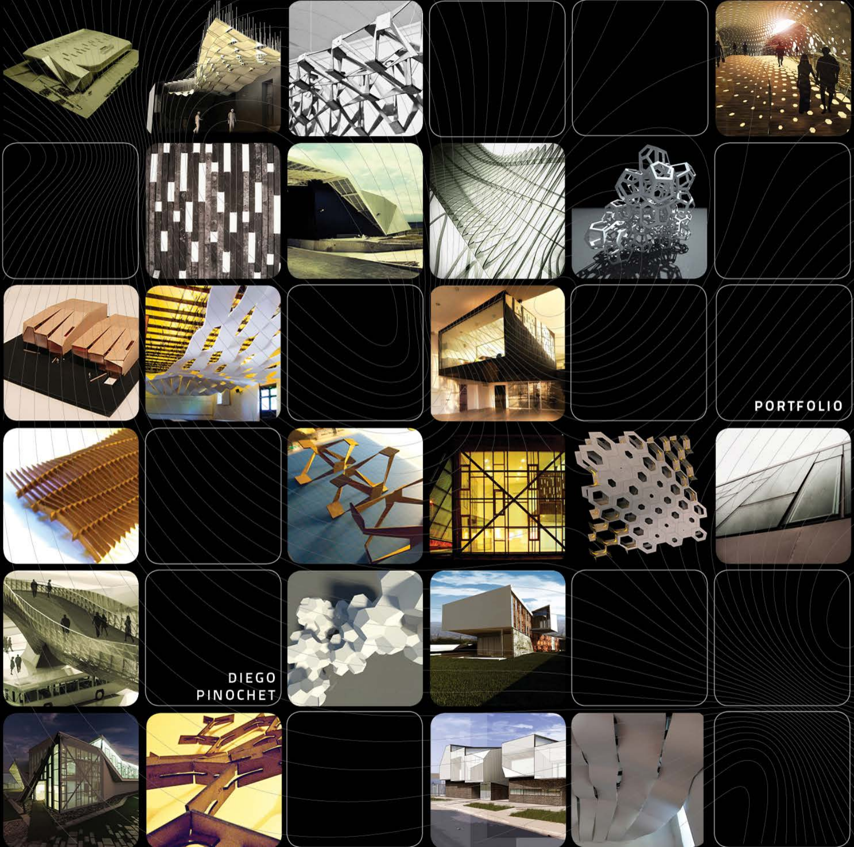
PORTFOLIO

DIEGOPINOCHETPUENTES



PORTFOLIO
DIEGO
PINOCHET

Diego Pinochet Puentes gradua
Pontifical Catholic University of Chile wit
2009, that same year he got his Master D
the thesis "Digital Form – Builded Form:
parametric systems through generative

He has worked in different architectu
Undurraga + Devés Architects (2006),
Lyon-Bosch Architects (2009).

In 2010 he founded TFPS (www.tfps.cl),
projects supported strongly by the
technologies, among which stands out
and Office, widely published at nationa
This project won the ARCHDAILY BUILDI
the institutional category.

He has worked as teacher in the Pontific
the Diego Portales University, mainly in
and new fabrication technologies area.
Currently, Diego is a full time academic at
Adolfo Ibañez University in Santiago of C

At academic and professional level, h
has been based in the incorporation
architecture, focused in the study of
emergent complex forms and digit
programming and the development of
to save the breach between digital an
wordpress.com).

His research has been part of the two
architecture (2010 and 2012), the first i
architecture schools (Medellin 2010), and
congress (Belgium – 2008).

Currently, he divides his professional w
projects, teaching and academic researc

BIO

ted as an architect from
h maximum distinction in
egree in architecture with
design and fabrication of
algorithms".

re offices in chile, such
Labarca – Lyon (2009) y

developing independent
intensive use of digital
he Huanacu Warehouse
l and international level.
NG OF THE YEAR 2009, in

cal University of Chile and
n the digital architecture

t the design Lab School at
Chile.

is field of investigation
of new technologies to
f generative algorithms,
tal fabrication through
digital tools that tends
d builded form (escripto.

last Chilean Biennale of
beroamerican meeting of
the ECAADE international

ork between architecture
h.

