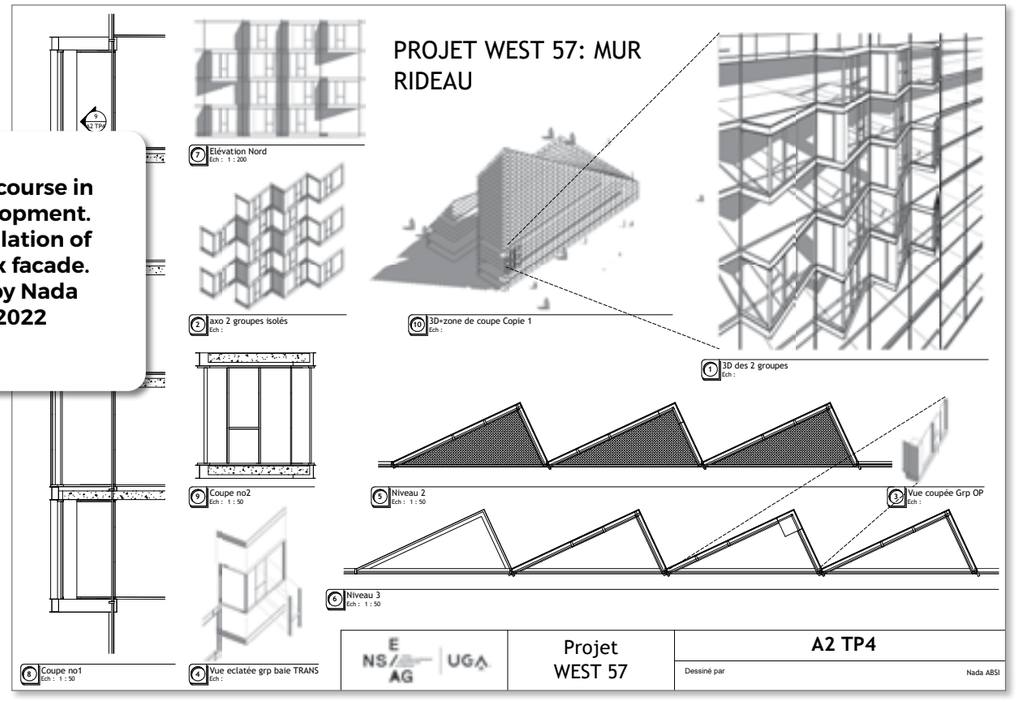
Conception numérique SANS LIMITE Groupe 3 : Margaux NICOLAS, Nacer-eddine AZZOUG, Dorian GIRAUD, Lucas FRUTOSO, Enzo FAVERO

## Construction: Detail development of a complex façade

S6MN BIM Conception 3rd Year Undergrad



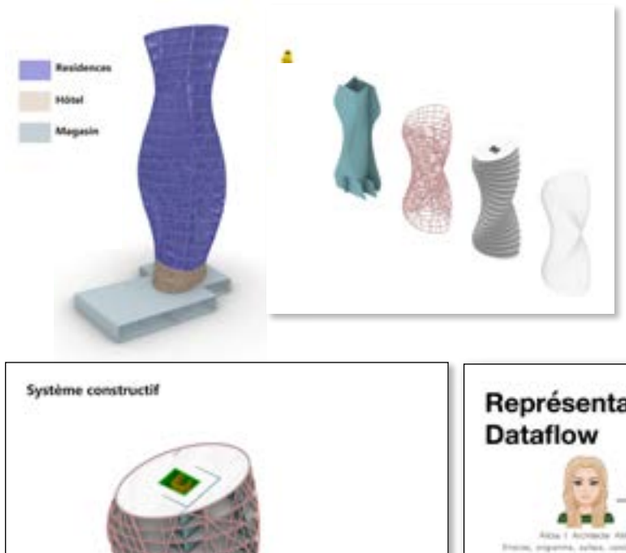
Construction :
Detail development
of a complex facade




**A second course in BIM development. The articulation of a complex facade. Project by Nada ABSI 2022**

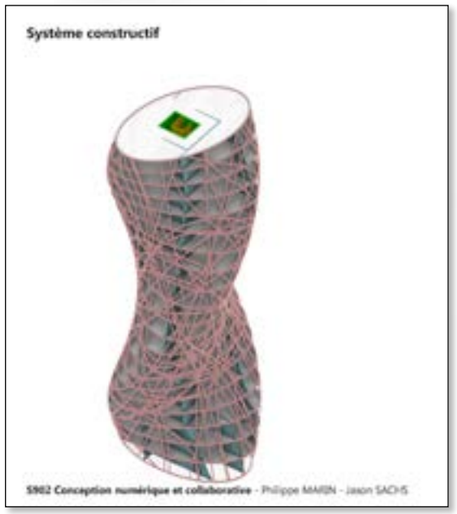
## Composed System Models:

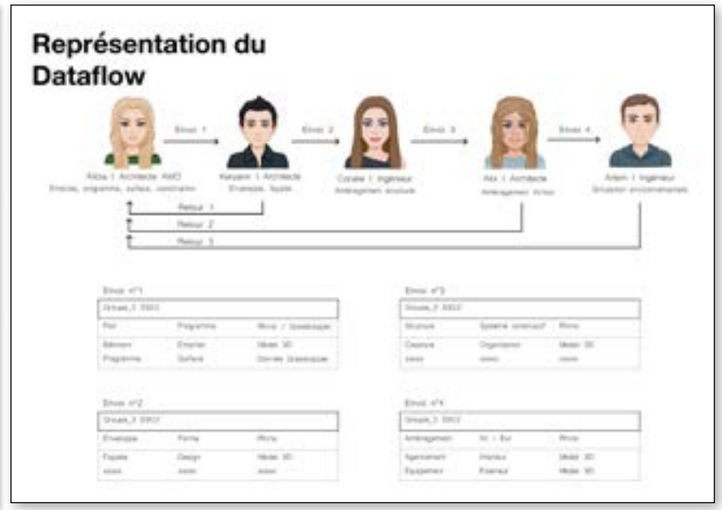
S902 Conception Digital & Collaborative, Masters Year 2

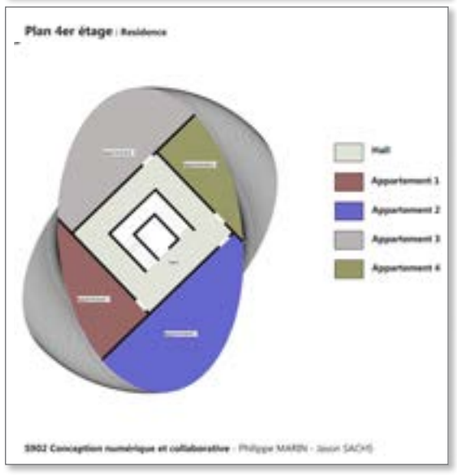


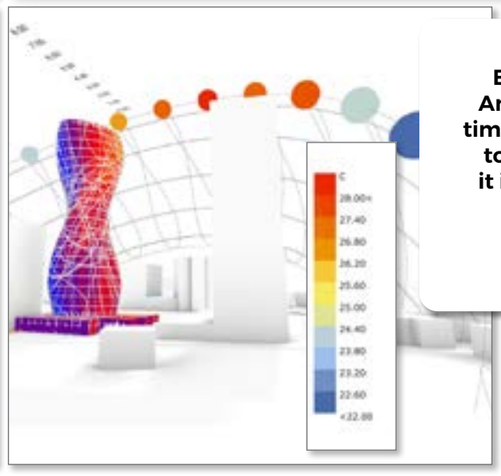

System models like these can be used to extract the geometry from a concept project and use that geometry as a base to apply the teaching of architectural systems. These models are from a course in collaborative conception. Teams of 4-5 generate three options with the systems models and simulations. This is done in 2-3 days of class work.

Composed System Models:
S902 Conception Digital & Collaborative
5th Year Masters 2



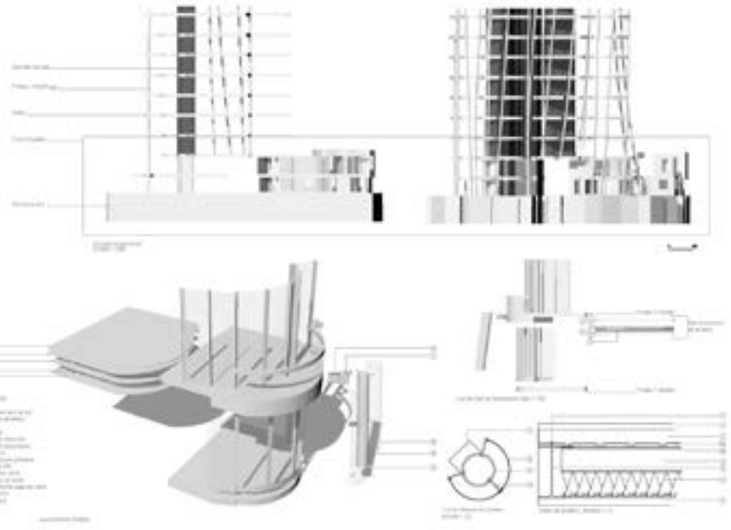



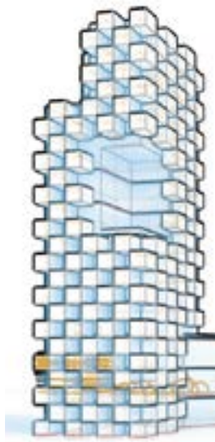

**Exploring and Analyzing in real time with feedback to the design as it is adapted and explored.**

## Generative Design Interfaces :

Using this approach to both analyze existing projects and conceive new tectonics!

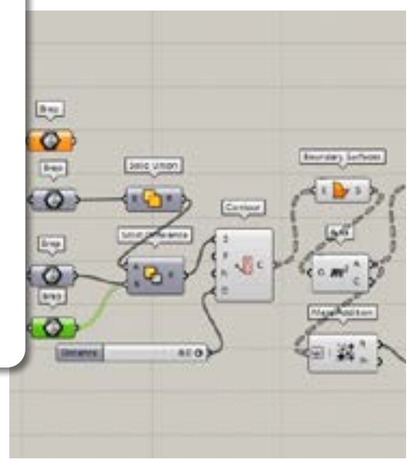
Construction Project Analytic modeling and drawing
OPUS Hong Kong, Gehry by Coralie RICHEBOIS
Studio SSAA 23 Shin Sachs

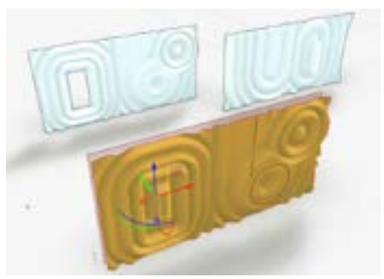




**Generative Design is the base for this exploration. The model is composed from simple volumetric forms and articulated by algorithm based processes. This keeps it adaptable and agile to make changes.**

**Relatively simple algo based processes can create complex but variable results**



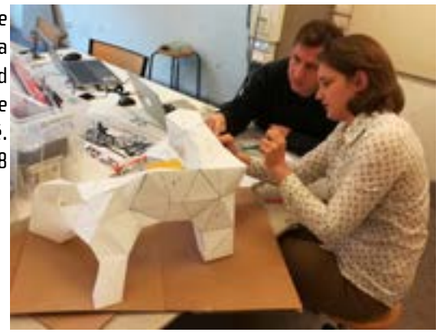



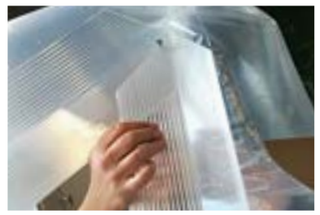


## Students Fabrication and Installation :

Conceiving and installing Cloud Shell Grenoble

Third year project studio Adaptive Urbanism Theme : Installation of a 1/4 scale mockup in the courtyard of the 16th century building. The former parliament of Dauphiné. Exposition : DNA Grenoble 2018






Development of faces

fabrication model

## S60T : Urban Ecology :

Adaptation: Biomimicry, Materiality, Embodied, Energy 3rd Year Undergrad


Meta City Seed Project,
La Poya, France 2024
COULON Marine
DOUDOU Lisa SAUL
Moritz

