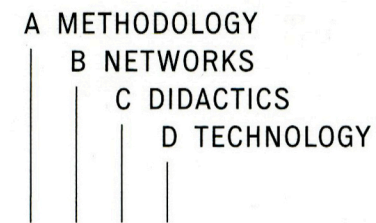


EXPLORATIONS IN ARCHITECTURE  
TEACHING DESIGN RESEARCH



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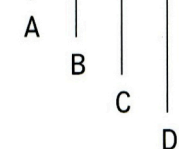


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\* Research Environments at the Swiss Federal Institutes of Technology in Lausanne and Zurich, photos by *Maris Mezulis*

## ALICE

Atelier de la conception de l'espace  
École Polytechnique Fédérale de Lausanne (EPFL)

Dieter Dietz  
Aline Dubach  
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Isabella Pasqualini  
Daniel Pokora  
Katia Ritz  
Marc Schmit

EXPLORING UNCOMMON TERRITORIES:  
A SYNTHETIC APPROACH TO TEACHING ARCHITECTURE

*Dieter Dietz*

*"My NAME is Alice, but—"*

*"It's a stupid enough name!" Humpty Dumpty interrupted impatiently.*

*"What does it mean?"*

*"MUST a name mean something?" Alice asked doubtfully.*

*"Of course it must," Humpty Dumpty said with a short laugh:*

*"MY name means the shape I am—and a good handsome shape it is, too.*

*With a name like yours, you might be any shape, almost."*

*—Lewis Carroll, Through the Looking Glass*

RÉALITÉS PARALLÈLES

In its approach to teaching, ALICE explores uncommon territories. The choices of topics and sites purposefully combine the familiar with very particular geographical, economical or morphological circumstances. We emphasize working concurrently with multiple tools, such as physical models, 3-D software, images, 2-D programs, computer aided manufacturing, etc. ALICE modifies its curriculum each year to encompass new material and domains.

The idea of a parallel approach to the conception and production of architectural design is a central aspect of the didactic structure. All projects are literally developed both in the digital as well as in the physical world. With "Réalités parallèles" (parallel realities) we propose a method of intense engagement with the idea of making, not only in a physical sense—as in the crafting of models, drawings, or hand-drawn sketches—but also in a virtual sense, as in the production of digital models, visuals, databases, images, etc. The design process is constantly challenged by catalyst reactions in the respective fields of production.

In recent times, the size of our geophysical earth, the "physically far," has constantly been challenged by the "technologically near." Our planet has shrunk and continues to shrink into a comprehended object. Our experience of journey, both physical and mental, is being unintentionally eradicated by the loss of intervals and temporalities. On the other hand, this presents us with a fresh vantage point that we cannot occupy directly: the agravitational horizontal window relentlessly scanning the earth's surface: humankind's third eye.

How can architecture not only engage with, but possibly create resistance to this new frictionless world, using the available new technologies? Can architecture still perform as a conductor of flows, while working against the grain of the ever smoother, the ever faster—while remembering that the earth pulls us?

GRAVITY AT WORK

The first phase in the ALICE curriculum includes the fabrication of a "physical construct" based on explorations conducted through experiments. The physical construct is intended to "declare gravity at work."

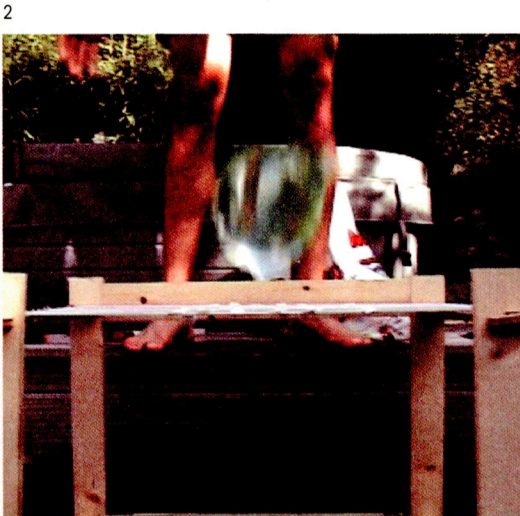
1 Experiment with smoke and a cardboard grid in order to understand how the resistance of air affects the way a given structure falls.

*Malaica Cimenti, Lila Held*

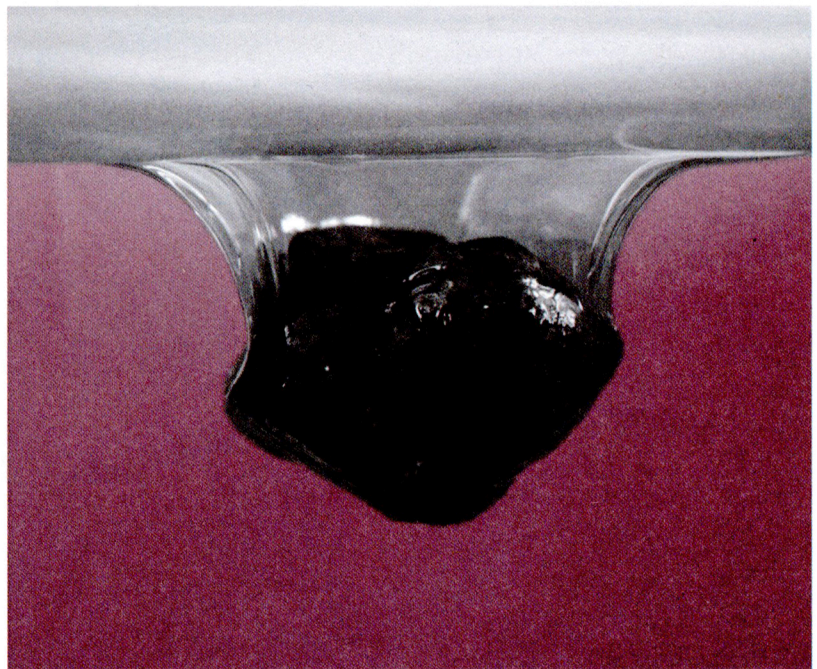
2 Emphasis was given to the observation both of falling objects as well as the receiving ground. Here gravity is replaced through a vacuum forming device: the result suggests a gravitational force through its visual narrative.  
*Nicolas De Courten, Christopher Tan*

3 The gravitational impact on falling object and receiving ground was observed as spatial and formal conditions manifested in compressed moments of time.

*Andreas Gubler, Sandro Tonietti*



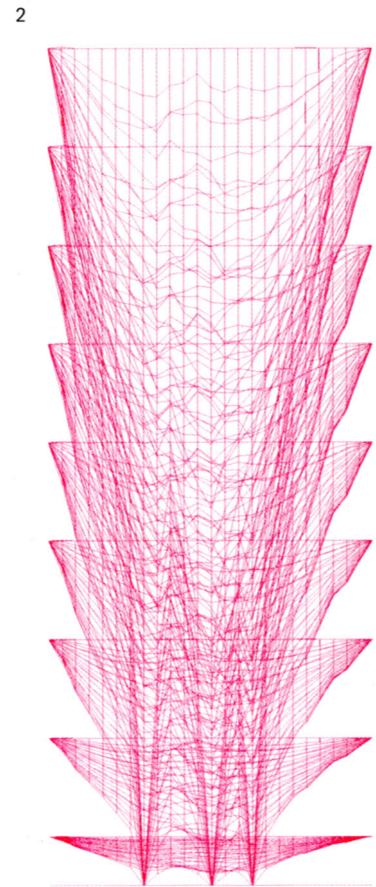
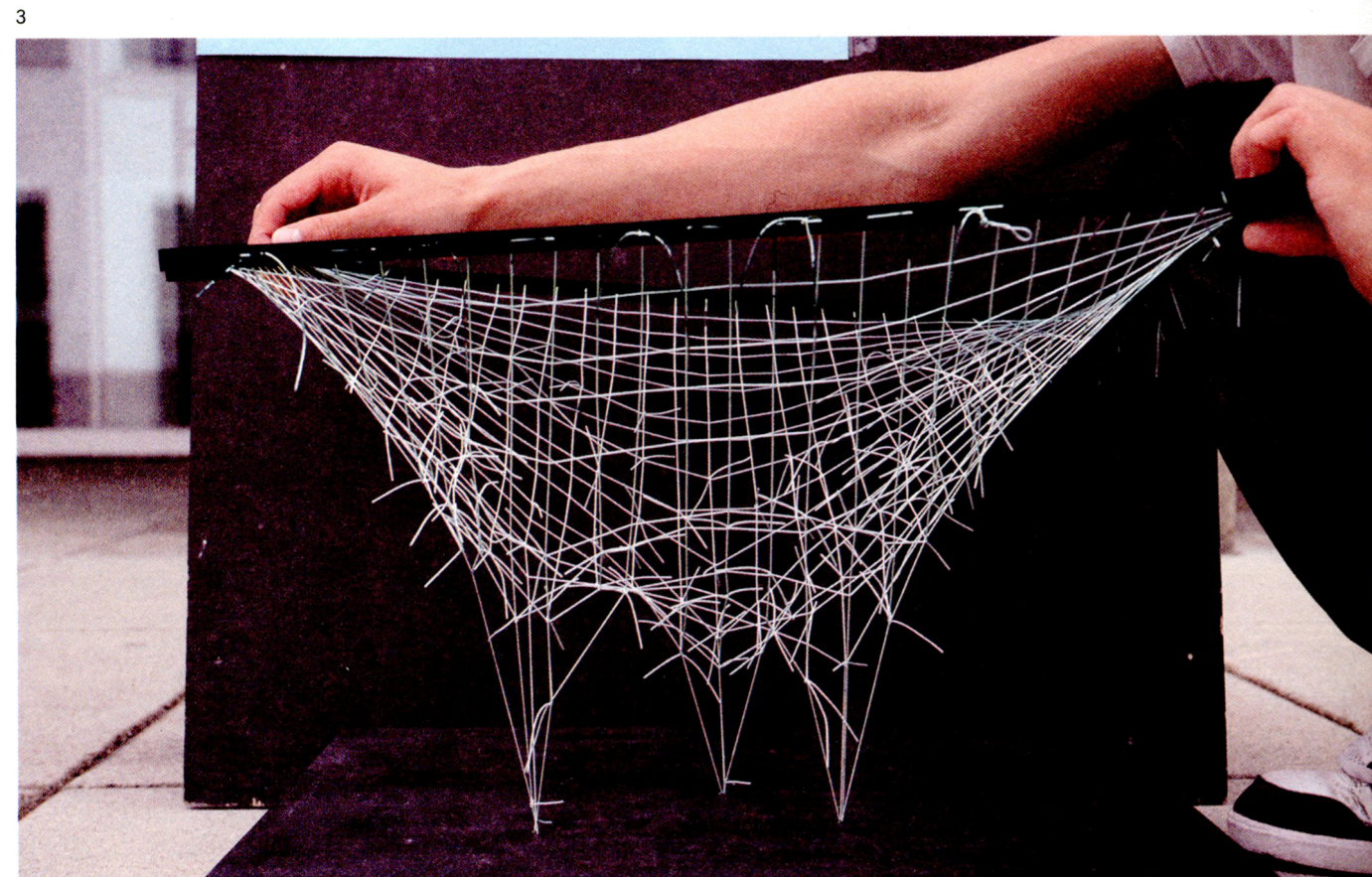
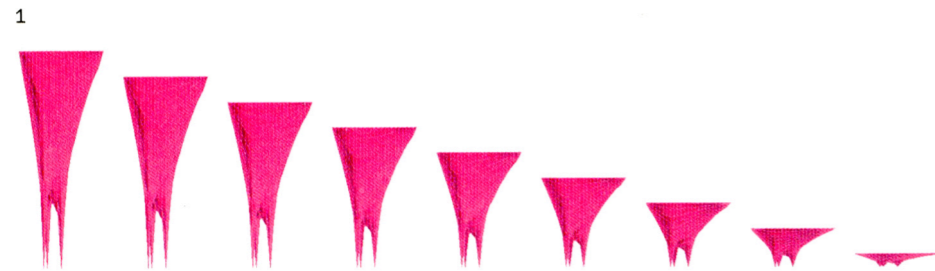
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**DRAWING IN TIME**  
3-D software is implemented as a tool for analysis of spatial conditions and transformations in time. The parallel construction of a physical model and its counterpart in the digital realm fosters an understanding of structures and forces.