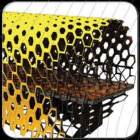
SELECTED PROJECTS
2006 -2012

Huanacu warehouse and offices

P iP B

Acoustic Ceiling

C B P A

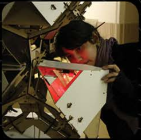


Parque araucano Bridge

iP P A

SYNNAT

C B P A



P Published
B Built
C Collaboration
A Academic Research
iP Independent Project

CV

Diego Ignacio Pinochet Puentes

- Grade: Architect
Pontificia Universidad Católica de Chile
Master of Architecture (M.Arch.), Architecture
2001 (august)– 2006 (august)

- Grade: Master in architecture
Pontificia Universidad Católica de Chile
Bachelor of Architecture (B.Arch.), Architecture
2006 (august) – 2009 (may)

Academic Experience

-Teacher and researcher
DO - DESIGN LAB - Universidad Adolfo Ibañez
January 2012 – Present (1 year) Santiago, chile

- Teacher - Generative and Parametric Design - Digital Fabrication
Universidad Diego Portales
March 2010 – January 2012 (1 year 11 months) Santiago, Chile

- Teacher- Building Information Modelling - Scripting - Digital Fabrication
PUC
March 2011 – December 2011 (10 months) Santiago, chile

- Director, coordinator and teacher at Building Information Modelling diploma
Advance Modelling and Coordination of digital projects
Pontificia Universidad Católica de Chile
March 2011 – December 2011 (10 months) Santiago , Chile

- Teaching assistant - Scripting, Digital Fabrication, Rendering, BIM
Pontificia Universidad Católica de Chile
March 2007 – December 2010 (3 years 10 months) Santiago, chile

Professional Experience

- Architect - BIM, Digital Fabrication, programming
TFPS ltda.
January 2010 – Present (3 years) Santiago, chile

- Architect- BIM, Digital Fabrication, programming
LyonBosch Arquitectos
June 2009 – November 2009 (6 months) Santiago, Chile

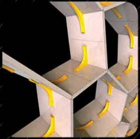
- A+D proyectos- BIM, Digital Fabrication
April 2009 – June 2009 (3 months) Santiago, Chile

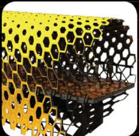
- Internship (architect)
Undurragadeves- U+D architects
January 2006 – April 2006 (4 months) Santiago, chile

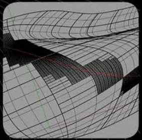
Main Skills

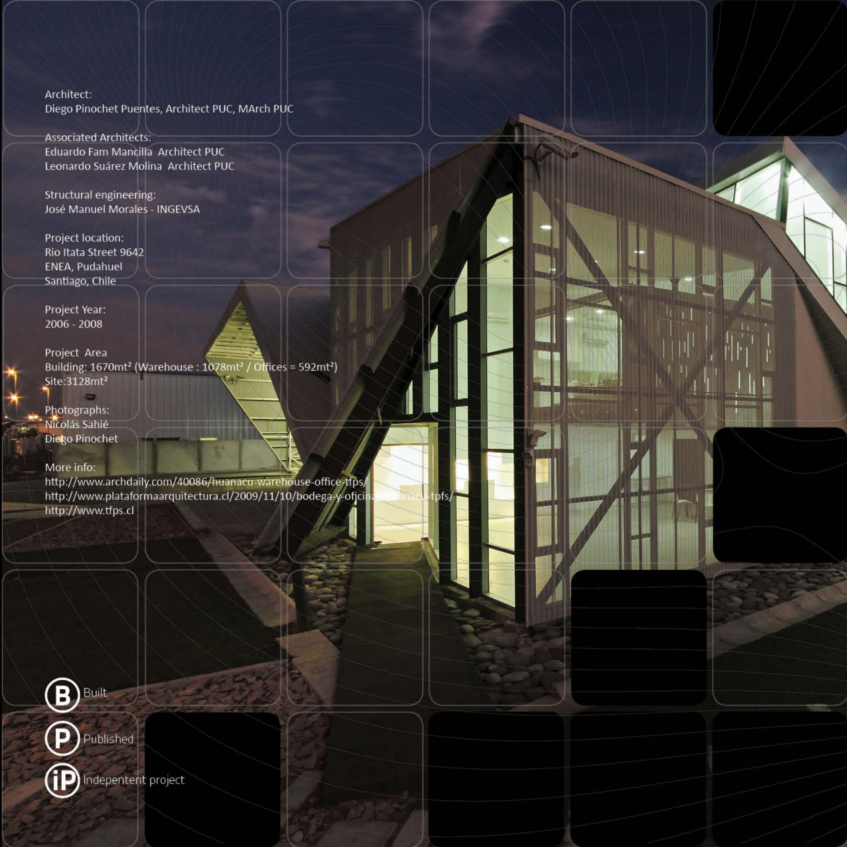
- Building Information Modelling (Revit, Catia, Digital Project)
- Scripting (Rhinoscript, Rhino Python, Processing, Maxscript)
- Digital Fabrication (Kuka kr180, CNC Router (technoisel, Multicam, roland), Laser Cutting (epilog, universal, accuris), 3d printing (dimension, zcorp, reprap), 3d scanner (nextengine).
- 3D Modelling and Rendering (Rhinoceros, 3dsmax, Maya, Modo, Blender)
- Electronics (arduino)