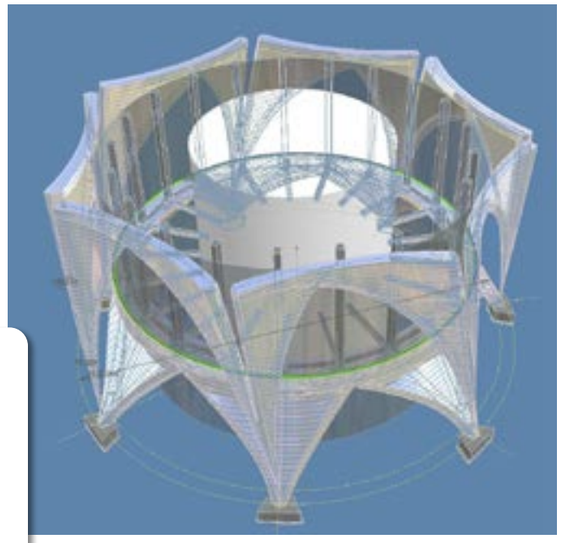
**Embodied energy and material ecology. These are key aspects of my urban scale adaptive reuse course. But it applies to choices about materiality in new construction projects as well.**






## The influence of some of my professional experience

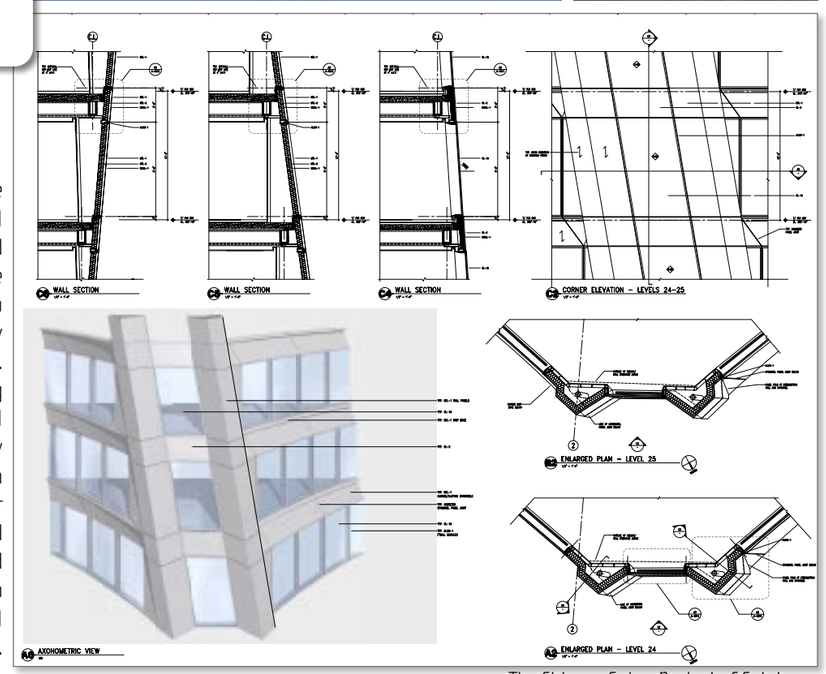
The Spire project of Calatrava, unfinished.



**My professional experience grounds me in need for and cohesion of all these aspects, in teaching young architects**

In the end of this introduction I include just a snapshot of my professional work and also research, design and just creative endeavors. These are example of the experiences that inform and inspire me that I infuse into my teaching.

I come to this approach to teaching conception through models and detail development of systems from many years of project leadership both on conventional and very complex project like this one. Developing detailed 3D models addressing the design and coordination piece by piece. And with teams of excellent professionals in all disciplines.

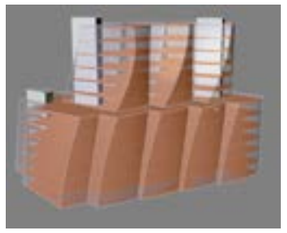



The Chicago Spire, Project of Calatrava

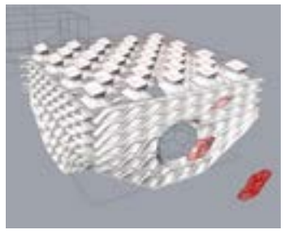
# Models: Visualizing Volumetrically: Sketching & Drawing

Student Study Models, My Models

Casa Malaparte:
Libera / Malaparte
by Indra COUPIN
ensaG 2018

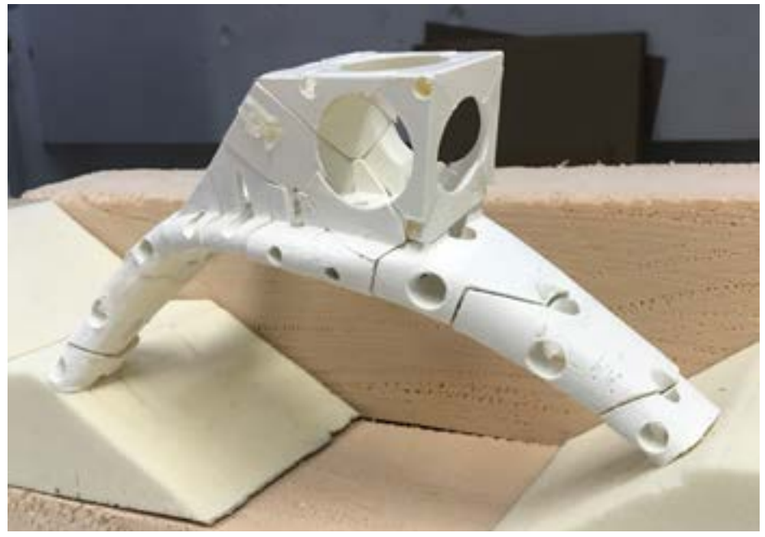


IAC Building:
Gehry Partners
by Veronika DESOVA
ensaPLV 2016

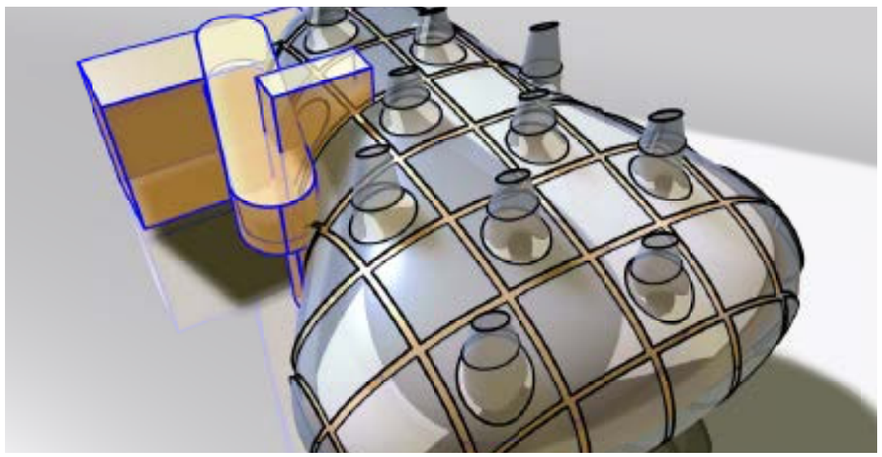


Broad Museum:
DSR
by Lisa SAMPER
ensaG 2021

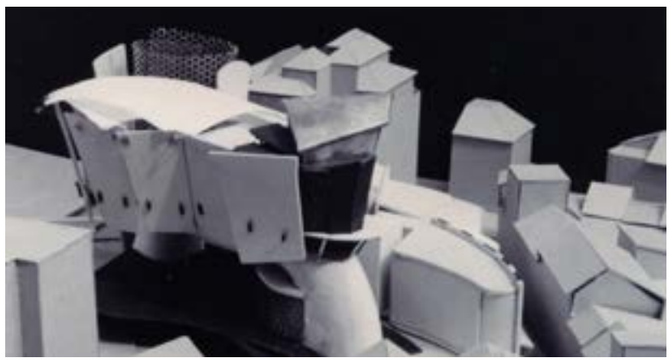

Detail model and fabrication preparation for the recovery and preservation of a historic project of French 1960's experimental architecture.
In exhibition at Conseil d'Architecture Urbanism et Environment de Haute Savoie, (CAUE74) Annency Fr. March 2020



First Study model in cellular architectural scale 3D Printing: IDEX Funded Research Grant Directed by Grenoble INP & Maison De L'Architecture de L'Isère; Project: " The Cloudshell Derivations Cloud Shell Isère " Subject of research 3D Printing of building scale vaulted voussoir structures - 2019



Graz Kunsthaus:
Peter Cook
by Abla BEN EL
MAMOUNE ensaPLV 2016



Rome Studio project model , UIC 1994
Direction Doug Garofalo

Spertus Institute:
Finalist Chicago
Architecture Club
Burnham Prize
Competition 2001
Exhibition at Gallery
400 at UIC 2003

# ENSAG S6AX : Workshop Brutalist Façades

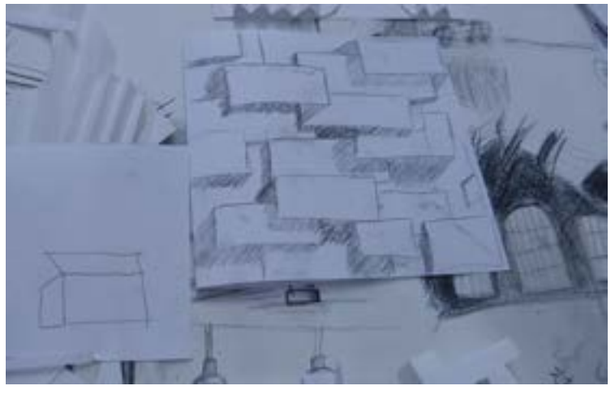
shading studies in drawings and mockups, 2022

Looking at the work of the brutalist architectures for inspiration, with their abstract geometric forms replicated on façades to create sculptural compositions; we will study all things related to the effects of shading on façades and the elements that create them.

We will construct mock-ups of building facades at reduced scale and conceive patterns of brise soleils and other shading elements, to experience the effect of design and composition of solid : void / chiaro : oscuro on façades.

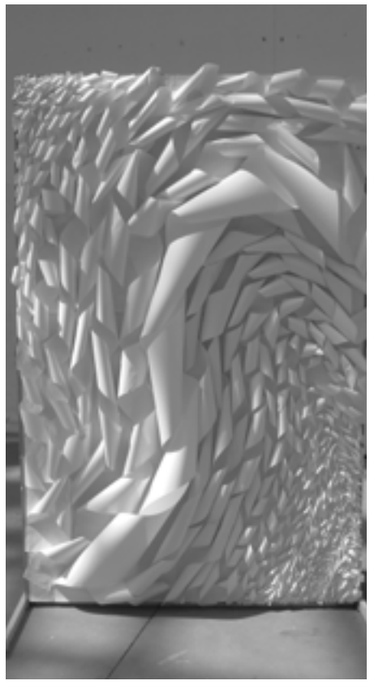
We will start with sketching and drawing for idea development, chiaro oscuro techniques with charcoal on paper.
We will construct physical mock-ups of multiple variations with paper and cardboard at 1/5 scale, with hand fabrication.

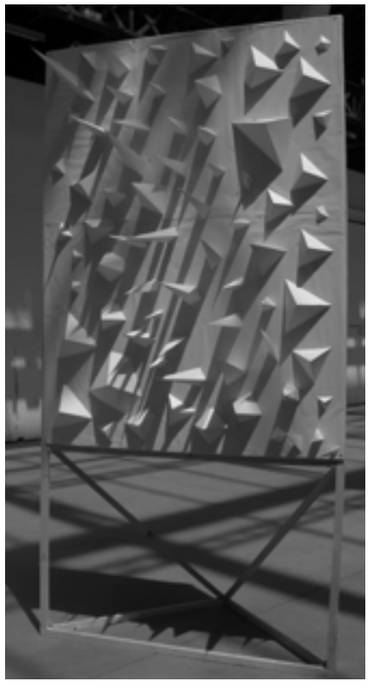
The hall constructed by Gustave Eiffel before the exposition





Finally we will study and document the results with photographic studies in high contrast black-and-white.
At the end, we might add some algorithmic tools to see how the physical mock-up results compare with simulations.
The simulations may provide another layer of graphic contents to add to the imagery created.