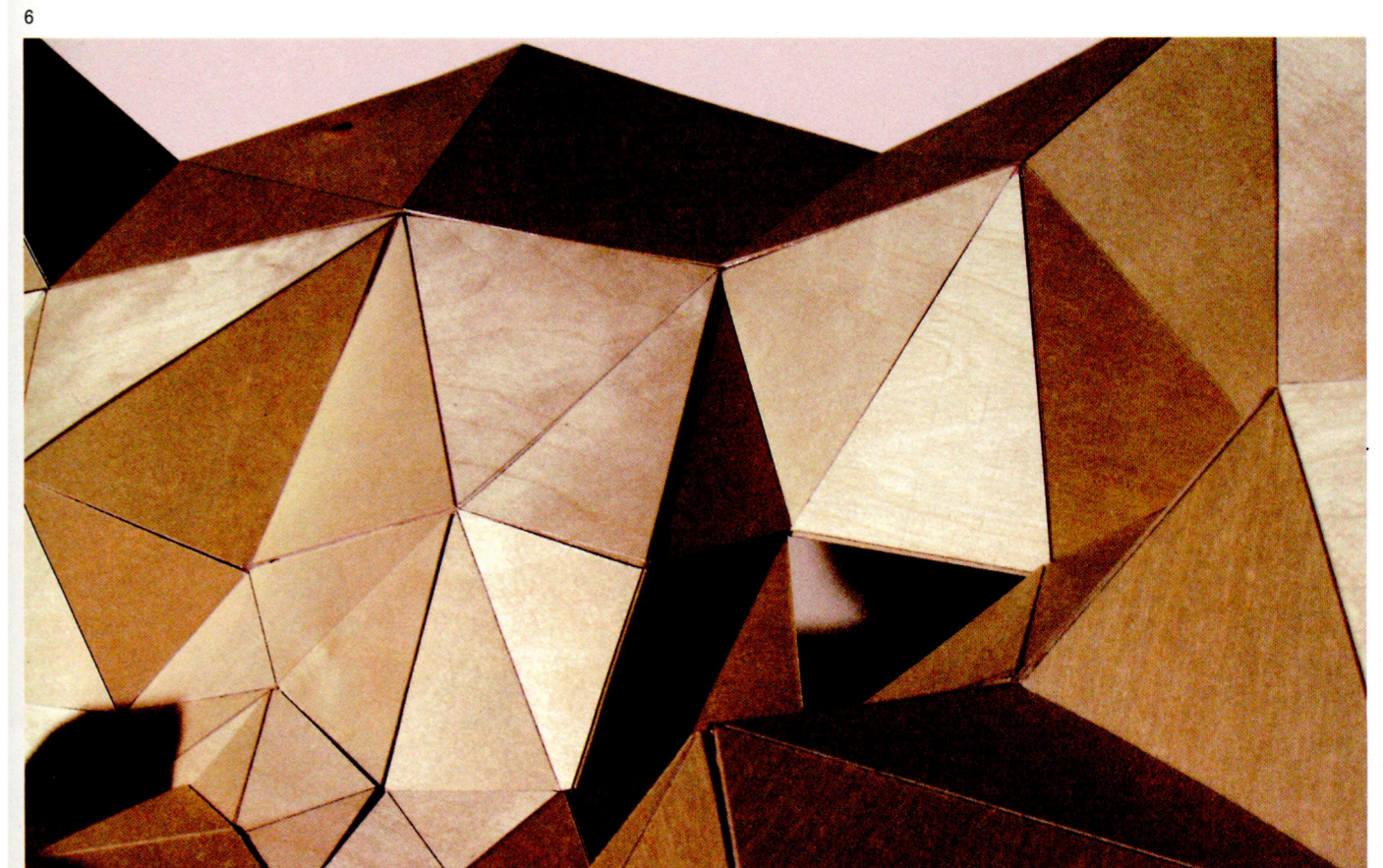
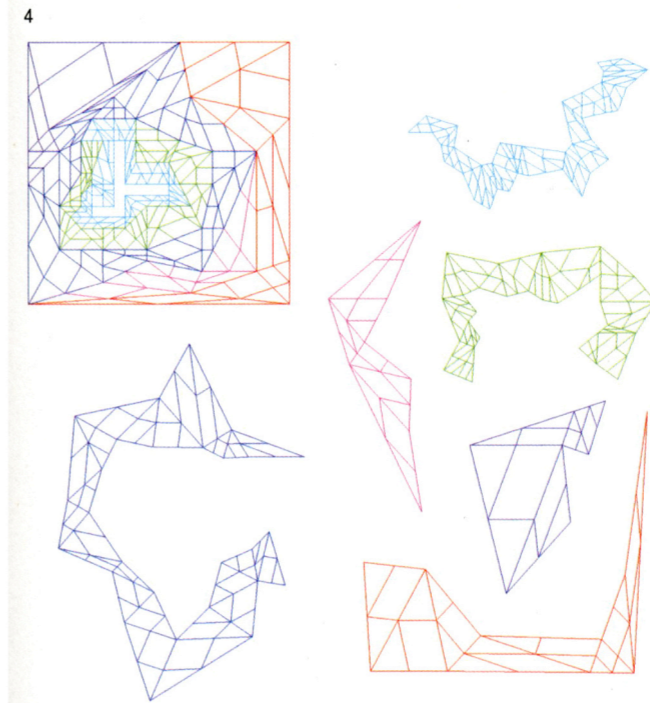
This project investigates how, with an increasing upward force, an initial two dimensional lattice redistributes itself into three dimensional space with some local attachments.  
*Nicolas De Courten, Christopher Tan*

- 1,2 3-D CAD sequence drawing mapping deformation in time
- 3 Physical model, wood and elastic strings



**A PHYSICAL CONSTRUCT DECLARING GRAVITY AT WORK**  
What appears to be a simple triangulated object is in fact a structure consisting of bands, with a hierarchy between the different joints. The result is not a fully rigid structure but rather a partially flexible construct that resists gravity by means of its geometry.

- 4 Drawing of templates for the construction of the model
  - 5 Cardboard templates
  - 6 Physical model, wood
- Nicolas De Courten, Christopher Tan*