More info: http://cl.linkedin.com/pub/diego-pinochet/57/335/652









Architect:
Diego Pinochet Puentes, Architect PUC, MArch PUC

Associated Architects:
Eduardo Fam Mancilla Architect PUC
Leonardo Suárez Molina Architect PUC

Structural engineering:
José Manuel Morales - INGEVSA

Project location:
Rio Itata Street 9642
ENEA, Pudahuel
Santiago, Chile

Project Year:
2006 - 2008

Project Area
Building: 1670mt² (Warehouse : 1078mt² / Offices = 592mt²)
Site:3128mt²

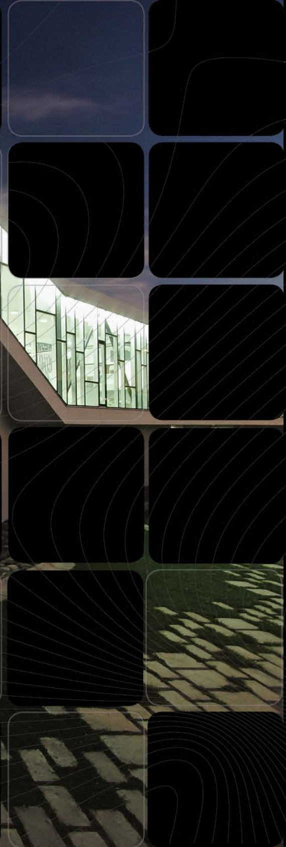
Photographs:
Nicolás Sahié
Diego Pinochet

More info:
http://www.archdaily.com/40086/huanacu-warehouse-office-tfps/
http://www.plataformaarquitectura.cl/2009/11/10/bodega-y-oficinas-huanacu-tpfs/
http://www.tfps.cl

B Built

P Published

iP Indepentent project



HUANACU WAREHOUSE & OFFICES

The assignment

A big storage building (with administrative offices and showroom), a "cool one" (just as the client requested), one that can "stands out" in contrast to the typical industrial architecture of the close context of the project, but... as cheap as we can produce it (aprox $430 USD/ sqm). A form that could respond to the internal logics of the company´s operation (charge and discharge of products, exhibition of these products in the showroom, administrative operations, etc).

The constrains

(1)A limited budget (enough to build a typical storage shed), (2) strict regulations of the zone (an industrial park near to the main airport of the city), and (3)about the internal operations of the company.

This led us to a fundamental question: How can we operate on the form, responding to the requirements of the client and the building regulations of the zone, and beside fit into the small budget?.

The equation that defines the problem was clear: client demands + building regulations demands + tight budget = a cool and unique building. Clearly , not an easy one...

The first approach to the problem solution, came from the idea of concentrate all the efforts to the exposed facades of the building (The site was defined by two streets), generating "perimeter activated by the program"(where liberties about building regulations were less strict) and leaving the production activities protected to the inside of the site.

Folding: The formal operation or ...."when architecture finally emerges"

How to operate on the form, then?, Where to start?. Taking the basic idea of a normal box (basically, a typical storage building ...a big shed) inverted. We started to think about this strong image , and the formal logic that we can explore and explode , to transform (starting from the same surface area of the initial box), the most exposed faces of the building to receive the critical activities demanded for the client

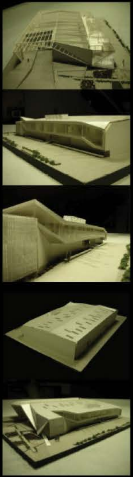
We use of a typical structure of industrialized steel frames (to let us have less cost in structural calculations), but operating from the folding of the skin (finally, the cheapest and more workable object in technical terms.