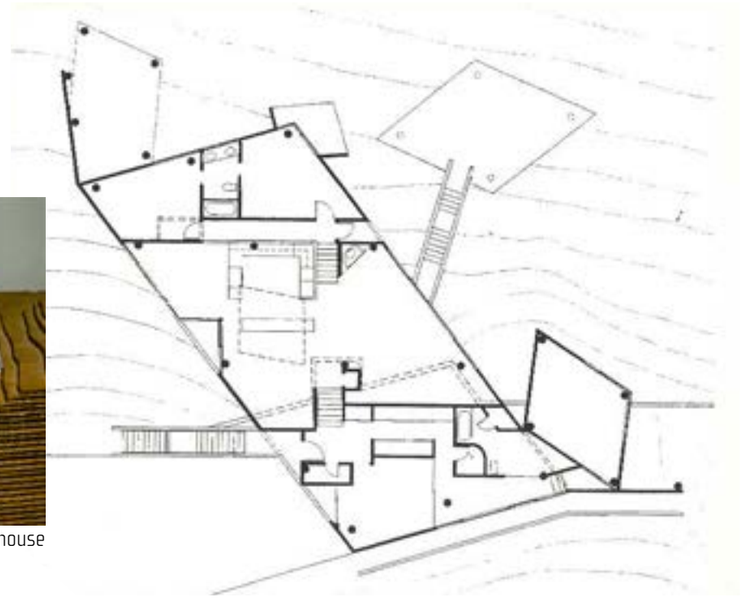


## ENSAG S7CT 21: Student reconstruction model
of an unbuilt project, Jérémy Chotard, 2021

The re-modelization of an unbuilt project. Learning BIM and construction

Wagner residence
Frank Gehry
Malibu, 1978
unrealized

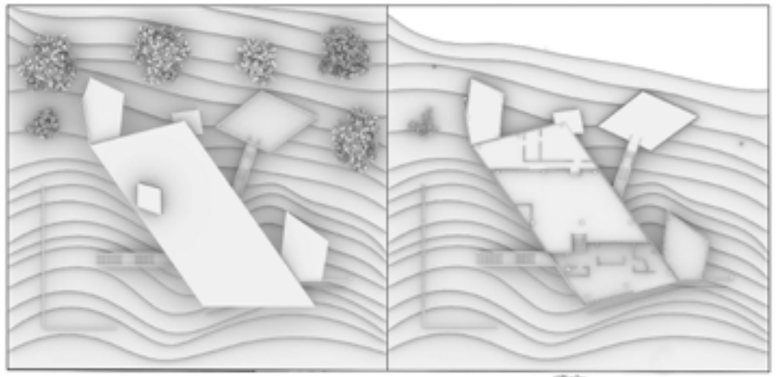
Original hand sketches and models Wagner house

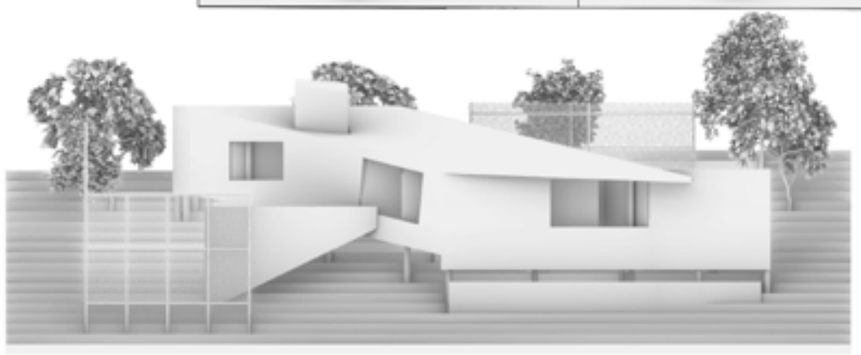




## WAGNER HOUSE

La modélisation BIM à l'aide de Rhino et VisualARQ est un bon moyen de s'affranchir de Revit ou ArchiCAD mais son utilisation ne se relève pas aussi facile. C'est un outil vraiment intéressera permettant de faciliter des taches au sein de Rhino mais en complexifie d'autres par la même occasion. VisualARQ est facile à prendre en main, toutefois, sa gestion des fenêtres rend très compliqué la mise en place d'ouverture dans les murs, même à l'aide de courbes. Par ailleurs, la jonction des murs devient très ardue si le mur n'est pas orthogonal, on perd l'aspect vernaculaire qu'offrait Rhino. Enfin l'utilisation des courbes et des surfaces oblige à bien agencer ses casques car ils peuvent gêner la conception comme le rendu de la maquette, c'est un aspect à prendre en compte.





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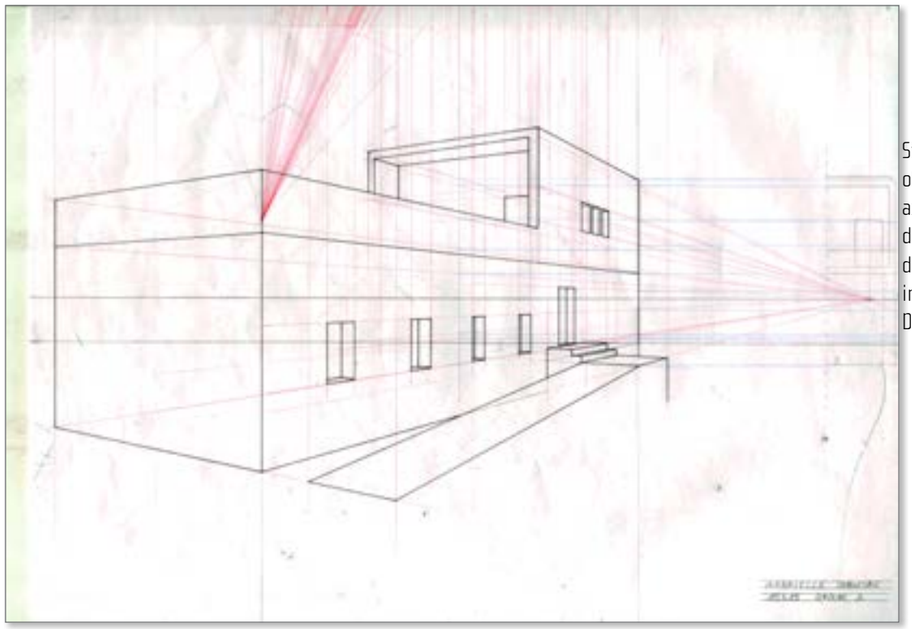
## WAGNER HOUSE

Les entrées sont marquées par des vides marquant le parallélisme du terrain. Des écrans de protections solaire en treillis métalliques donne au visiteur l'impression qu'un glissement de terrain pourrait se produire à tout moment. Le parking se dote de tapis d'asphalte sculpturaux et accentue le décalage.

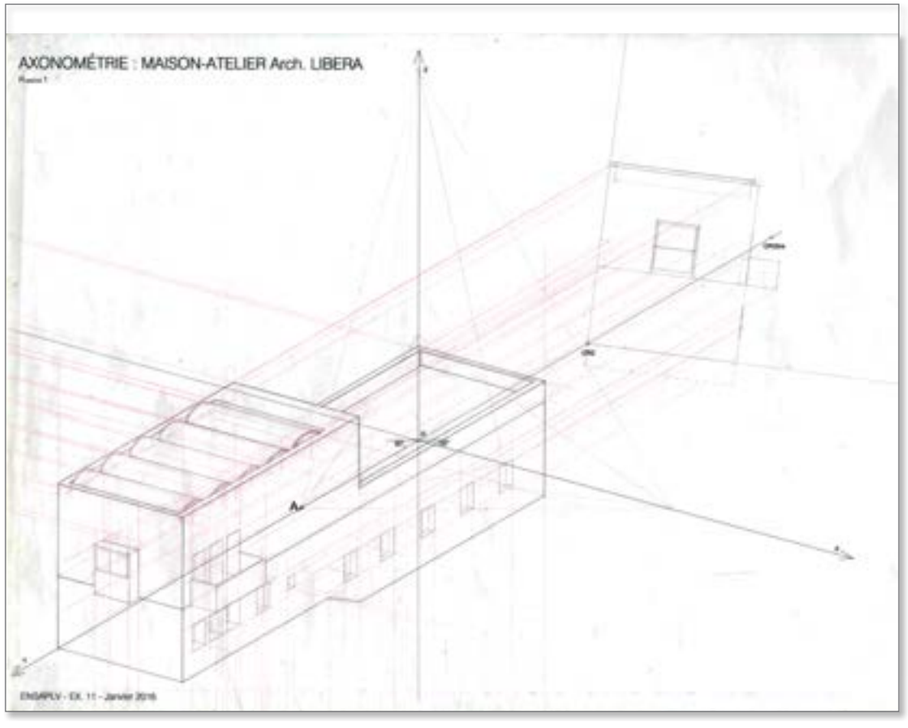
Enfin, il faut savoir que la maison est devenu très célèbres suit à l'exposition sur la « déconstruction » organisée par Jeffrey Jipnis et Philip Johnson au musée d'Art moderne. Sans rapport avec Frank, ils avaient choisi cette maison comme exemple parfait de déconstruction architecturale, notamment grâce aux poutres en porte-à-faux. L'étanchéité a été un problème majeur. Bien qu'imaginée en 1978, celle-ci n'a jamais été réalisée.

3

## Drawing Descriptive Geometry
L 37, ENSA Paris La Villette, 2016



Studies in construction of perspective and axonometry by descriptive geometry drawing methods taught in the traditional Ecole Des Beaux Arts methods.