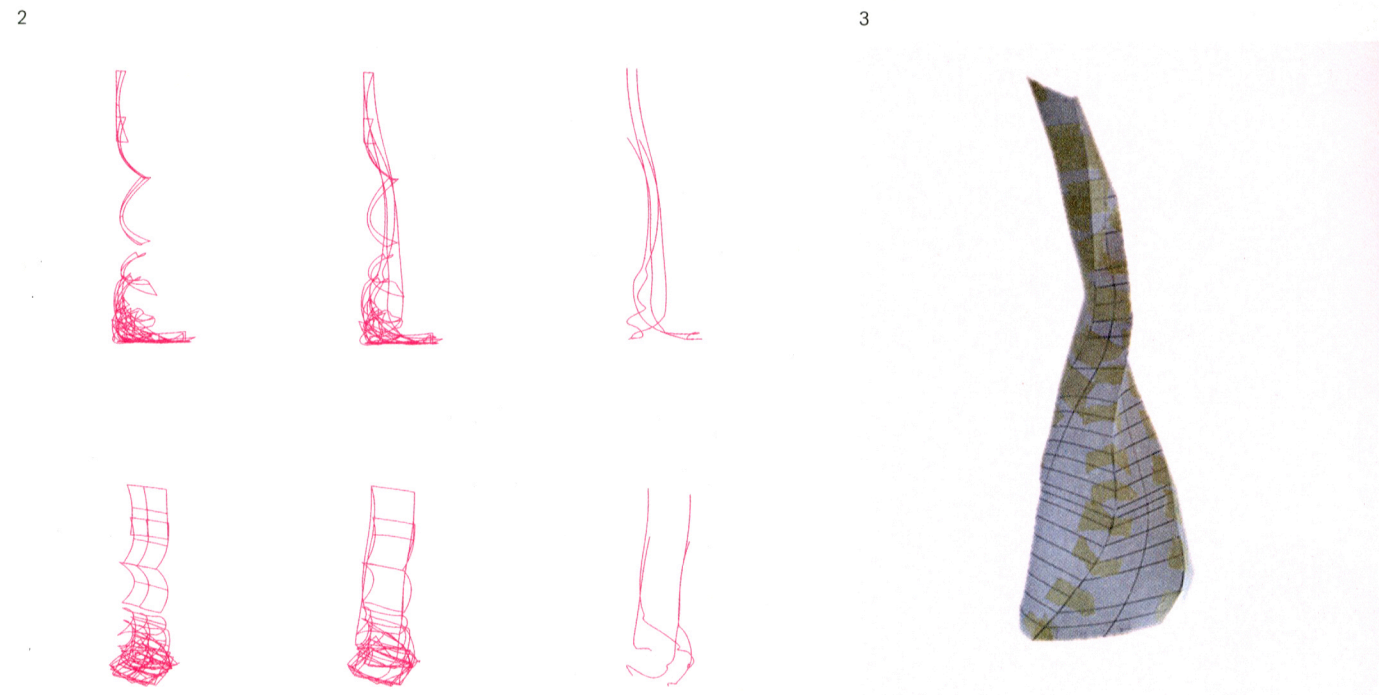
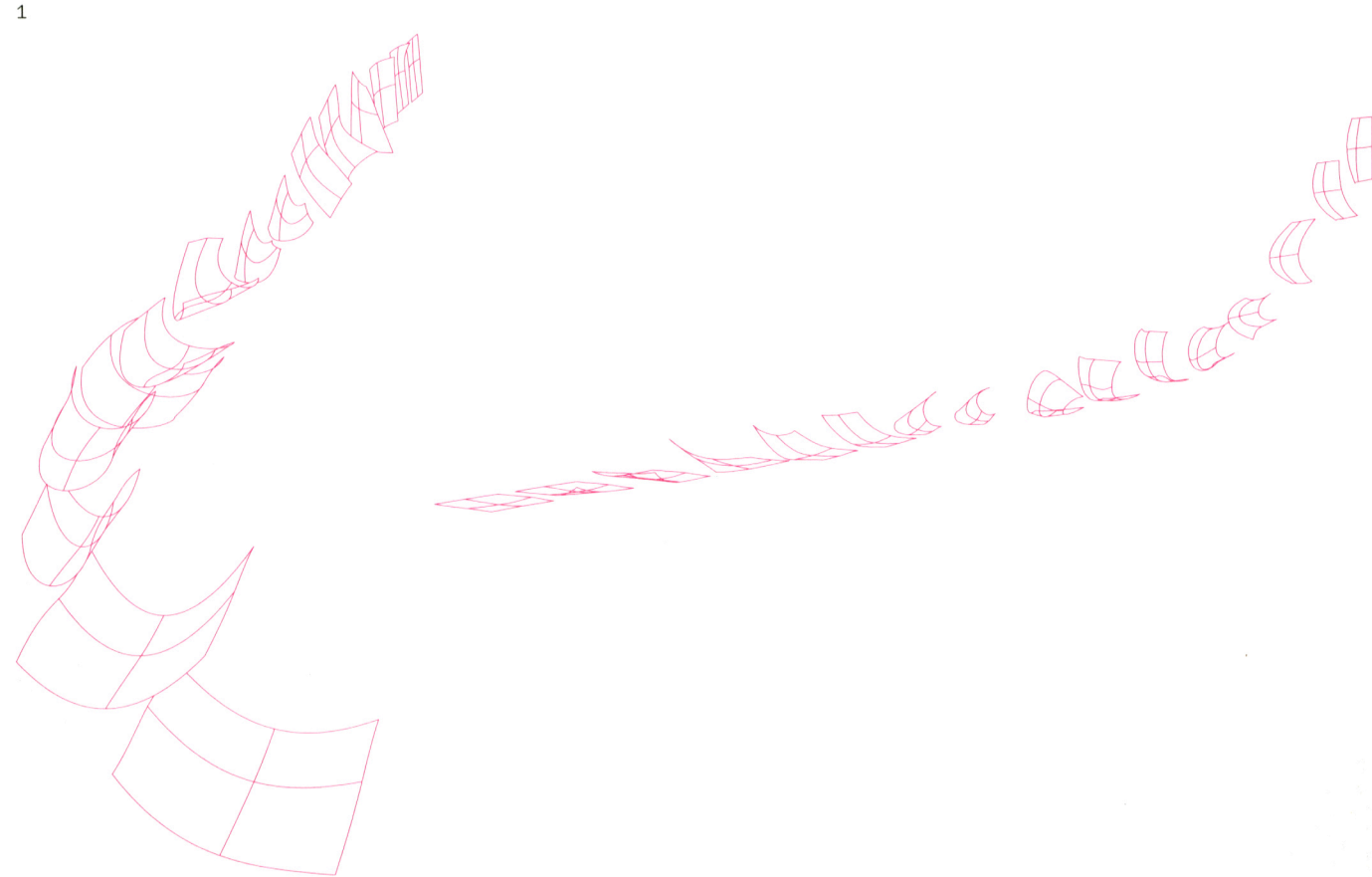


WORKING MODELS IN TIME

It is a core idea of the ALICE curriculum to work simultaneously in parallel realms—to develop a project in 3-D software and to test it constantly in physical models, or to draw while at the same time probing material qualities in one-to-one mock-ups. In this approach the design process is constantly challenged by catalyst “reactions” in the respective fields of production.

This project was generated through the tracking of a sheet of paper falling in space. The movements were recorded by 3 cameras and then reconstructed in 3-D software. The trajectories of the four cardinal points of the sheet led to a warped spatial construct, built in thin cardboard, its wrapped geometry locking its form in space and making it a structurally robust artifact.  
*Augusta Prorok, Bertrand Sauterel*

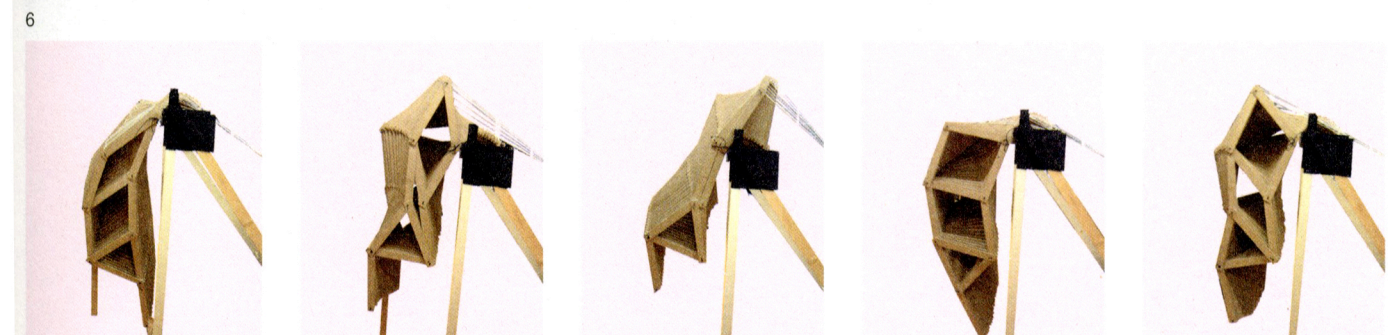
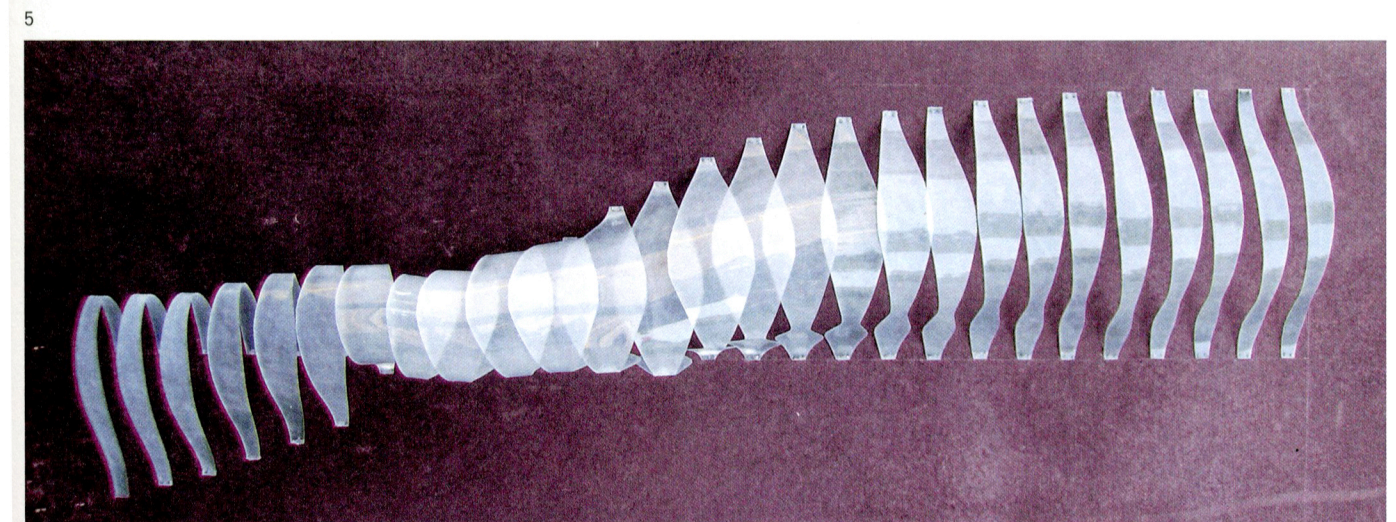
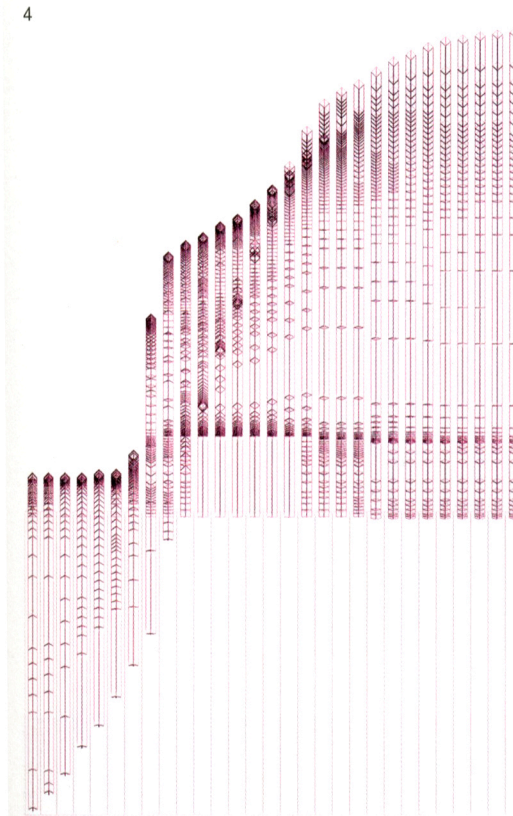
- 1 Sequence drawings: falling paper in space
- 2 Sequence drawings: volumetric study
- 3 Physical model declaring gravity at work, paper