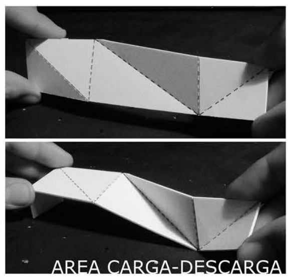
A series of folding operations (mainly three operations), allowed us to generate the two fronts, that in terms of proportions and surface area, are the same of a regular industrial building, so in that way we can insert the different activities of the program and elemental situations (showroom, administrative facilities, truck access, etc):

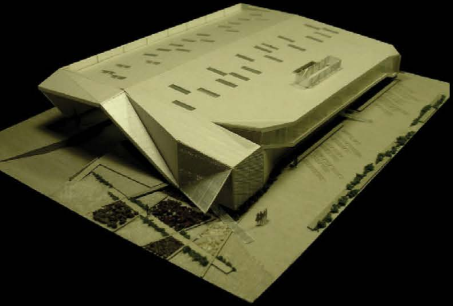
a- Access: A first folding that allowed the access to the showroom through the corner, recognizing from a single view the two folded facades of the building.

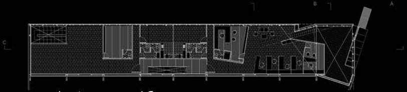
b- Work and view: A second folding of the west facade generates the office volume, allowing the views (the main demand of the client) to the future "los maitenes" park (hoping it will be ready in a year or two), separated from the industrial activities and with as much natural light as possible.

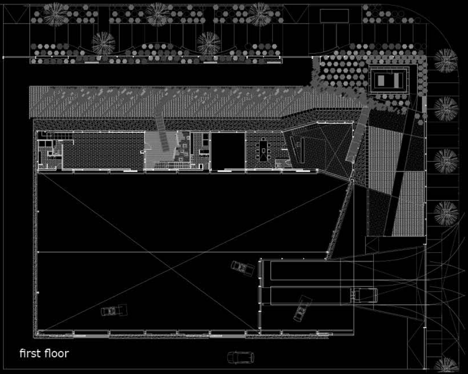
c- Work and production: Generating the larger folding to "rio itata" street, a big five meter overhang that forms the roof protecting the loading and unloading activities from rain and strong sun, connecting this space fluidly with the rest of the building.