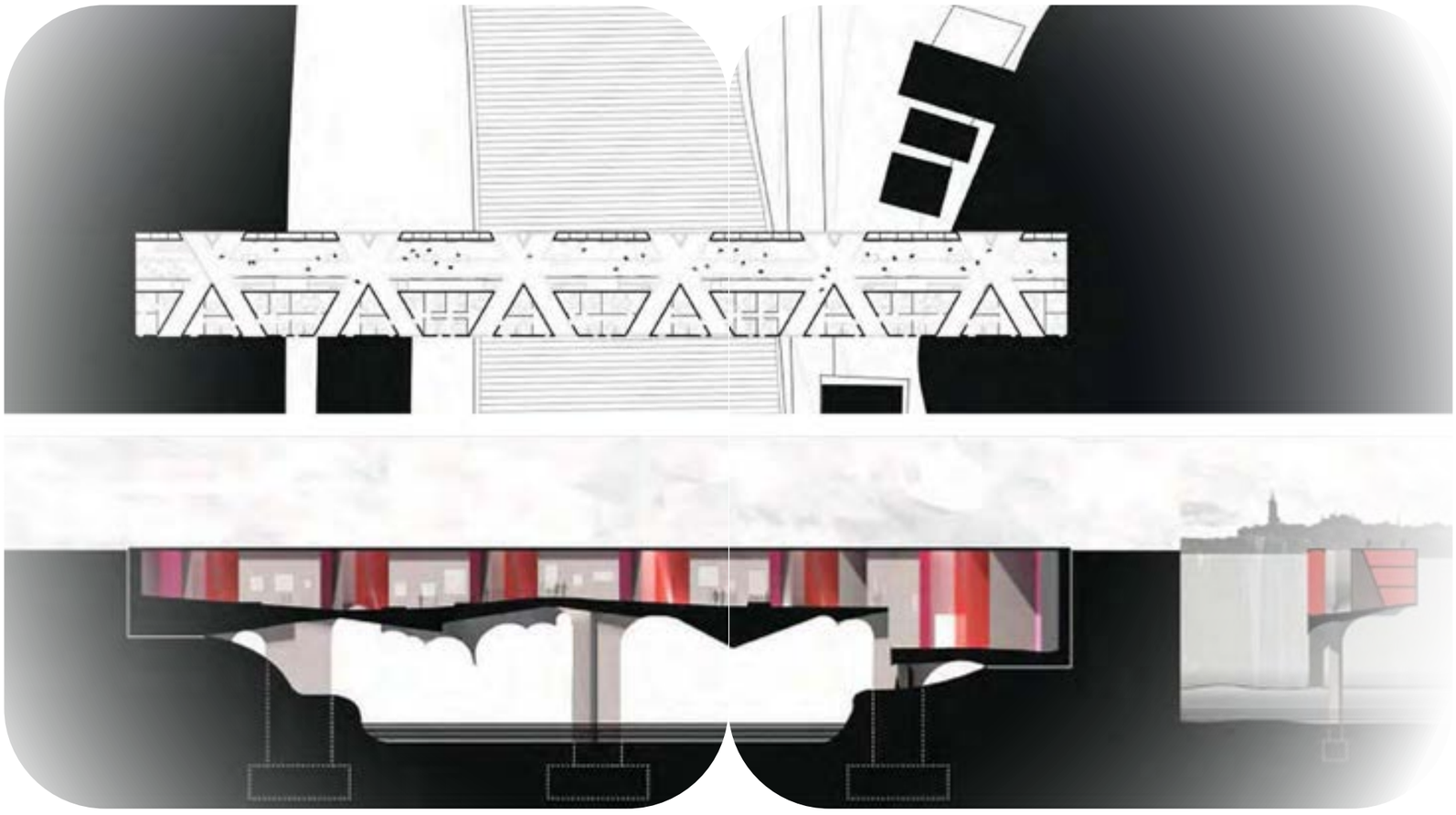

## S7CT Generative AI:
Speculative Urban Renders

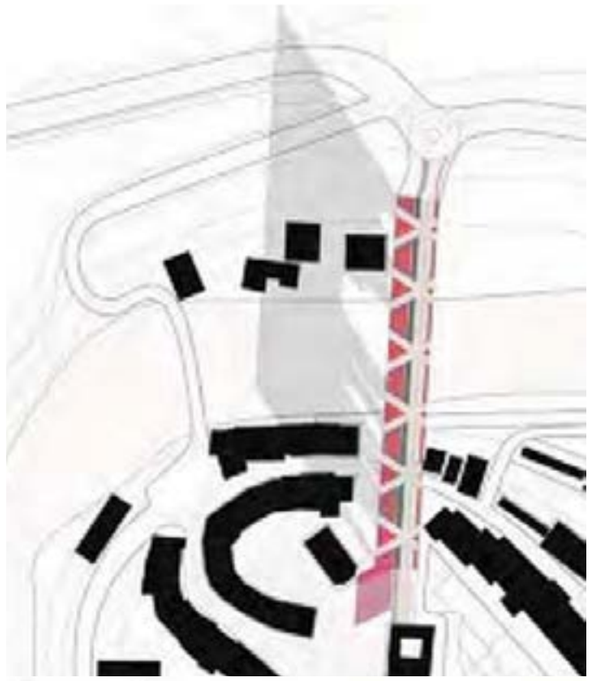
Hacking
Grenoble

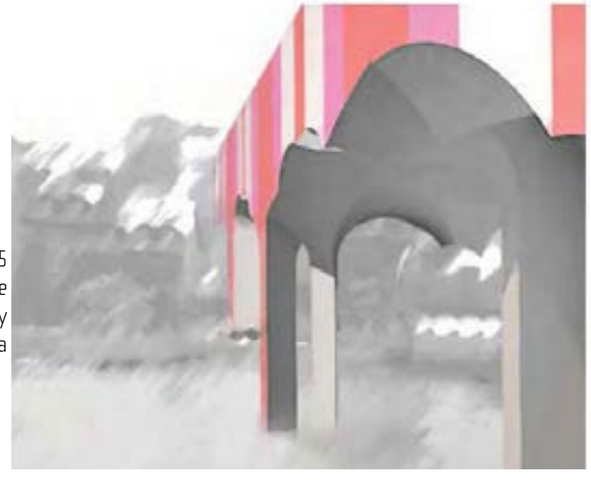
Hacking
Paris

# Projects Studio

## Bern Concept Studio Spring 15, with Julie Flohr





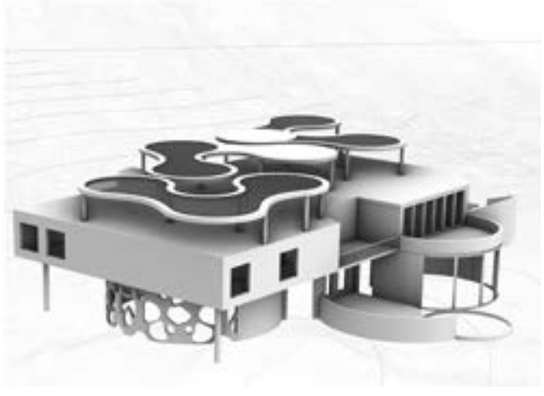


3rd Year Project Studio Spring 15
Bern Bridge Site
DOS SANTOS FARIAS Eva Joy
FERRERE Lysa

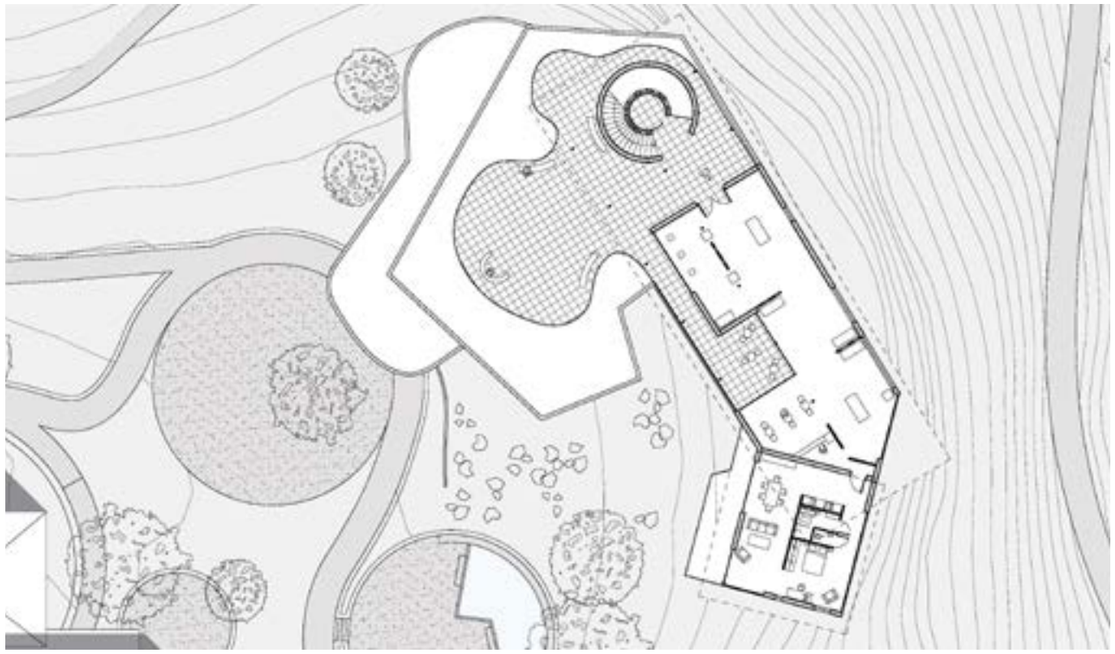
## Projects Studio

Voiron Vicat Concrete Factory Site Fall 22 with Tchely SHIN

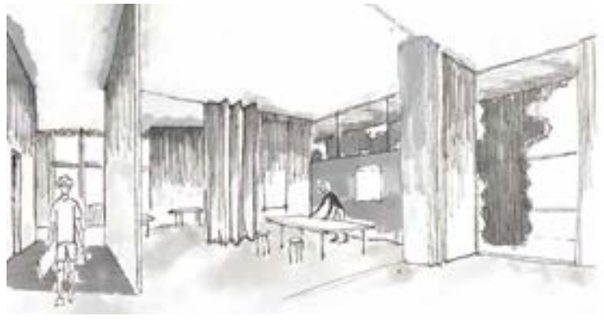
3rd Year Project Studio Spring 2022
PUTRI Catlea





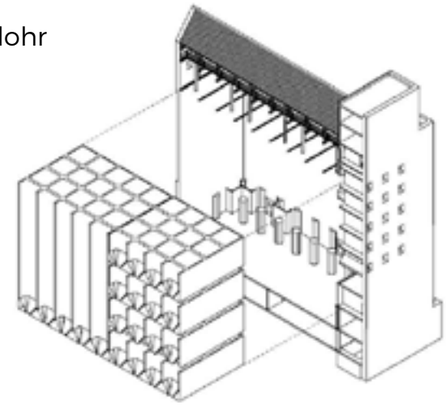


3rd Year Project Studio Spring 2022
CHAVANNE Jordan

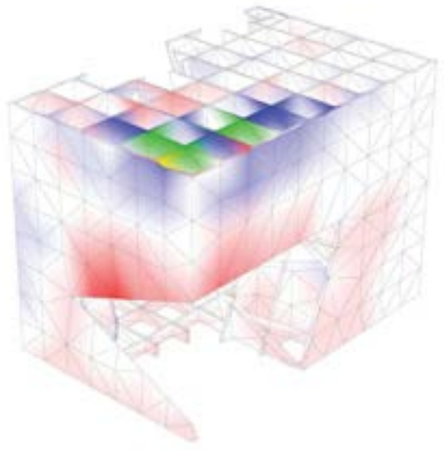


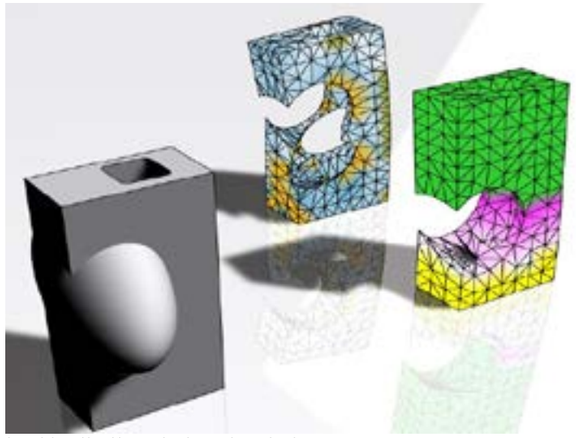
## Projects Studio

Basel Bernoulli Silo Decomposition
Concept Studio Spring 15, with Julie Flohr



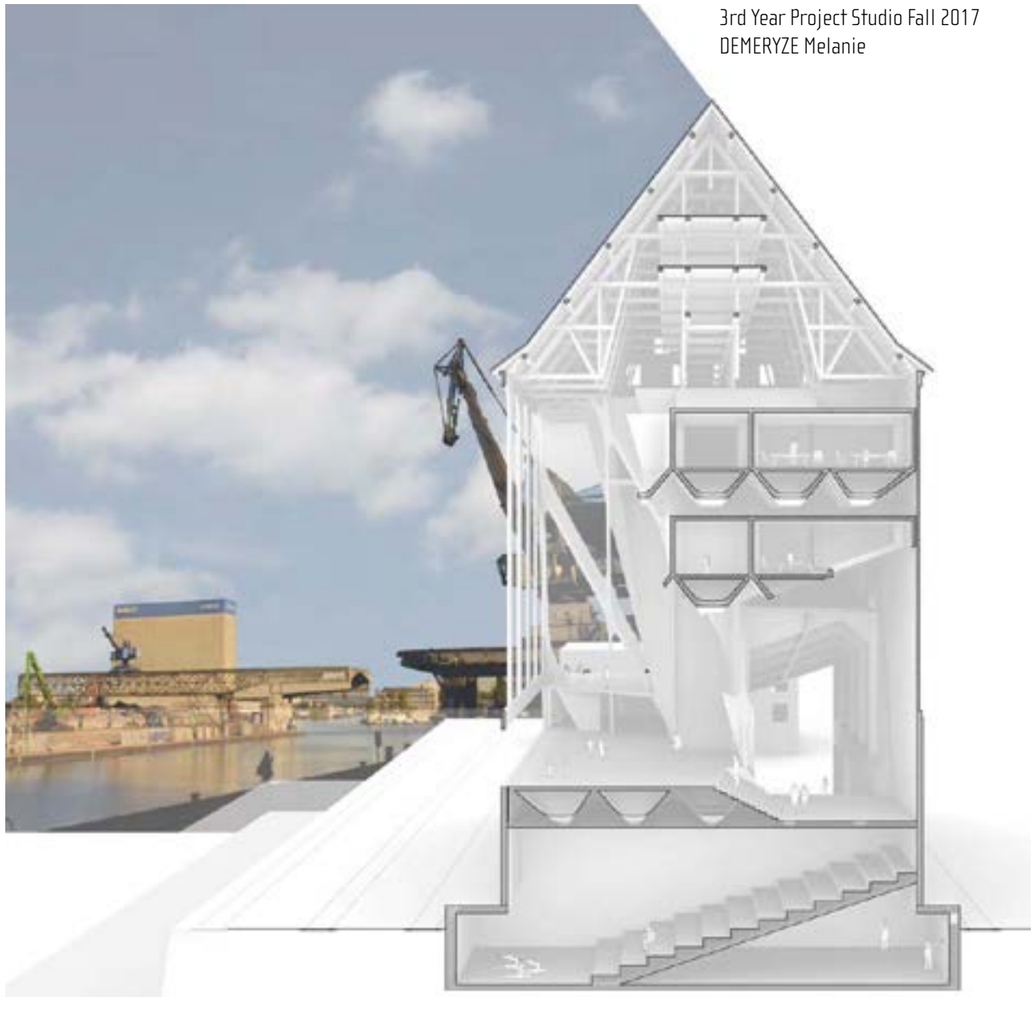
Analytic model of imposed stresses on deconstructed silo