FROM DESIGN DEVELOPMENT TO FABRICATION  
The second phase in the ALICE curriculum tests, transforms, develops and materializes the initial ideas towards a concrete proposal for the pavilion. Scale, material, structure, program, construction details, fabrication and assembly are addressed.

4,5 Analytical sections in drawing and model form of a first profane experiment: a dome of glue, poured over an inflated balloon, collapsed as the balloon was removed.  
*Aurel Martin, Mikael Monteserin*

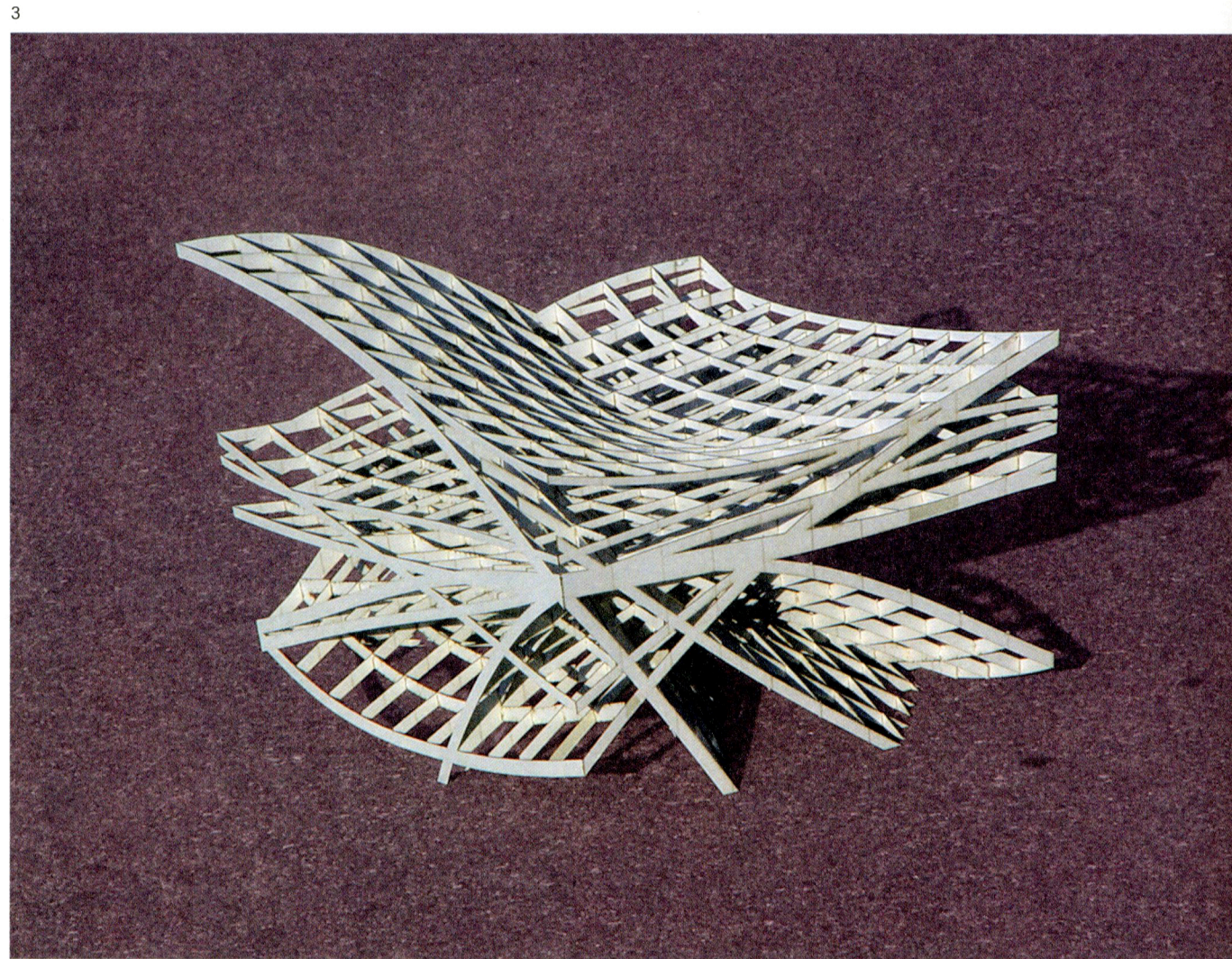
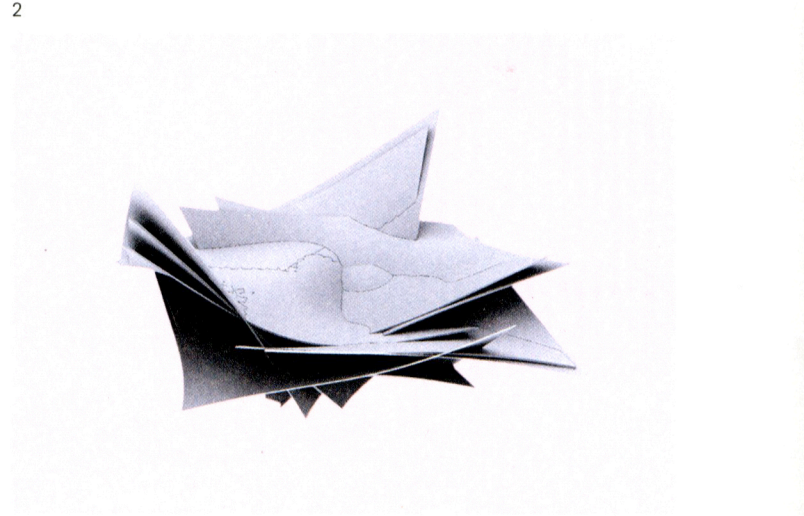
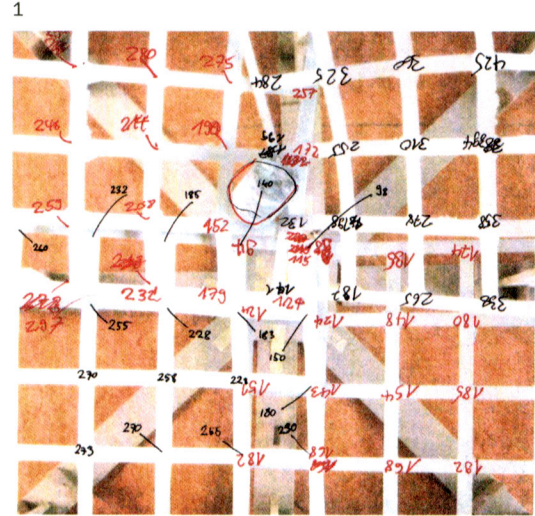
6 Gravity impacts on form. A hanging structure responding to tidal forces along an embankment. Wood structure connected by elastic strips.  
*Fatma Ben Amor, Aurélie Krotoff*



This project proposes a physical representation of the spatial impact of a falling object on a series of receivers. In the absence of the falling object, the physical representation registers the temporal aspect of the event while disclosing new spatial encounters.