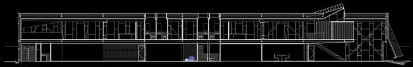


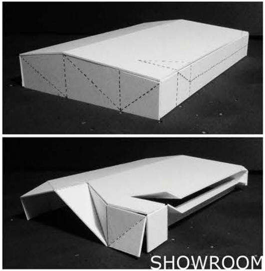

AREA CARGA-DESCARGA

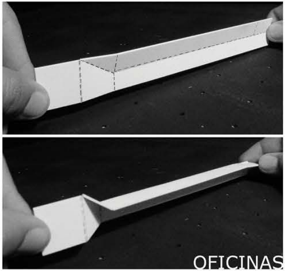

model

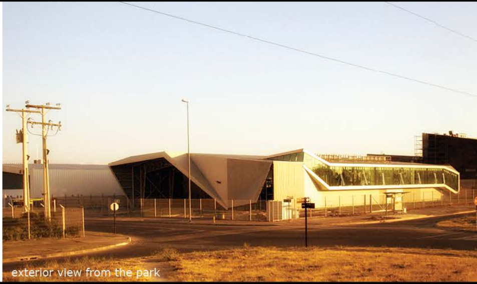

segundo piso - second floor

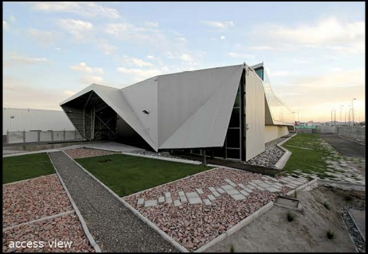

first floor


section

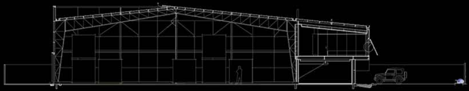

SHOWROOM

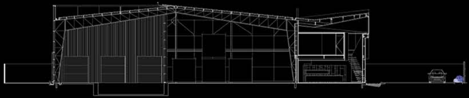

OFICINAS

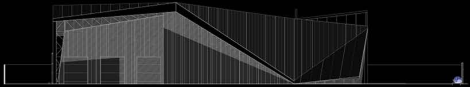

exterior view from the park

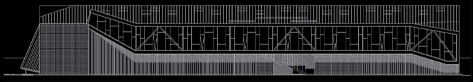

access view

west facade


corte - section

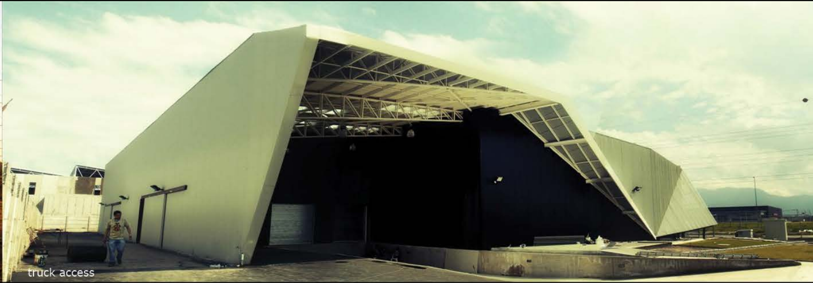

corte - section

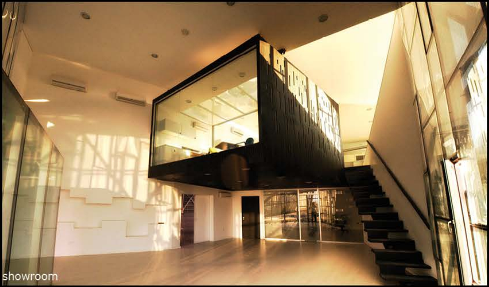