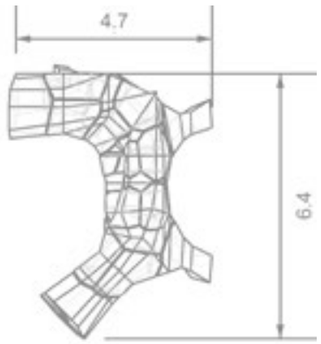
teaching the Karamba based analysis

3rd Year Project Studio Fall 2017
DEMERYZE Melanie



# Tectonics & Structure Fabrication

Adaptive Urbanism Project Studio
Fall 2018, with Julie Flohr





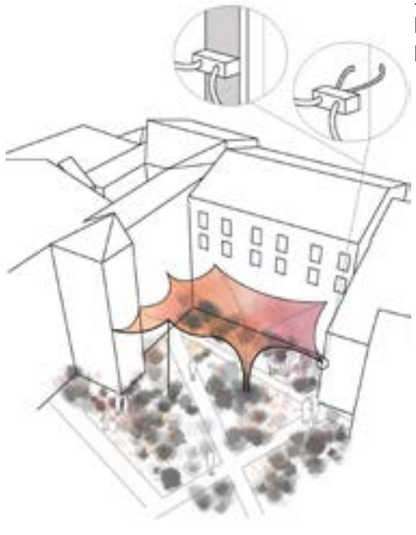
Third year project studio  Adaptive Urbanism Theme :

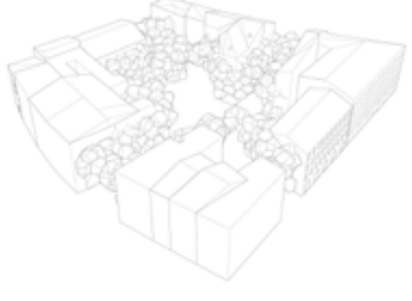
Installation Parc De La Villette Paris : At conference FAB 14 Paris

Composed Fantomes : Urban Interventions

3rd Year Project Studio
Fall 2018
FORQUE Elise

3rd Year Project Studio
Fall 2018
JABBOUR Miguel





## Tea cup modeling
an introduction to variable modeling

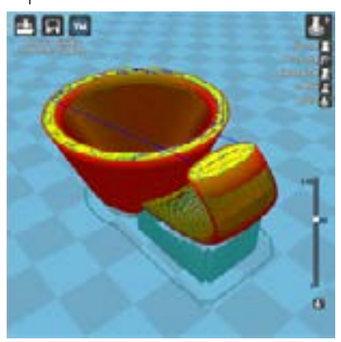






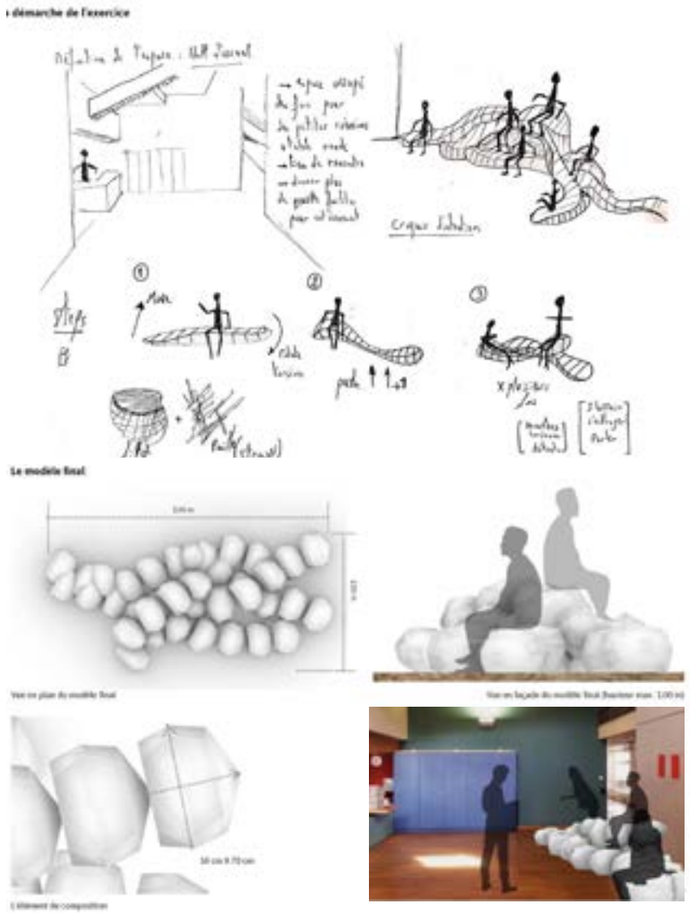

Tea cup modeling with control geometry history, exercise rendered in multiple courses as an introduction to variable modeling.
Exercise in modeling tea cups, with the geometric history of creation protected, makes design variation possible. Each student develops their own design in less than an hour. The result is that each has a unique design. The model is simple, but it involves each student engaging directly with/engaging directly with the object. And by the end of the exercise, each cup is ready for 3D printing. This underscores the strong advantage of this design approach. The path is direct to manufacturing.

Résultats des élèves, à partir de plusieurs centaines d'exemples
Impressions 3D des modèles

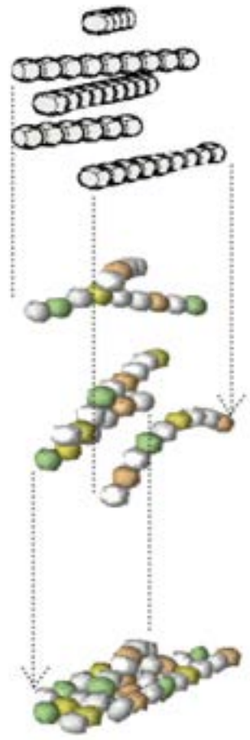





## Project Furnitecture:
Design Program DPEA, ensaG



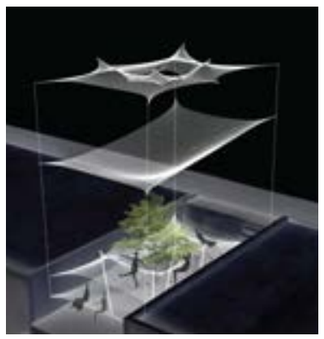

Using physics simulation of gravity and "digital touch" to create instances of design pieces.
Marouen HAMMAMI, 2020



Sophie MERIGNY, 2017

Damien DUFOURNET, 2020

Thao Vy NGUYEN, 2020

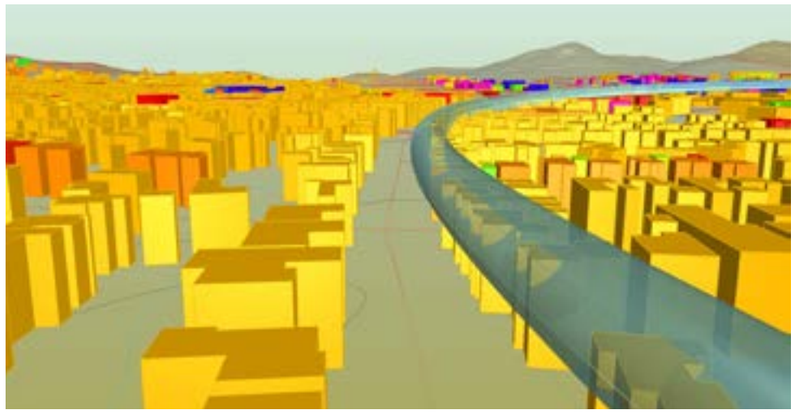


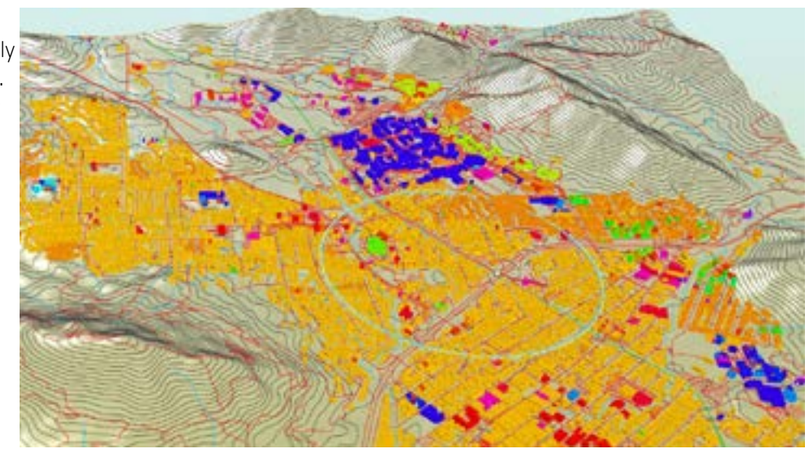
# Cartography : Urban Systems : Ecology

an introduction to variable modeling

2D Topographic Study Map : Generated entirely from open source data : Amsterdam

Invisible Cities Exhibition, 2003
w/ Brininstool & Lynch





3D Topographic Study Map : Generated entirely from open source data. First concept maap for SLO LOOP

# S60T : Urban Ecology, Form, Function and the Metabolic :

## Circularity in Architecture. Or Where To Land In Architectural Practice In Anthopocene?

OPTIONAL TRANSITIONS 2 S6 OT Urban Ecology, Form, Function and the Metabolic:
In order to raise awareness of the logic of the «circular economy» with its regenerative flows of resources, resembling the metabolic functions of a living ecosystem, students will undertake the analysis of the conditions of use of existing urban areas at the scale of the urban border. Paris / Lyon / Grenoble can provide a useful comparison of scalar organization. This scalar difference will emphasize the need for a human-scale relationship in defining boundaries. Odom's Emergy flow analysis methods will be presented.

Once this understanding is gained, the Linear / Circular contradiction will be explored. The research will examine what types of uses must be reintroduced, within the «local» urban boundary, to cultivate this metabolic function. This will be followed by an analysis of existing built architectural resources and an examination of the potential for local renewable energy, food and water production, as well as local non-polluting industrial production.

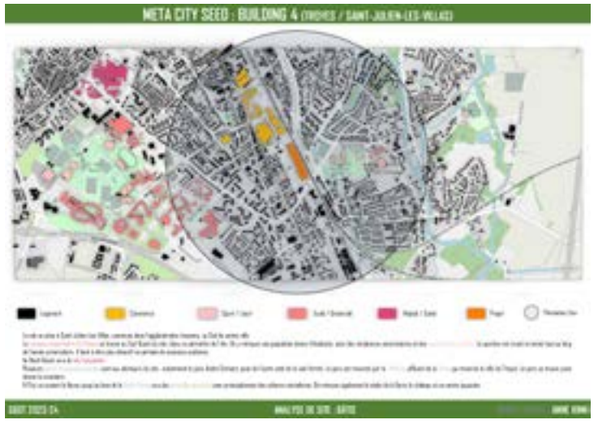
Finally, adaptation strategies will be proposed to cycle resources, build resilience, and provide for the basic needs of local residents. Students will work in small teams to design an intervention with a conceptual projection of resource flows. They will identify existing buildings with the potential to be used to reintroduce productive functions. An EcoPLU plan in the form of an urban diagram will present the strategy for the areas and location of resources, within the district. A resource flow diagram will accompany this strategic plan.