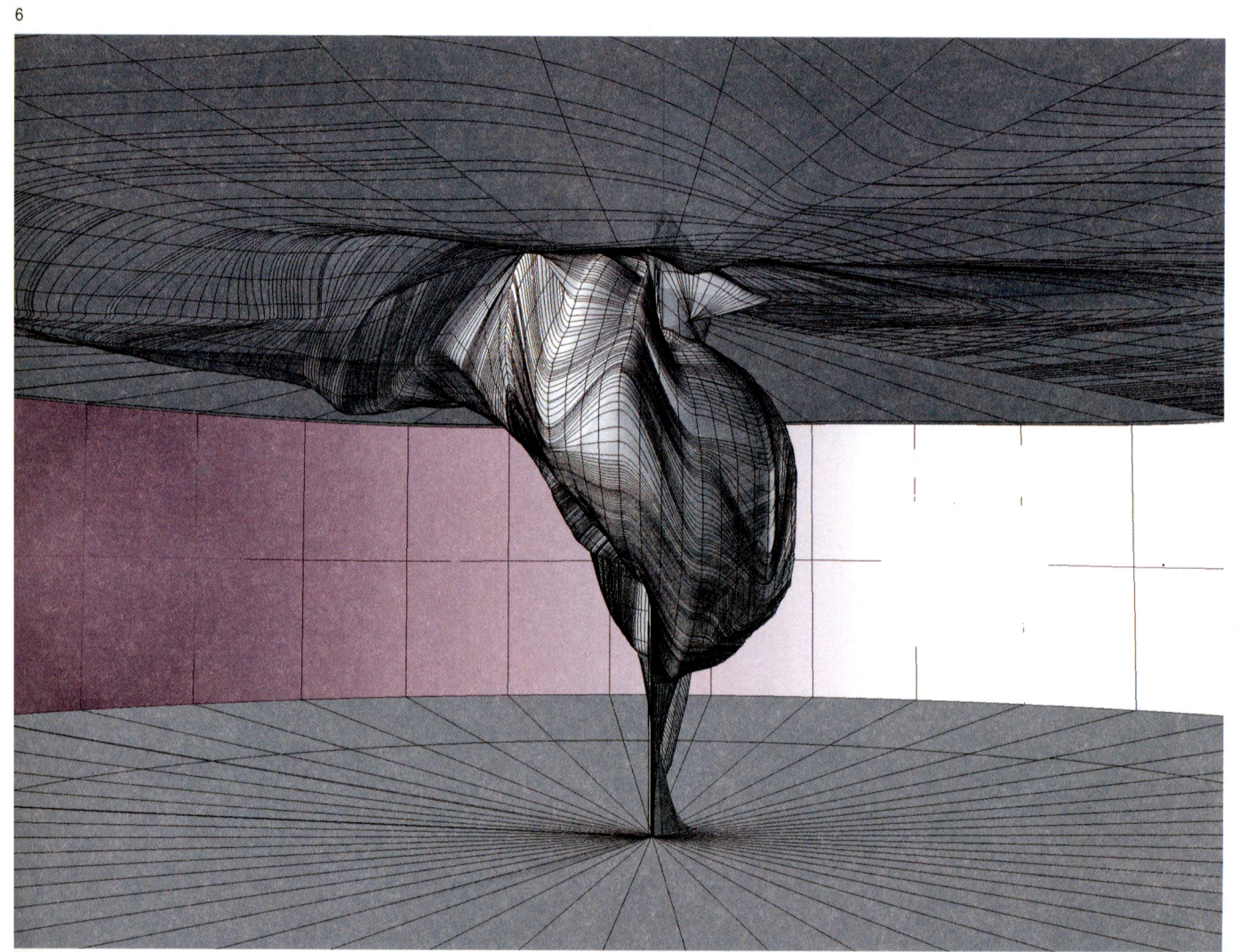
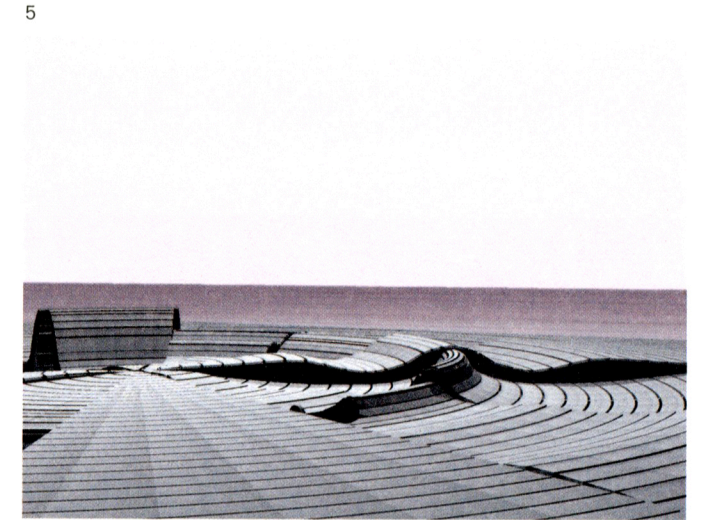
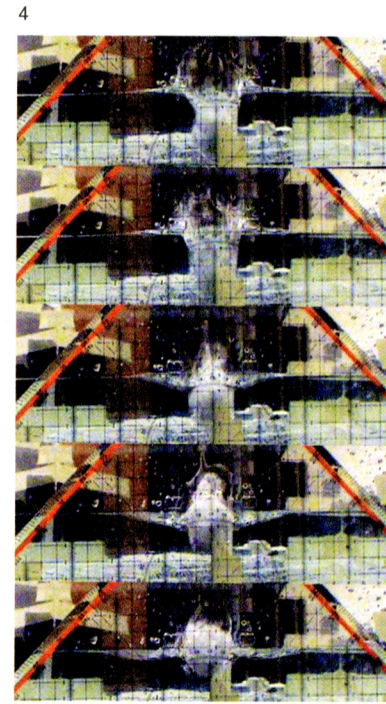
Adrien Alberti, Sebastien Hefti

- 1 Physical experiment on gravity: card-board structure deformed by a stone
- 2 Rendering of a layered structure derived from physical experiments
- 3 Physical model, proposal pavilion



This project was selected by the jury at the end of the first semester. In an extensive discussion with the group, the decision was taken directly work with the water surface of the River Thames. Nathalie Egli, Auguste Michael, Andres Tovar Nuez

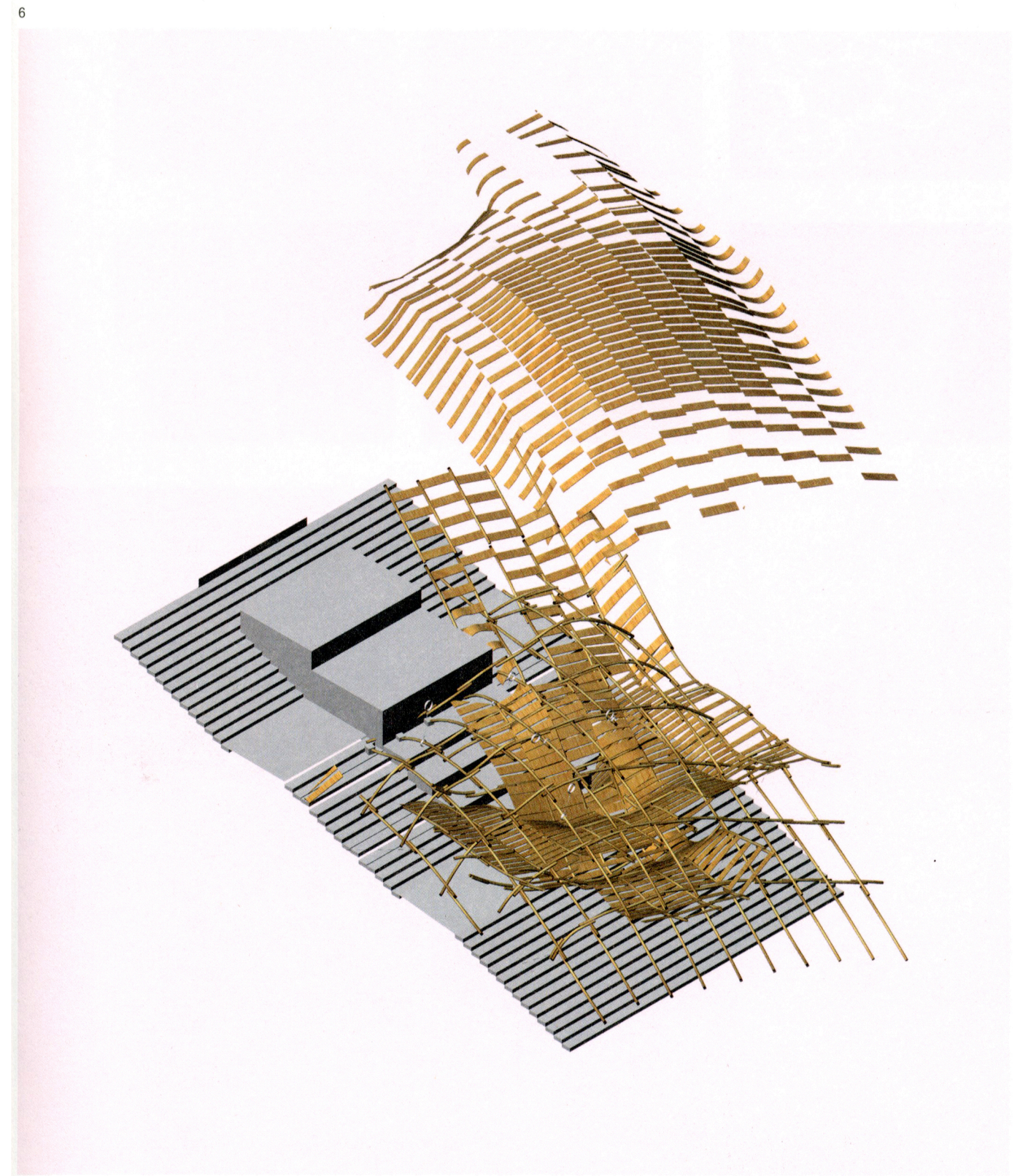
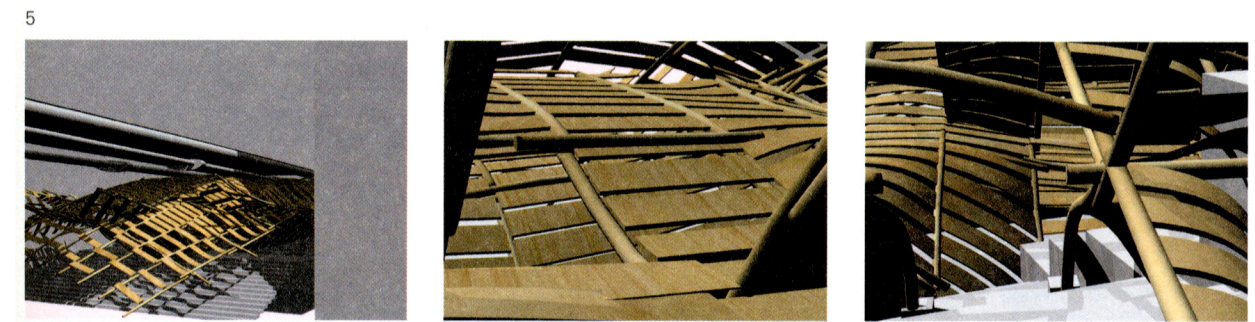
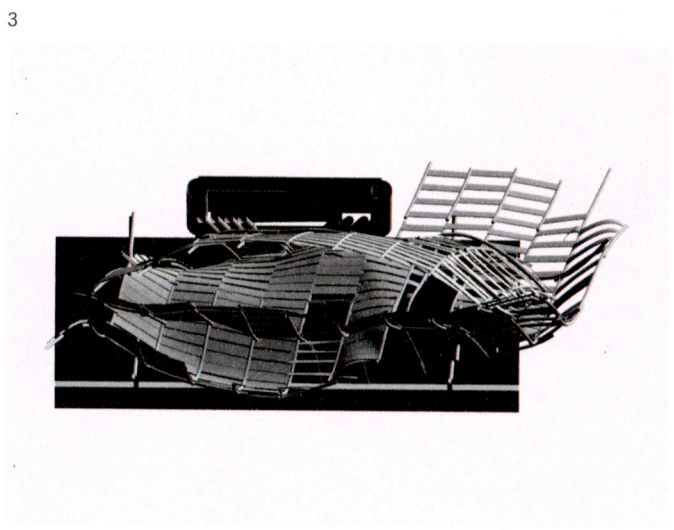
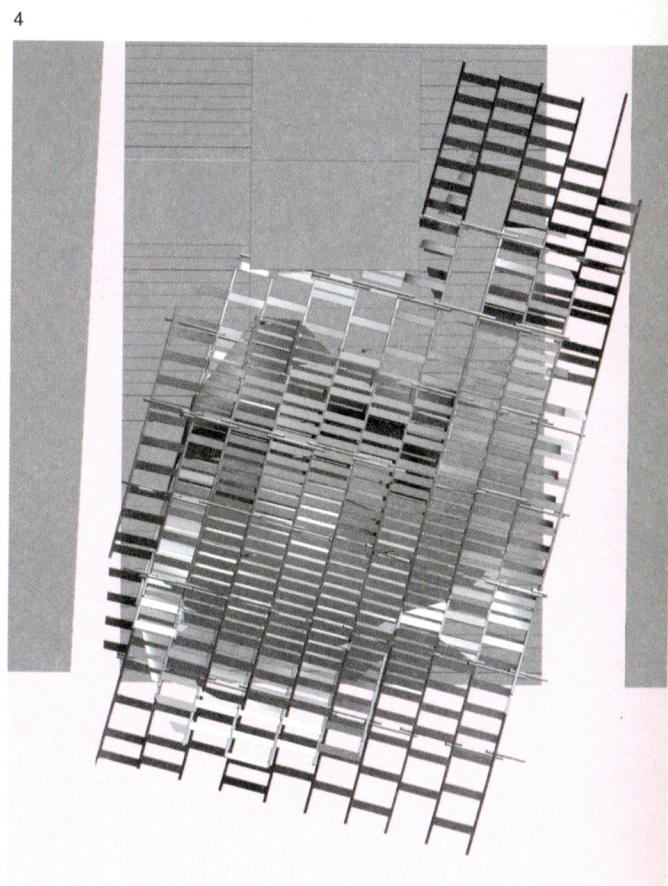
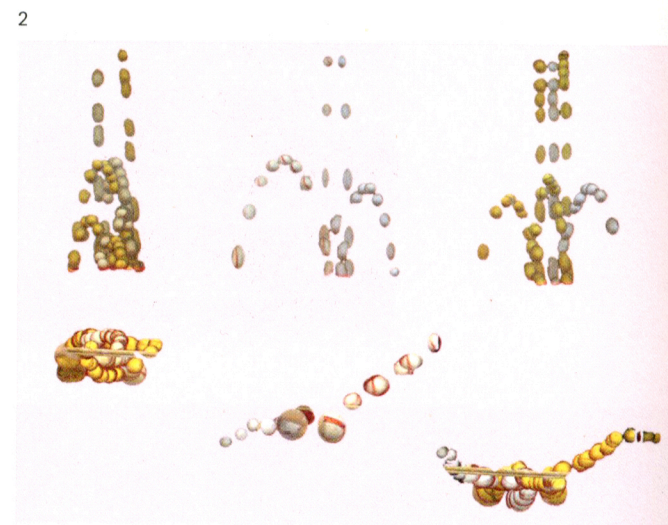
- 4 Physical experiment on gravity: a ball falling into water
- 5 3-D CAD drawing, section
- 6 Renderings declaring movement of water