fachada norte - north facade


fachada poniente - west facade

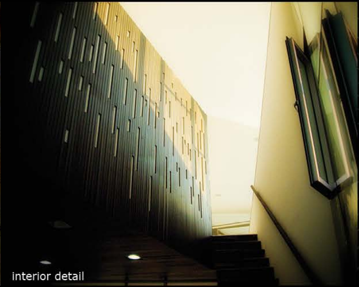
offices interior

warehouse

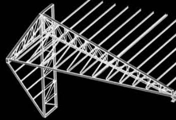

truck access



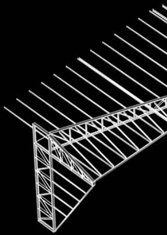
showroom

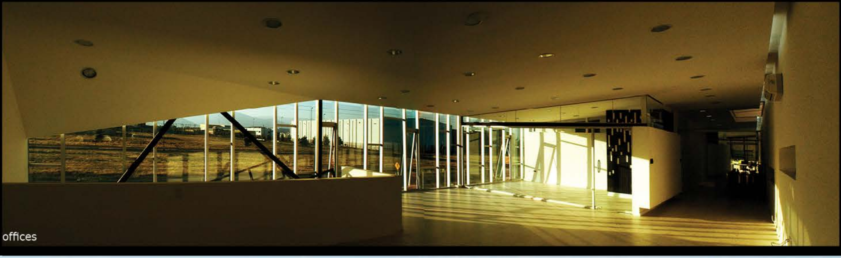


interior detail

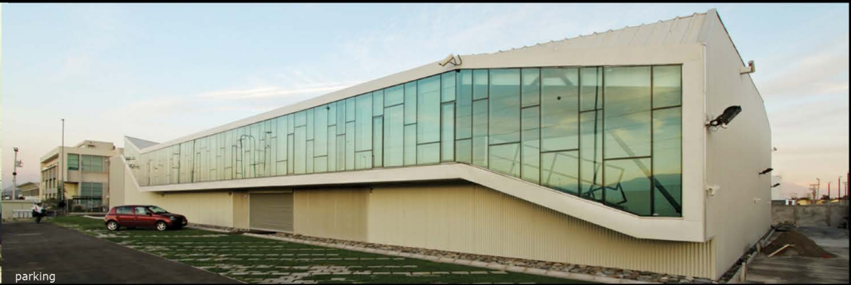


Structural Digital Model

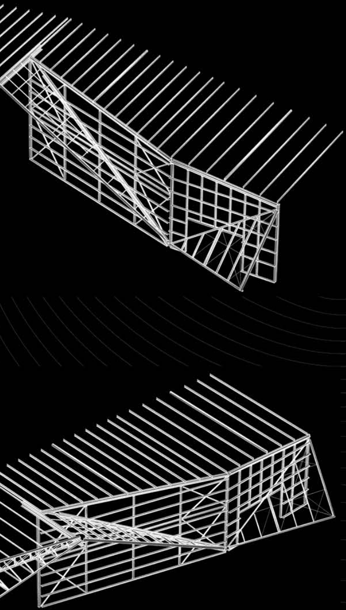




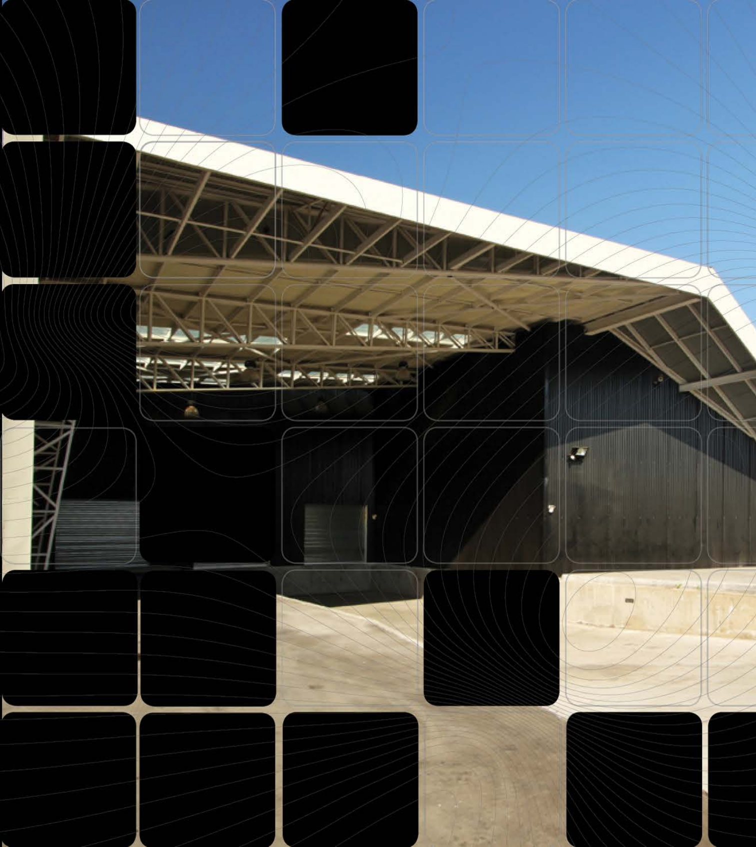
offices

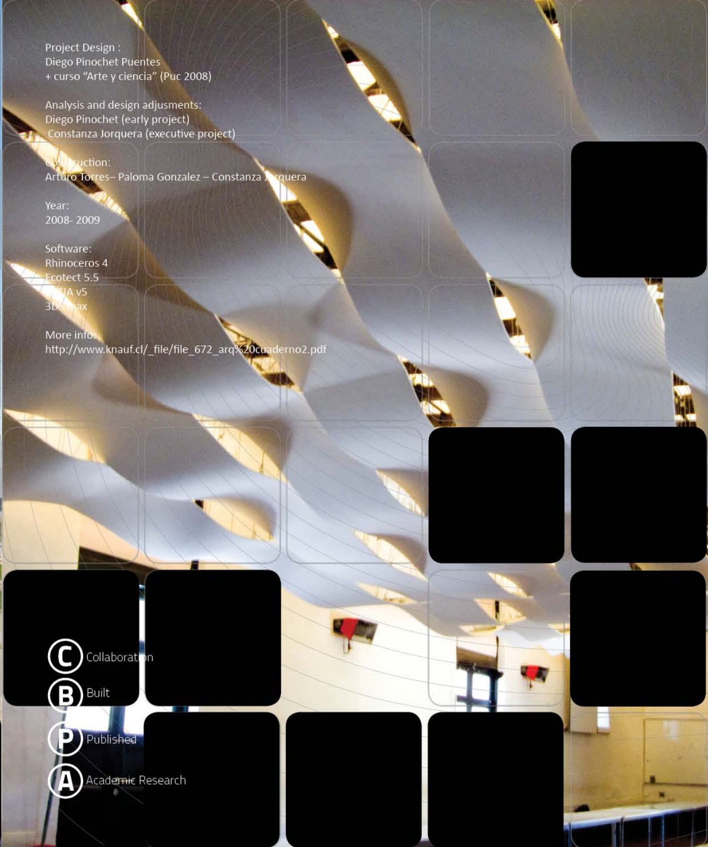


parking



Structural Digital Model





Project Design :
Diego Pinochet Puentes
+ curso “Arte y ciencia” (Puc 2008)