Doughnut Economy Diagram
Kate Raworth

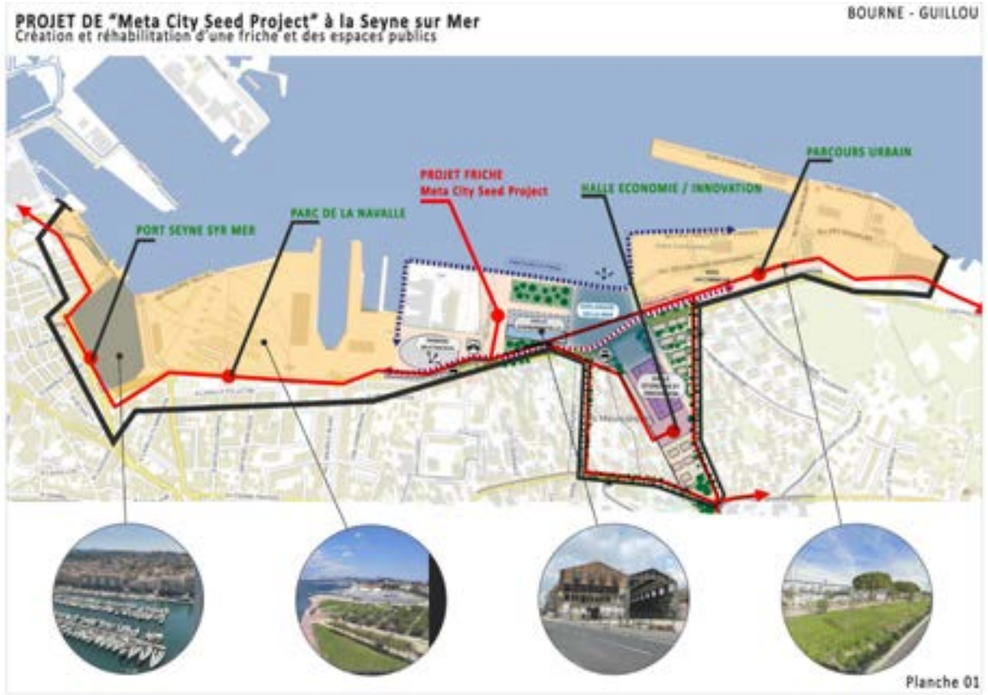


Meta City Seed Project, Saint Julien Les Villas, France 2024 KINN Anne, NZINGA Quiria

This is an aspect of the Adaptive Urbanism Project informing and building on the pedagogy. Ultimately this is about reintegrating food water energy into the local.
There is a strong ecological focus in everything that I teach. I always express the need for integrating passive and active energy systems and simply creating micro-climates and open environmental natural spaces within buildings.
This goes back to my undergraduate in Geography with a focus on urban development and environmental policy. We knew then the climate crisis was coming.
At the time I was studying what we called ecological economics, what today we call circularity.

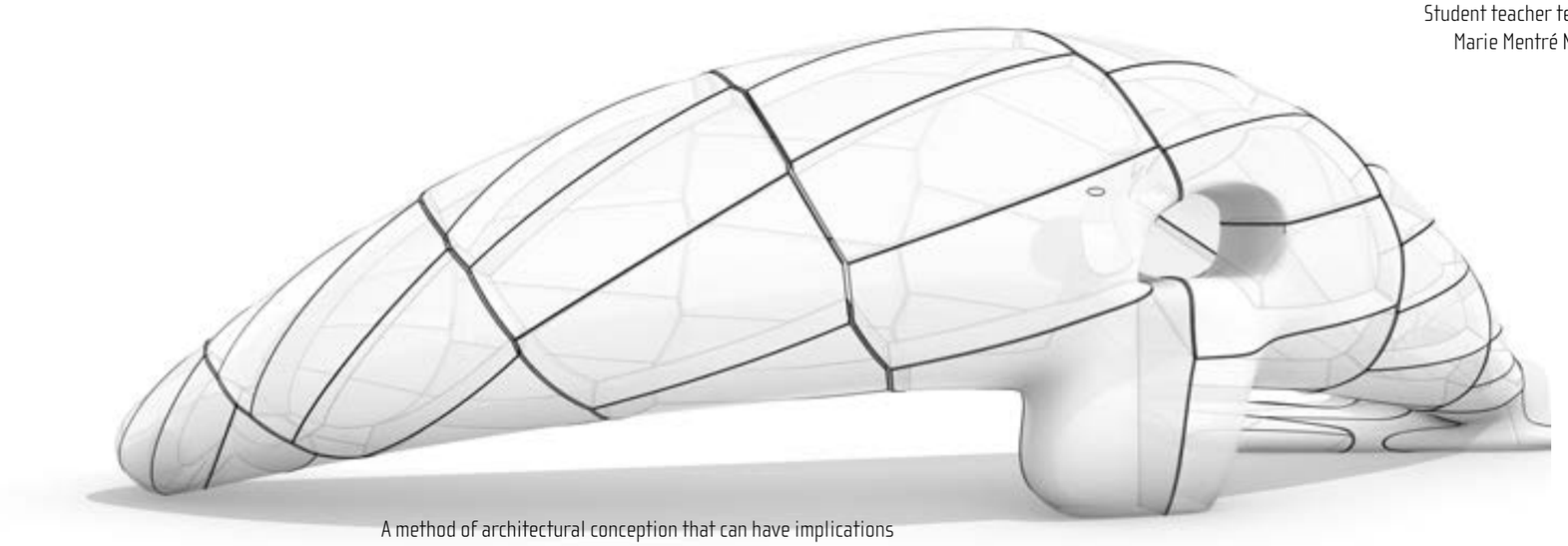






Meta City Seed Project, La Seyne Sur Mer, France 2024 BOURNE Anthony, GUILLOU Robin

# Research & Design Development:



## Cloud Shell Derivations:
Adaptive Urbanism

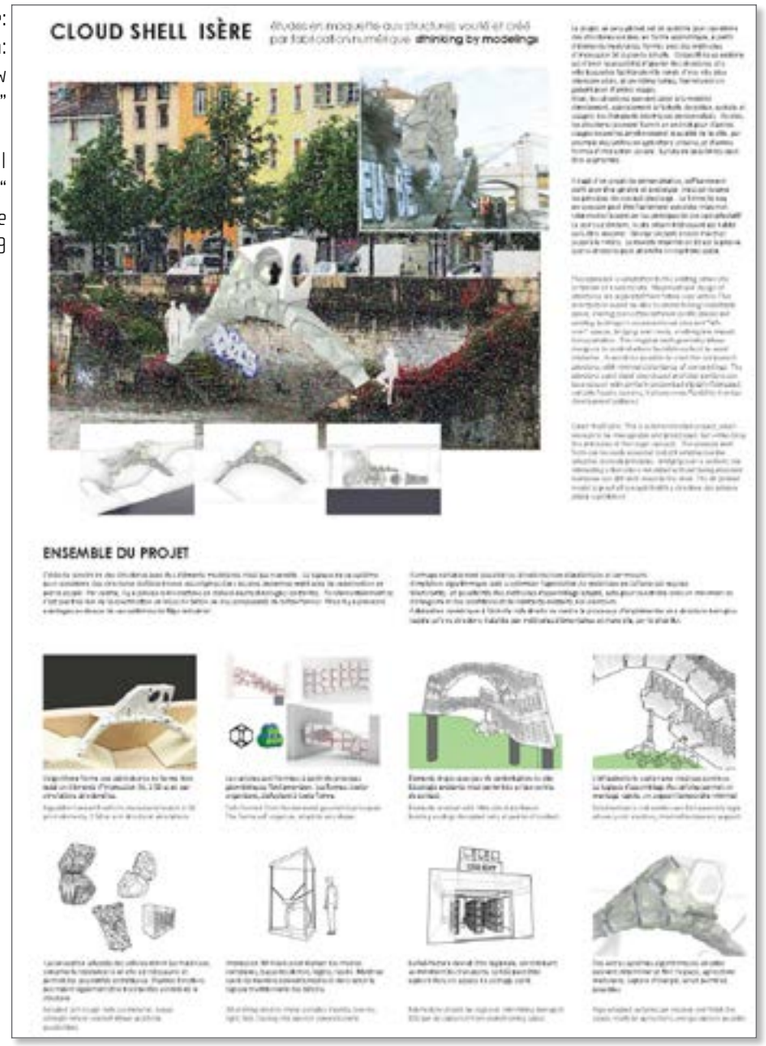
A method of architectural conception that can have implications for alternative forms of spatial arrangements, much larger than building scale. It has implications for new approaches at the urban scale, a concept of Adaptive Urbanism. De-coupling interior construction ( user specific ) from "Core & Shell" in mixed use buildings. A mix of uses, clearly being the best approach to achieve and organic ( Distributed Network ) pattern of growth and development. Modularized systems of infrastructure (smart grids) could be expanded progressively along with componentized building form, and integrating and/or following transportation systems. This method would allow for need based growth as opposed to the current model of mass development.

Though it is common practice in architecture to separate the logic of the design process into these phases; it is rare that the core and shell phase is conceived of as a generic space, suited first to the site and second to a range of potential uses. Uncertainty is seen as something to be avoided in a market driven rational economic (real estate development ) climate. If buildings were conceived first in a non-program specific context it would allow the design process for this phase to prioritize building flexibility, overall performance, impact on its cultural social context and priorities of urban density. This proposed approach may prove to be a model available in the near term, to facilitate the construction of a more robust and sustainable urban fabric.

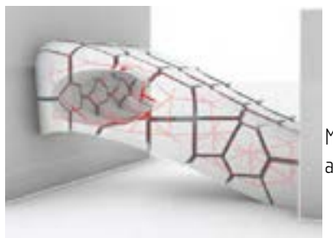


Fab Lab in the Alpes Challenge: First Prize "Digital Fabrication: Does it open the way to a new architecture?"

Project: "The Cloudshell Derivations : Cloud Shell Isère" Student teacher team with Pierre Marie Mentré November 2019

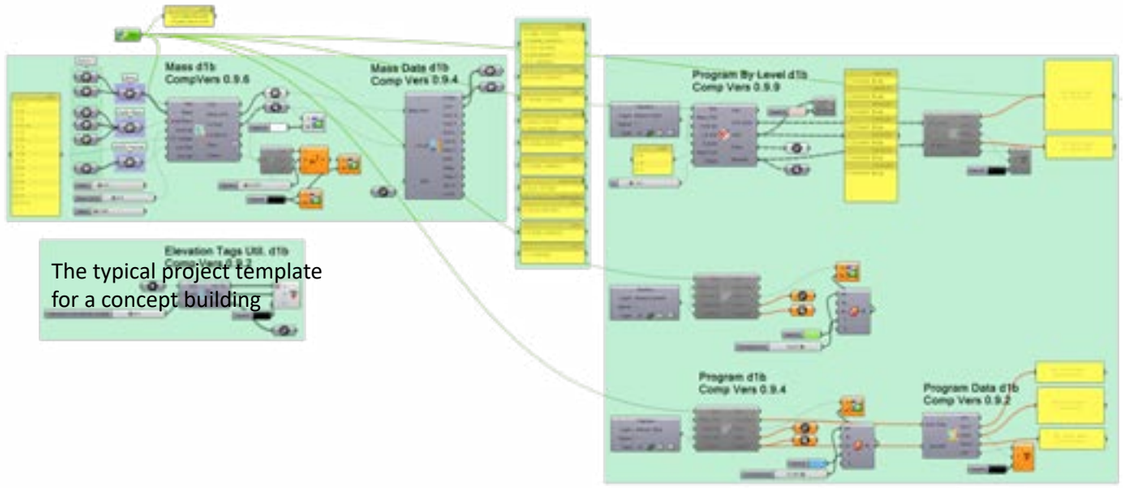



First ceramic 3D printed Cloud Shell model
European Ceramic Work Center
The Netherlands
2014



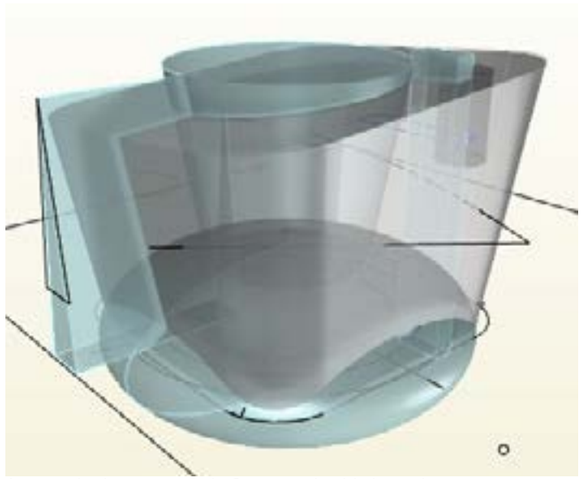
Modeling cellular assemblies

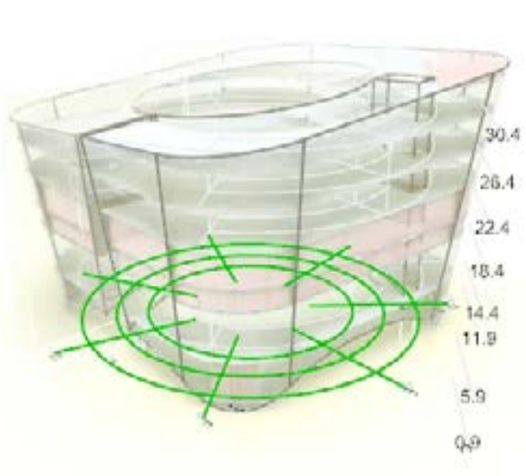
## Development of day1bim Tools:
A concept generative design front end for architects



The typical project template for a concept building

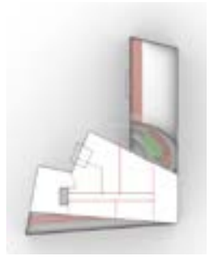
day1bim Tools is a set of conceptual massing and programming tools for architects, which allows the user to quickly develop a project concept model and extract fundamental project information. The concept model developed can be used for simulations and representations. With grasshopper based connections, the geometry can be linked forward to generate native elements in a BIM environment. It's a flexible model that is ready to visualize in minutes and easy to modify.