This project and proposal for a pavilion below Millennium Bridge started off with a film sequence of balls impacting on a textile under tension. In the course of the development of the project, the focus shifted from the falling object towards the particular nature of the ground condition.

*Clio Gachoud, Minh-Luc Pham*

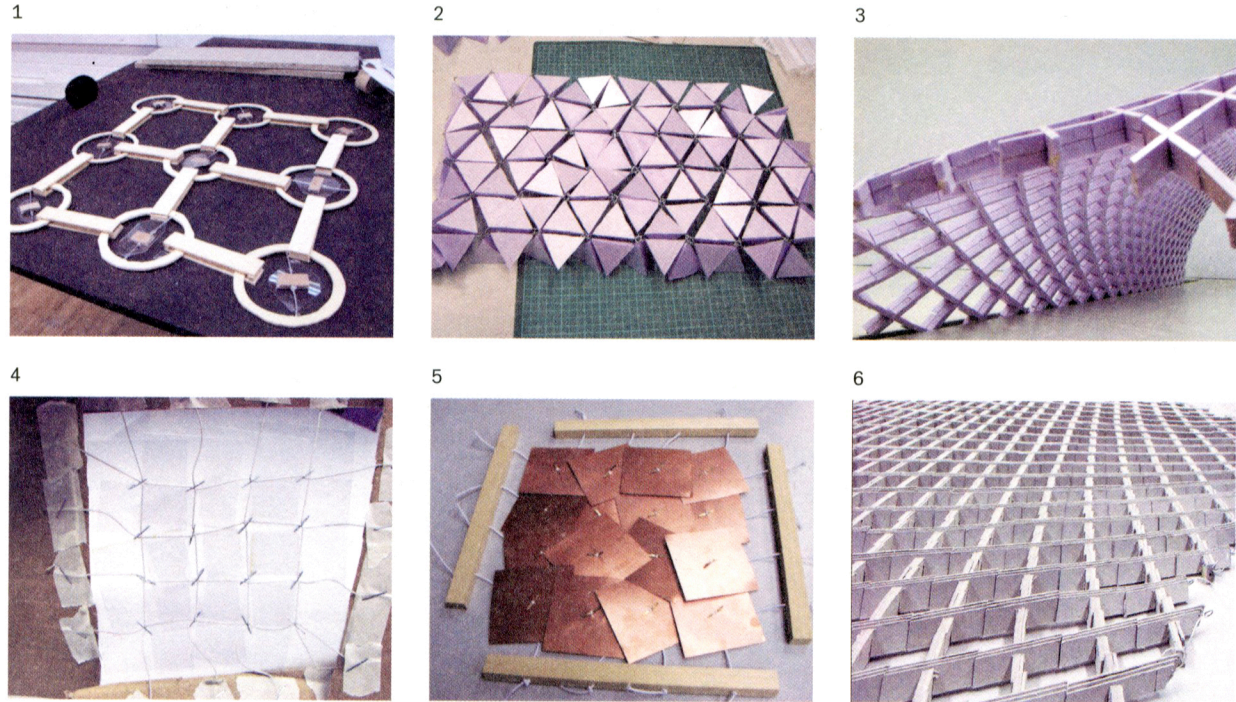
- 1 Physical experiment on gravity: two falling balls impact on textile under tension
- 2 Sequence drawings recording the balls in space
- 3-6 3-D CAD drawing, urban lounge below Millennium Bridge



**OVERFLOW: THE LONDON PAVILION PROJECT**  
 Overflow was originally designed for Tower Bridge Plaza. This site was strategically chosen in order to investigate how a natural force such as the tidal movement occurring in the Thames could be amplified and extended over the land in the form of a spatial screen, continuously transforming the presence of the iconic London