Analysis and design adjusments:
Diego Pinochet (early project)
Constanza Jorquera (executive project)

Construction:
Arturo Torres– Paloma Gonzalez – Constanza Jorquera

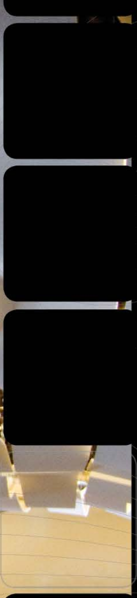
Year:
2008- 2009

Software:
Rhinoceros 4
Ecotect 5.5
CATIA v5
3DS Max

More info:
http://www.knauf.cl/_file/file_672_arq%20cuaderno2.pdf

Ⓒ Collaboration
Ⓑ Built
Ⓟ Published
Ⓐ Academic Research

ACOUSTIC CEILING PUC



This Project was part of the master thesis "digital form – builded form" , and also was part of a collaboration agreement between knauff enterprise and the school of architecture of the Pontifical Catholic University of Chile. This project was product of an investigation of new applications and techniques for plasterboard construction.

In march of 2008, was proposed the first idea about the project for the exploration of double curvature surfaces fabricated with plasterboard parts.

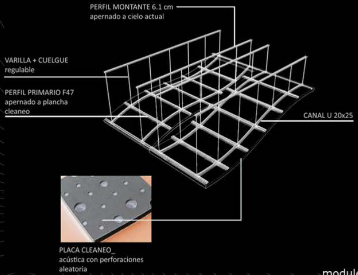
The prototype considered the generation of a surface composed of a series of undulating stripes, that through acoustic analysis, could be modified according to specific parameters for acceptable acoustic performace for classes or seminars with poor acoustics. This parameters were determined according to two scales:

- Global scale: in relation to the master surface. The form will depend of the preliminary acoustic analysis in the early design. (basic NURBS surface analysis).
- Cell Scale: in relation of the plasterboard cell and its capabilities of deformation, and adaptive possibilities into the global system for minimizing reverb and echo, through concavities and convexities.

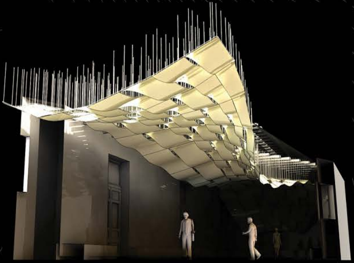
The parametric tools development (rvb and CATIA), consisted in the generation of every cell, taking care of maximum deformations and size of each part. The design system, allowed the generation of a rugged surface, that improved the acoustic performance of the classroom, and that generate all information needed for fabrication of the prototype (cut templates for each cell, curvature information, etc.)

The construction process and final analysis was part of the class "art and science" dictated on 2008 for the professor Arturo Torres. The process considered a research of one semester in relation to the double curvature surfaces made of plasterboard. The class research dismissed the first ideas for bending the cells (through cross sections), replacing it for a hidratation process of the plaque for a posterior deformation according to its specific curvature.

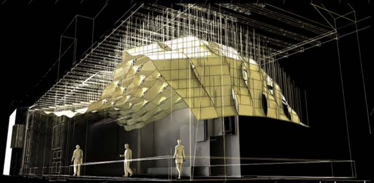
The project was a first approach to manufacturing oriented processes in the thesis, in relation to material condition of a project, because of the deformation possibilities of a common material, the generative techniques of developable surfaces and the process from a 3d model to a 2d model, that were the main constraints and limitations to the success of the prototype.