A conceptual arrangement of mass and void elements



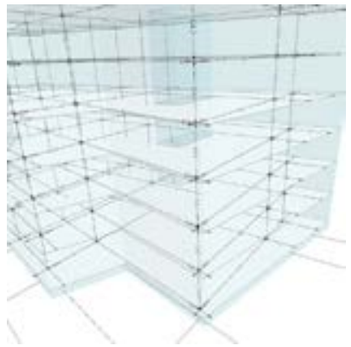
The resolved concept model



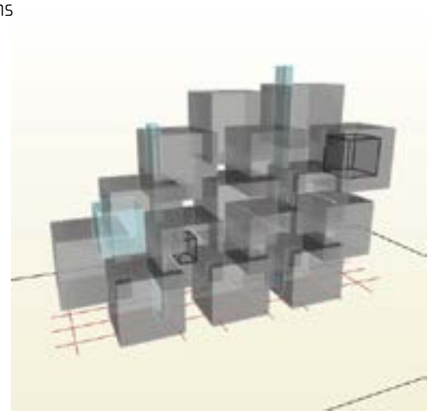


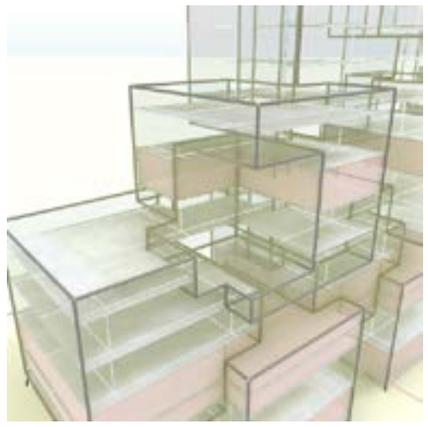

Programming : Curves to Spaces to Walls ( if desired ) : and on to native elements in a BIM environment when the project advances

https://www.food4rhino.com/en/app/day-1-bim-tools


Structure:
While day1bim is not intended to be a structural analysis tool, the structure component does a very good job of quickly aiding the user to visualize the entire structural wire frame of the building. It also determines quantities and generates the lengths of centerline geometry separated into columns and beams in two directions. The wireframe comes out fully tagged and, of course, this center line geometry once created, is immediately available to be linked forward to an FEA analysis.

Elemental Forms


Resolved Concept Massing


A detail view of complex intersections

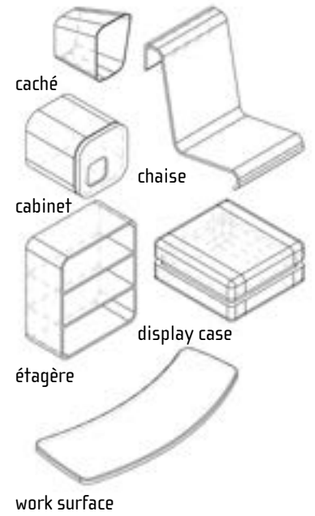

Developed facade isolated faces to control geometry for panelization

**Cornell Inhabit:**
Modular space defining installation / display System

Furnitecture

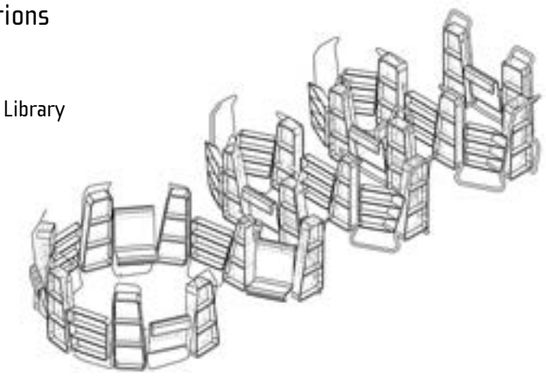
Cornell INhabit - Wave

Concept : Feel

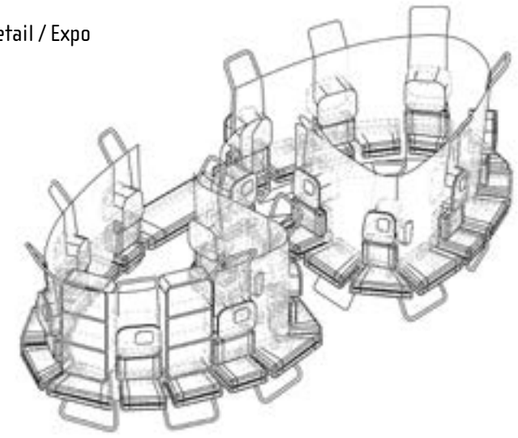



Configurations

Library



Retail / Expo

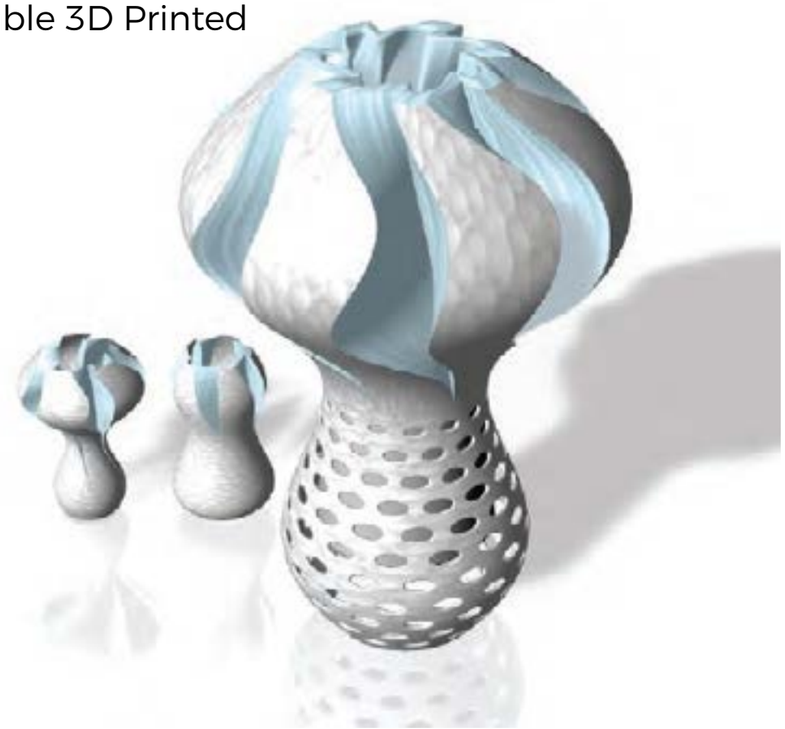


The Cornell InHabit system is an arrangement of components, which may include drawers, shelves, partially open boxes, as well as surfaces of a range of sizes from display to work surface. It could also incorporate display components such as vitrines. These elements are arrayed in irregular looking balanced composition. The overall arrangement could be used to define spaces such as in a work environment or retail space, activating a space with "Furnitecture". It could also be a focal point in space as a central display or in any number of variations on a table. The composition could be supported against a wall or free-standing. The system could be equally well used in a living environment in its functions of space defining and arranging of items, in a suitably open plan living arrangement.

Proposal for a retail / expo space : Proposition d'un espace retail / expo

## Blend Vessel Project:

Variable Customizable 3D Printed

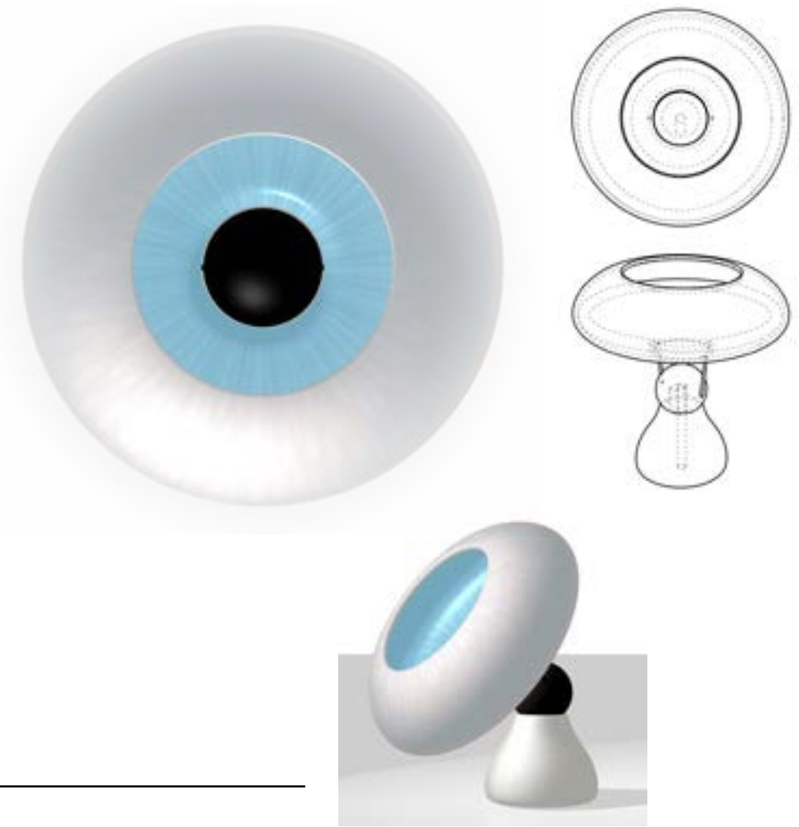


Research in variable design object and ceramic 3D printing
European Ceramic Work Center: Artist in Residence 2014



## IC Lamp:

A luminous form in cast porcelain. Transformable and with LED lamps to create a surreal form and light.