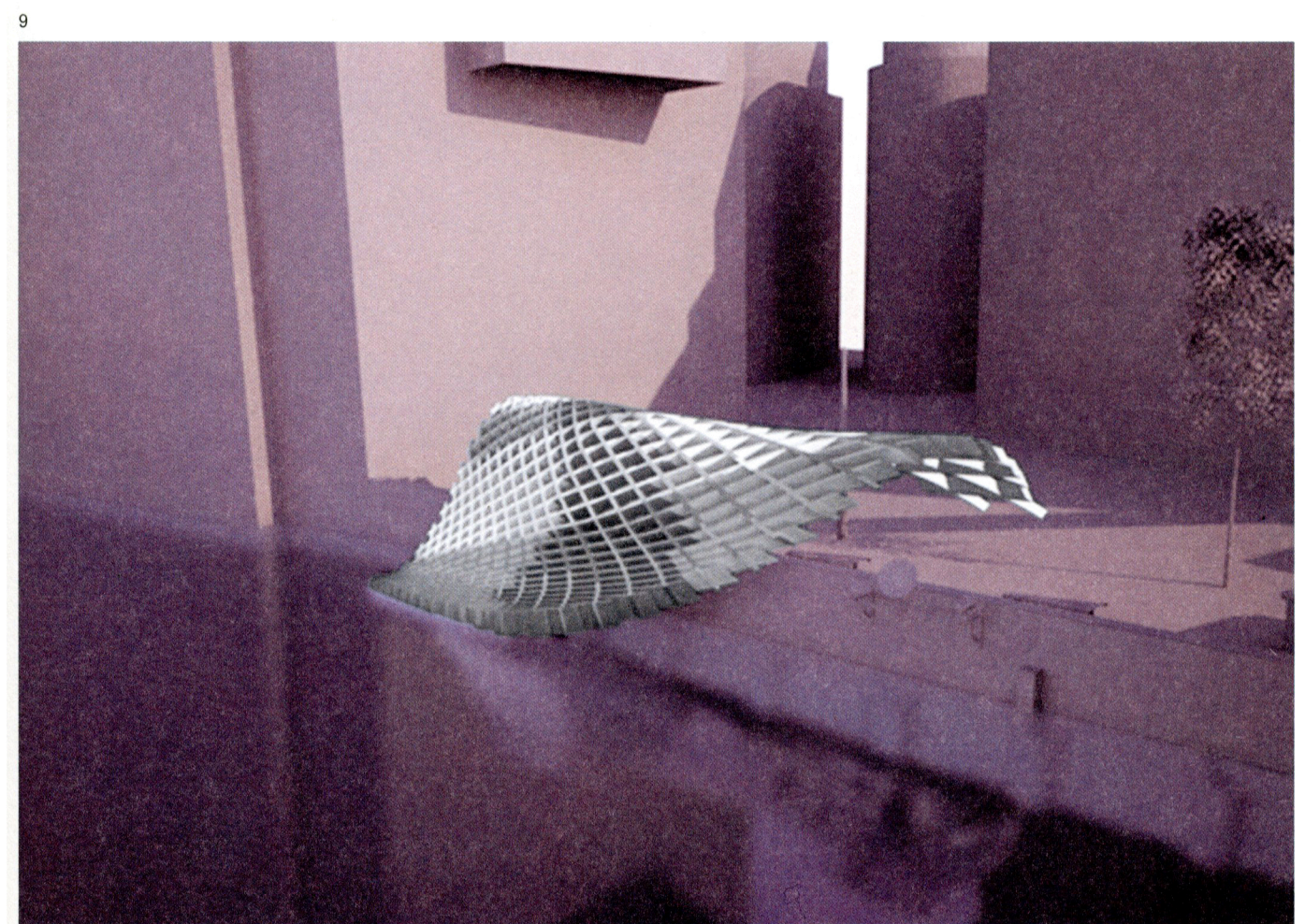
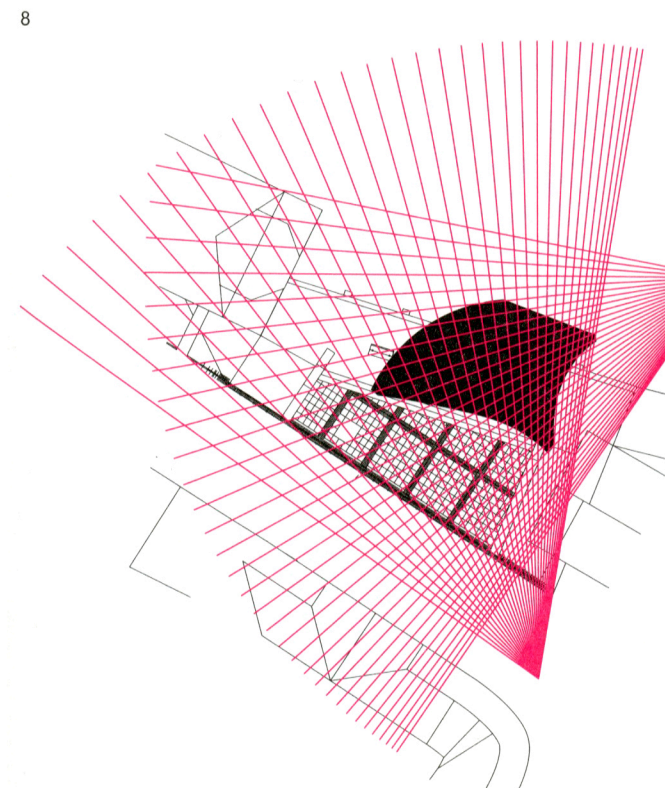
skyline and its perception from the plaza. The pavilion was developed as a group project during the second semester of the ALICE studio.  
 1-6 The development of the final project was accompanied by a large number of study models, structural tests, mock-ups, and testing materials.

7 Testing a first Styrofoam mock-up: moving with the tide in the river Thames at the embankment of Tower Bridge Plaza in London, March 26, 2008.



The final proposal for the ALICE Pavilion for the London Festival of Architecture is a structure measuring 9 by 15 meters, a large-scale architectural artifact that interacts with the tidal movements at the Thames River. Conceived as a flexible post-tensioned polystyrene structure

fastened along the embankment parapet as a hinge, it will pivot according to the tidal amplitudes in the Thames River.  
 8 Pavilion project group  
 9 Rendering of the tidal installation, Tower Bridge Plaza in London





Twelve students took the challenge of bringing the design into fabrication. This took place at the ECAL+EPFL Lab over a period of two weeks and around the clock. Faced with over 800 different pieces to produce, to assemble flat and then to test under various types of forces, the

team first had to find strategies for making the cutting process as efficient as possible. This was achieved by means of angle-cut spread sheets that directed a clear path throughout the entire construction process.

1 Production of the structure at ECAL+EPFL Lab. The demand for space was generously met at ECAL in Renens.

2 *Overflow*, 1:1 test assembly on a football field in Renens near the ECAL+EPFL Lab.

1



2



3 Arrival in London: the stacks with the disassembled members properly placed at the river walkway on June 18, 2008.

4 On June 20, *Overflow* was installed at high tide around 4 P.M. The mounting was staged as a public event. About fifty passersby helped to lift *Overflow* into place and to shift it into its calculated position.

3



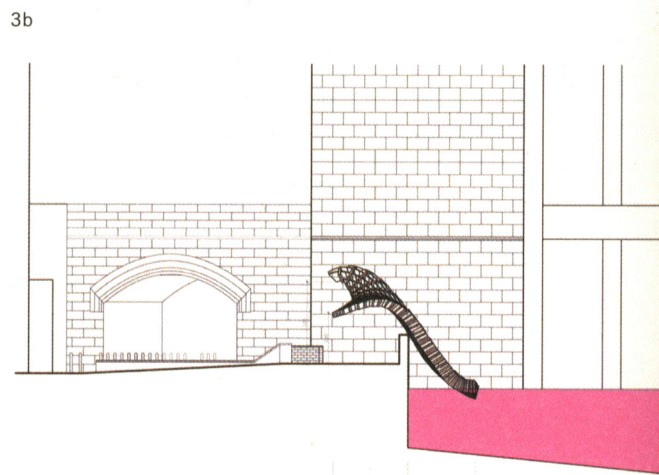
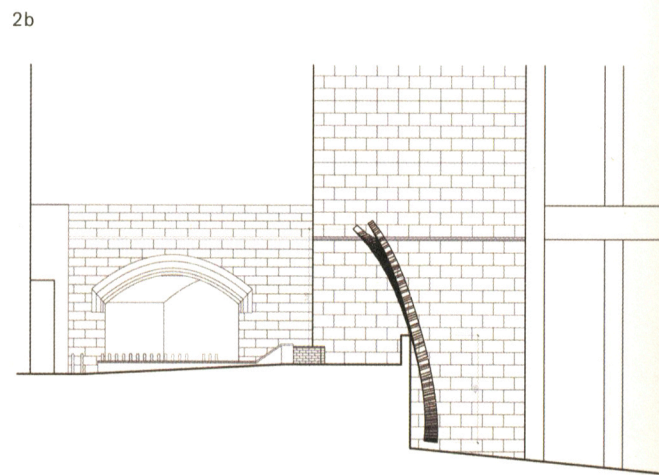
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The structure of the installation is based on the idea of a radial grid. The geometry implies constantly changing viewpoints, as well as porosity in gradient conditions and in motion, caused by the impact of tidal forces. It is specifically designed for passersby in motion. The porosity of the structure will enhance the awareness of

the view filtered from behind, implementing a direct awareness of the urban setting.

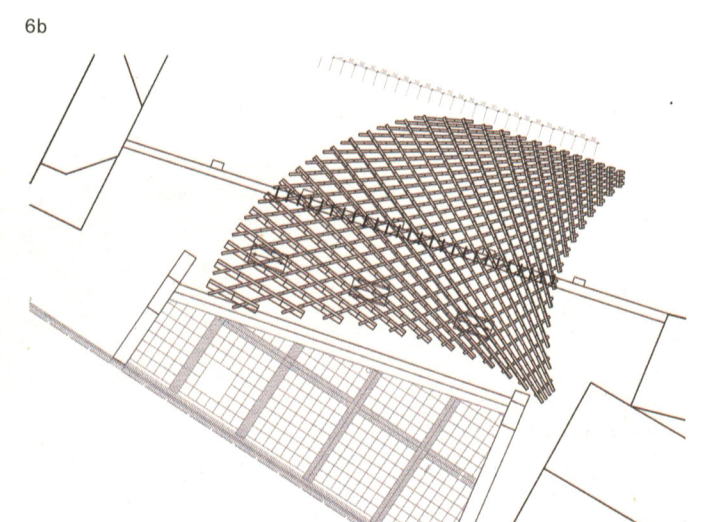
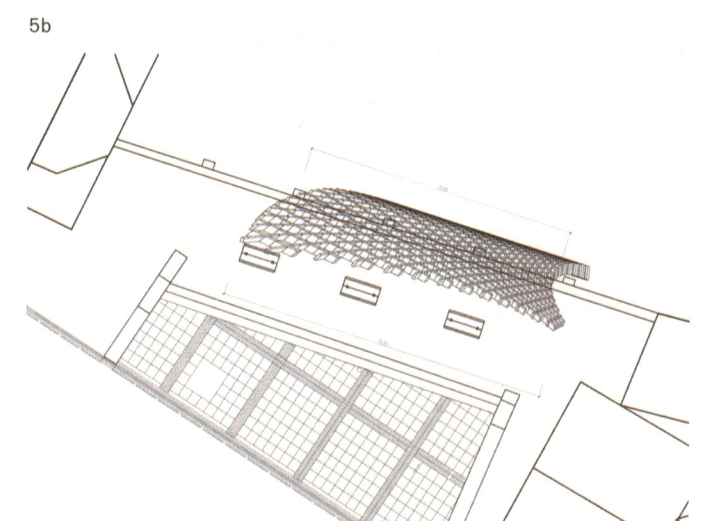
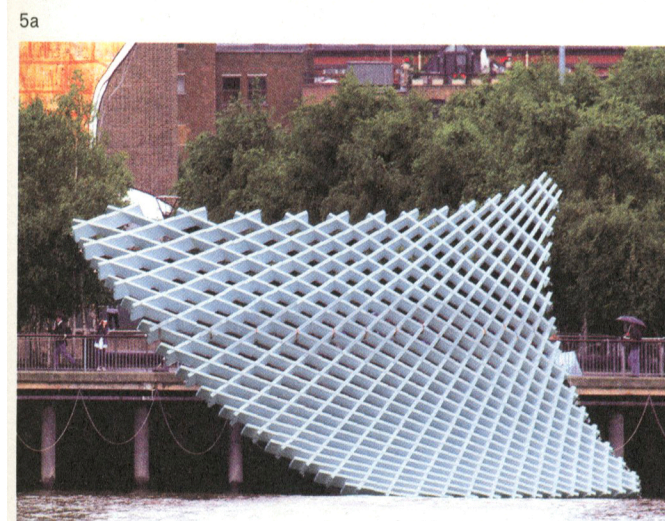
- 1 Overflow at low tide, view towards St. Paul's Cathedral
- 2a,b Overflow at low tide
- 3a,b Overflow at high tide