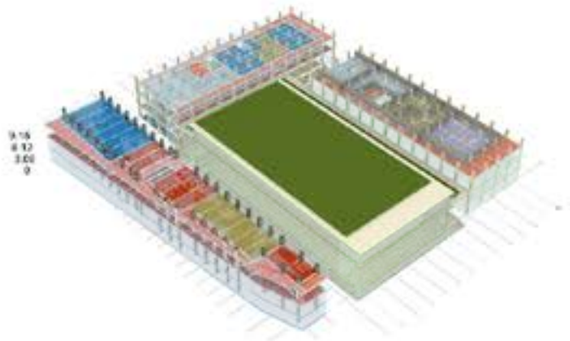


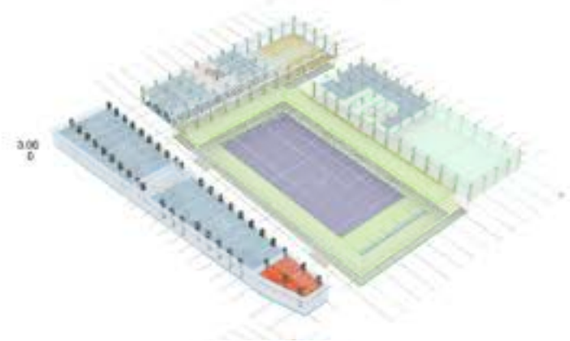
## 2 Part Chair

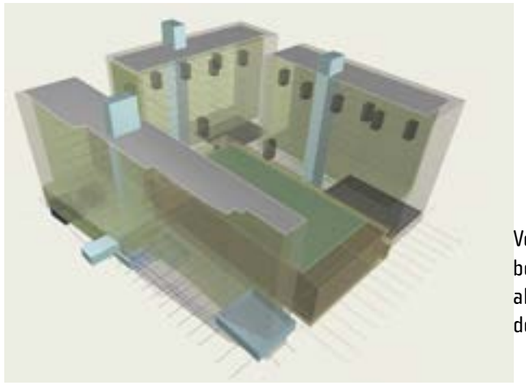
Haring & Tusk

# Professional & Personal Projects:

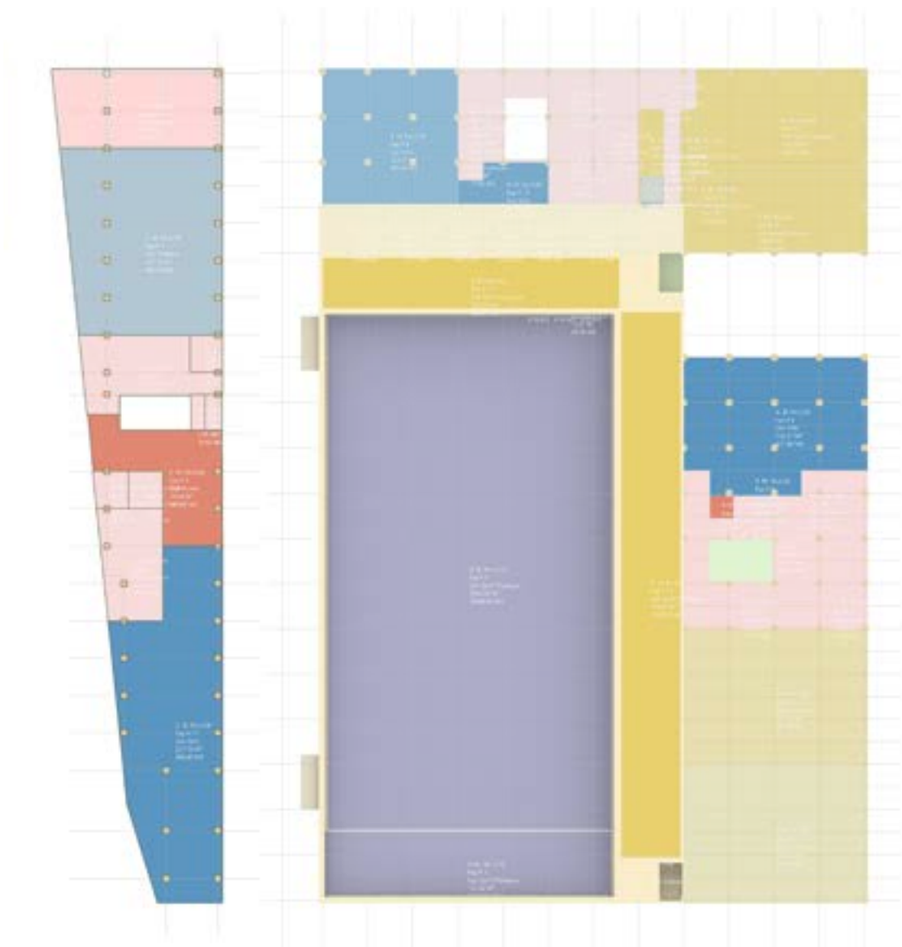
Mixed Use housing - Underdevelopment in a metropolitan site in France: Client / Site Information withheld, currently in competition







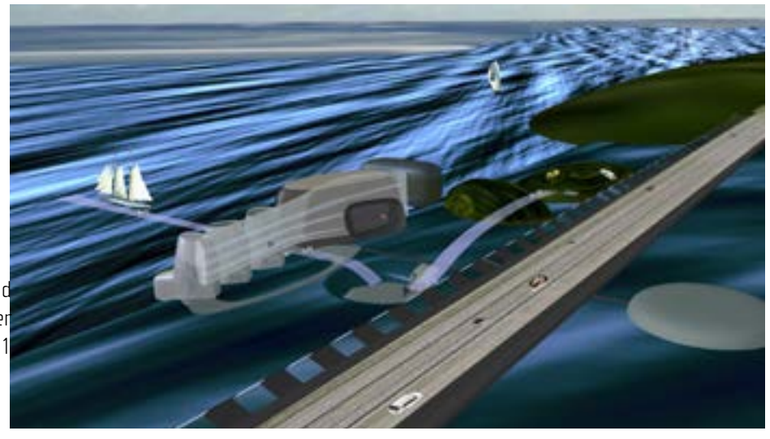
Volumetric Concept Massing before application of the algorithmic generative design articulation tools



## Competitions :

Amstel Bridge Competition, 2009

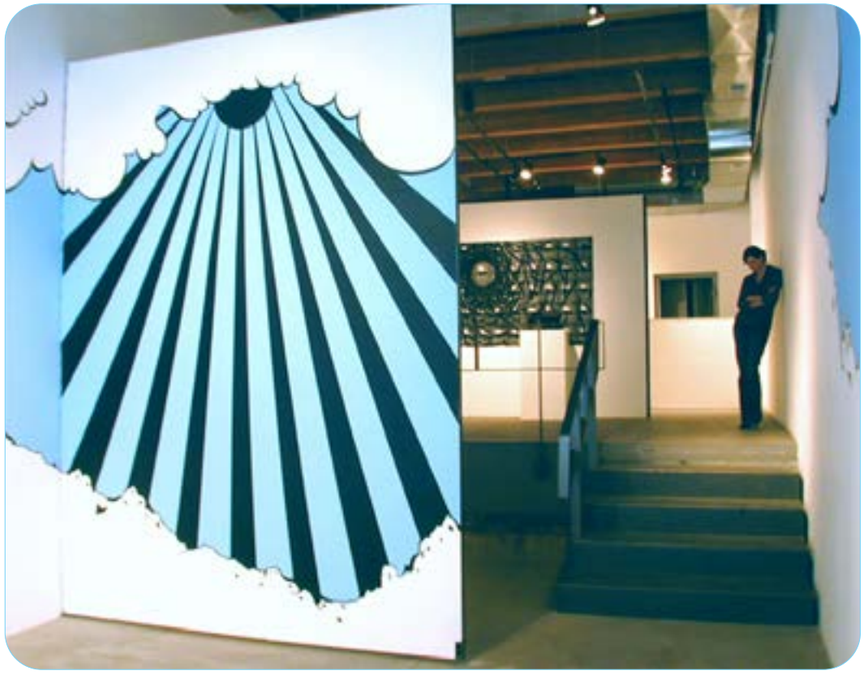
Concept Image Adaptive Urbanism, Cloud Shell Grenoble, 2018



Asfluitdijk World Sustainability Center Competition, 2011

## Julia Friedman Gallery :

Design, fabrication and installation for a multimedia art gallery Chicago's West Loop district. 2001



Princess Nourah Bint Abdul Rachman
University For Woman, Riyadh KSA
Academic Medical Center,
*Centre Universitaire Hospitaliers*
Project Architect

## Academic

Flashpoint Media Arts Academy, Chicago Illinois
*Rénovation d'intérieur pour une école du design multi-média,*
Project Architect

Parkland College Campus Extension
Student Union
Champaign Urbana II.
Design & Project Architect

Case Western Reserve
University Student
Union - Architectural
Interior Features
Design & Coordination

William Jones College Preparatory High School,
Chicago Illinois
Façade Design & Coordination ,
*Conception Du Façade et Development Technique*

Round Rock Cedar Ridge High School, Round Rock Texas,
*Lycée*
Project Architect

Project Architect for
the construction of new
public school buildings,
Naperville, Illinois



King Abdullah Financial District
Riyadh KSA w/P+W
Mixed Use Tower 4.01
*Tour à Usage Mixte 4.01*
Project Architect

## Towers

King Abdullah Financial District
Riyadh KSA w/P+W
Mixed Use Tower 4.10
*Tour à Usage Mixte 4.10*
Project Architect

Godfrey Hotel, Chicago Illinois, w/VDTA
18 story hotel staggered steel truss structure
Project Architect

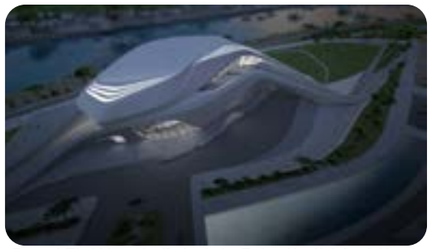
## Garmin USA, Chicago Retail interior

Design of display fixtures, Digital Fabrication of interior wall structure.

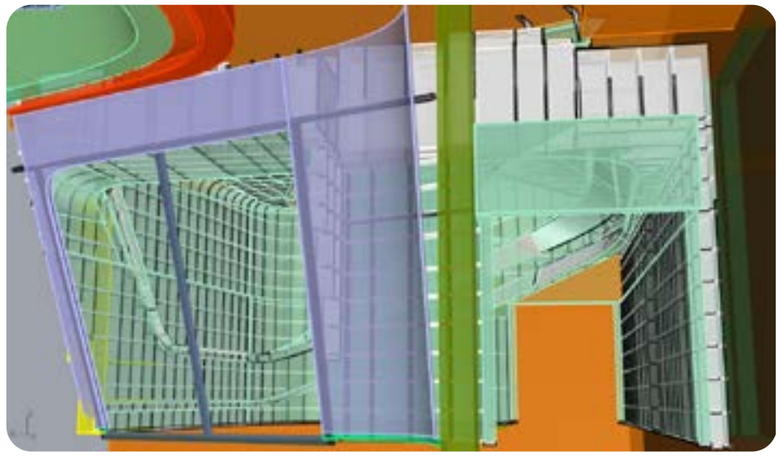


## Detailed Fabrication : Modeling

Zaha Hadid / SANAA

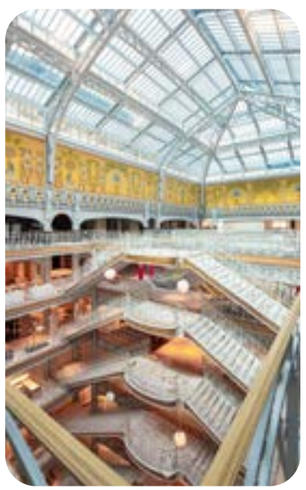


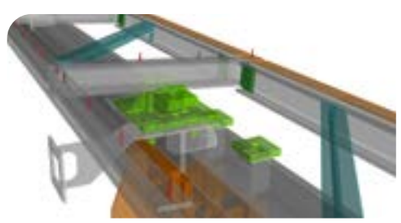
Grand Théâtre de Rabat de Zaha Hadid Architects

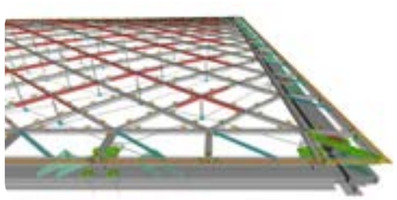


Detailed modeling for interior finished constructions: preparation of all components for direct digital machining. Project of Zaha Hadid Architects “Théâtre National De Maroc” In consultation to Aurblanc

Lyon, FR. 2019

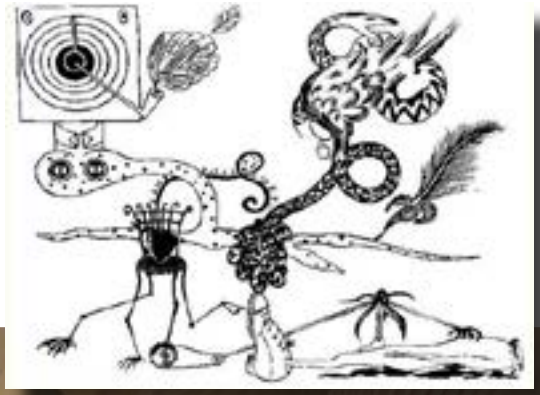






The detail modeling and translation to digital fabrication of all of the elements for the structure of double curved glass roof systems. In consultation to Bollinger Grohmann Engineers, Paris Office

# **Wildcard :**
## Parametric Exquisite Corpse



In class midterm exercise November 7th
AIADO : 3917 Parametric Modeling :
Grasshopper / Rhino
Fall 2013

An experiment sharing algos between students which yielded unexpected results

Parametric Exquisite Corpse

Among Surrealist techniques exploiting the mystique of accident was a kind of collective collage of words or images called the cadavre exquis (exquisite corpse). Based on an old parlor game, it was played by several people, each of whom would write a phrase on a sheet of paper, fold the paper to conceal part of it, and pass it on to the next player for his contribution. [Dada & Surrealist Art," by William S. Rubin]