The installation was finally mounted in Southwark at the South Bank of the Thames River in front of Tate Modern. The spatial structure of the installation behaves as a tectonic overflow, from water to land. Although the Thames has historically had a substantial impact on the development

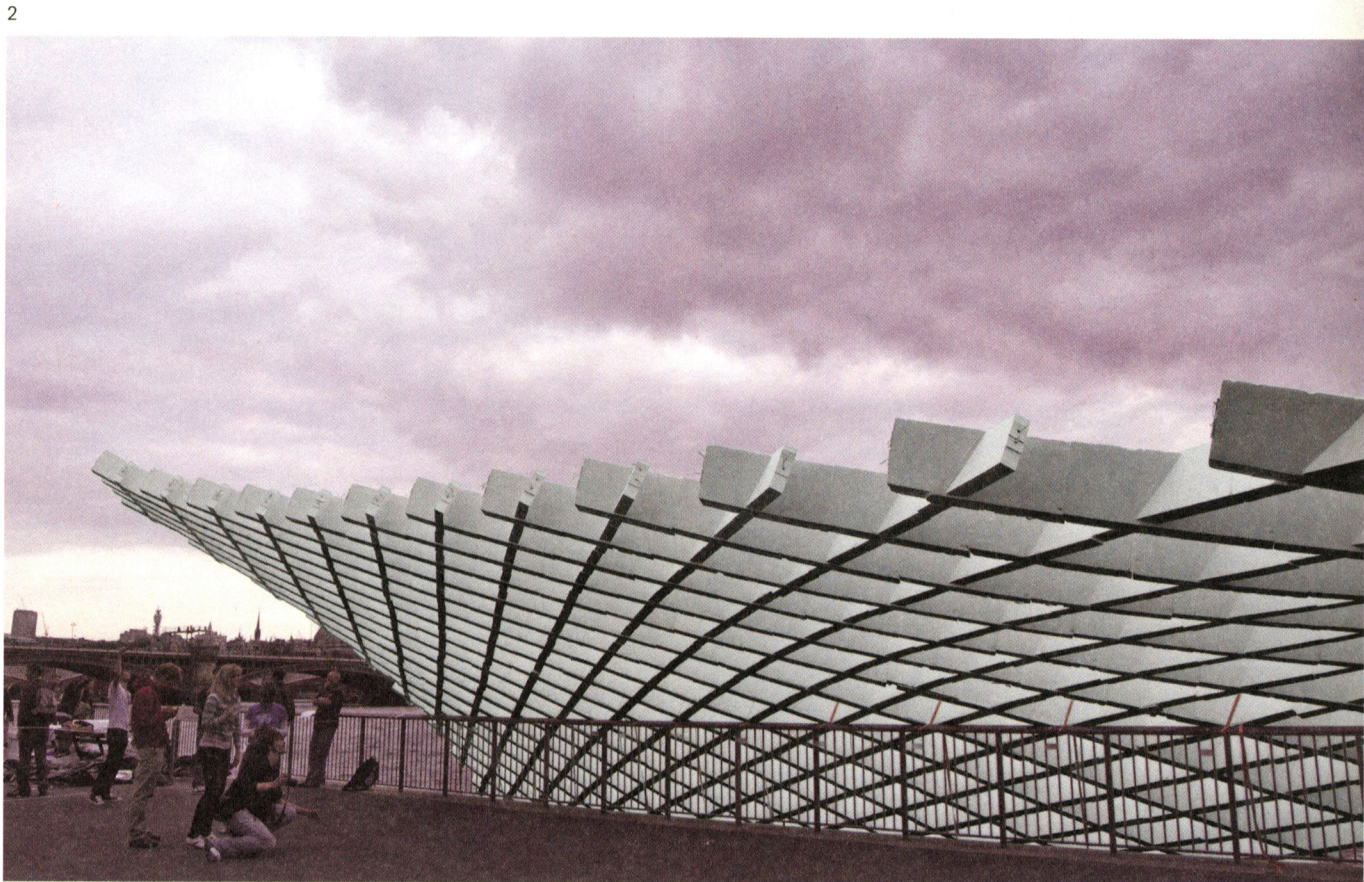
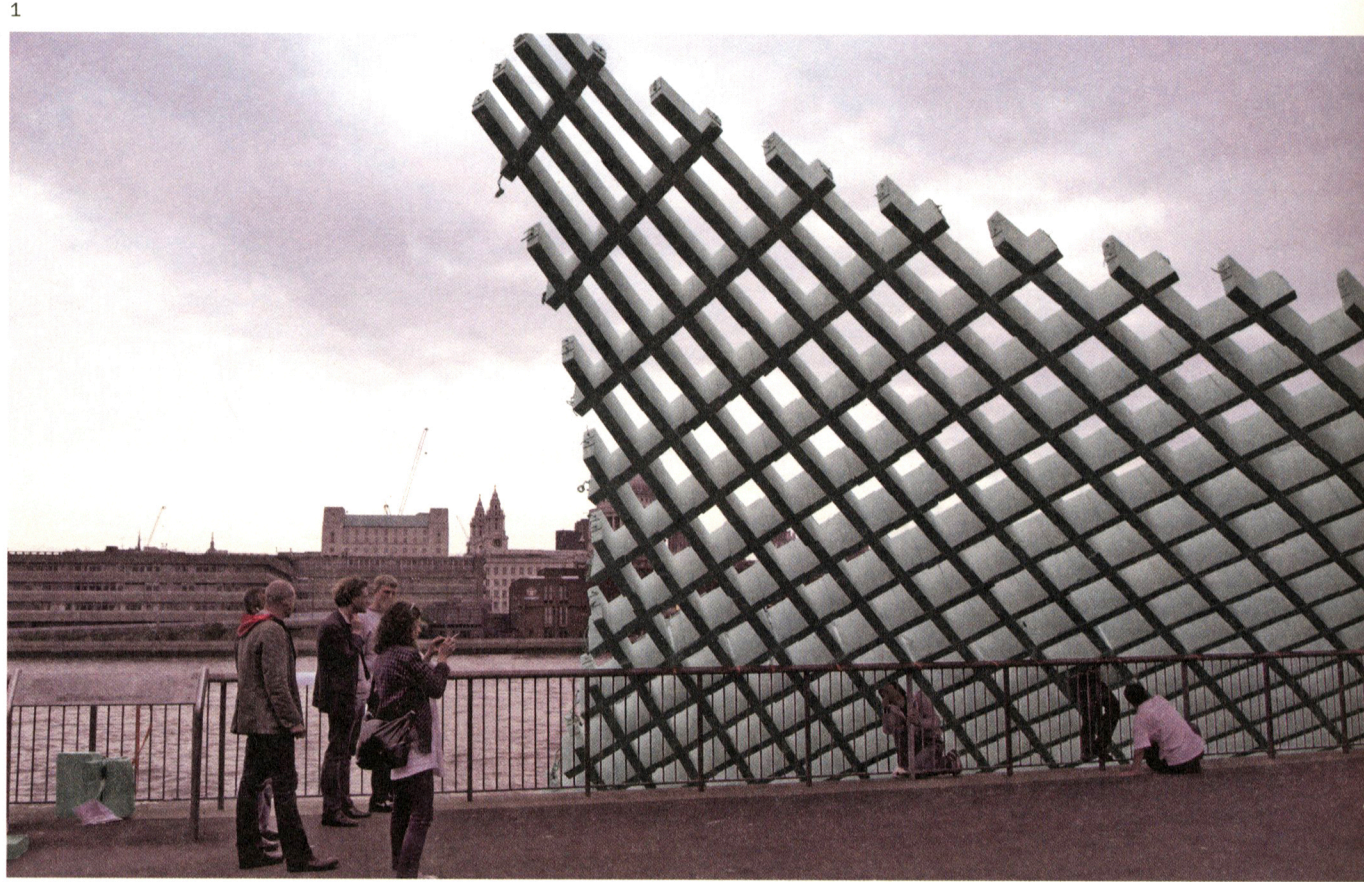
of the urban fabric of London, a personal and physical connection to the river is restricted today by an imposing embankment. Twice a day, this buffer zone absorbs an almost unnoticeable water level change of over six meters, mainly vertically along its retaining walls.

- 4 Frontal view in front of Tate Modern
- 5a,b Overflow at low tide
- 6a,b Overflow at high tide



The proposed installation attempts to first accentuate our awareness of the tidal phenomenon and then transfer it into a physical experience expanding from a vertical to a horizontal spatial configuration over the embankment walkway.

- 1 Overflow at low tide
- 2 Overflow at medium tide



- 3 Overflow at low tide, view towards St. Paul's Cathedral
- 4 Overflow at high tide

Pavilion project group: Malaïca Cimenti, Esteban Coto Chavarria, Nathalie Egli, Clio Gachoud, Loïc Jacot-Guillarmod, Auguste Michaud, Monica Rita Basbouss Moukarzel, Minh-Luc Pham, Edouard Philippe, Christopher Tan, Sandro Tonielt, Andres Tovar-Nuez