PERFIL MONTANTE 6.1 cm
apernado a cielo actual
VARILLA + CUELGUE
regulable
PERFIL PRIMARIO F47
apernado a plancha
cleaneo
CANAL U 20x25
PLACA CLEANEO_
acústica con perforaciones
aleatoria

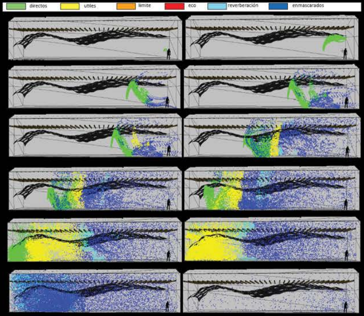
module



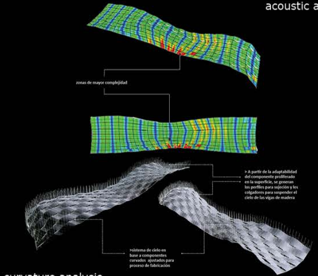
project render



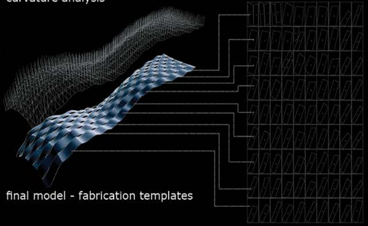
project render


directos
utiles
limite
eco
reverberación
enmascarados

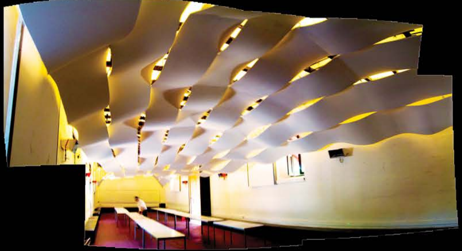
acoustic analysis

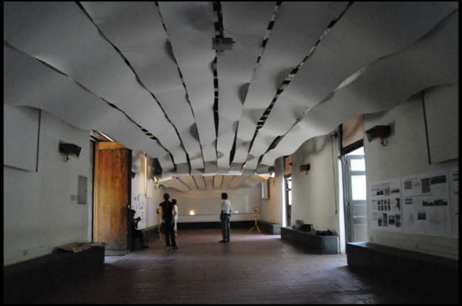

zonas de mayor complejidad
> A partir de la adaptabilidad del componente proliferado en la superficie, se generan los perfiles para sujeción y los colgadores para suspender el cielo de las vigas de madera
>sistema de cielo en base a componentes curvados ajustados para proceso de fabricación

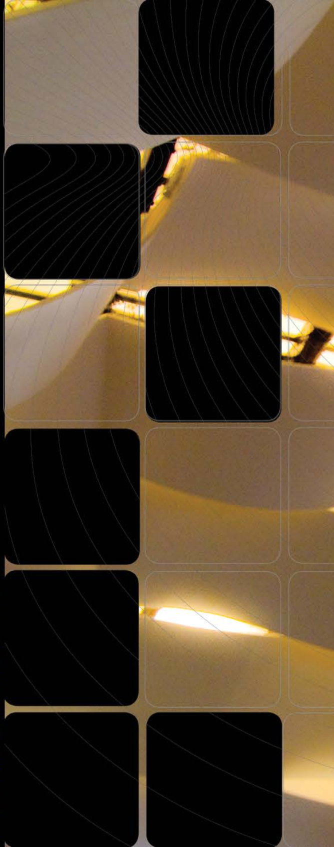
curvature analysis

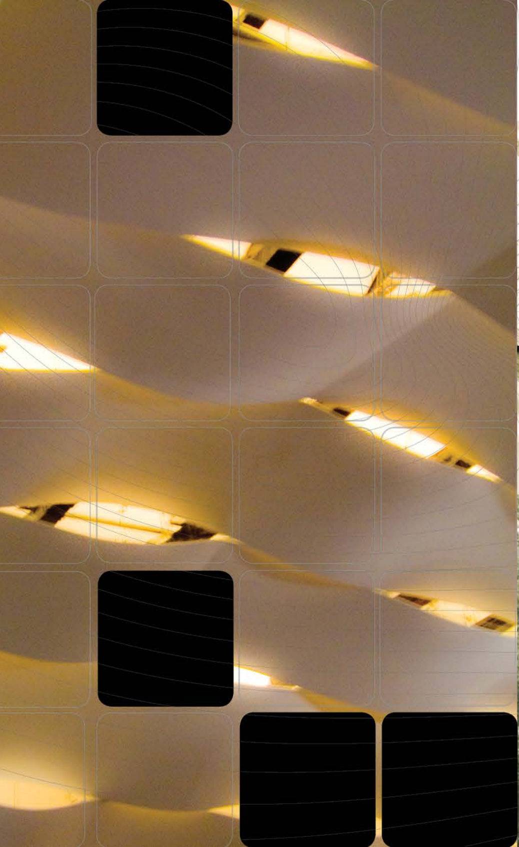


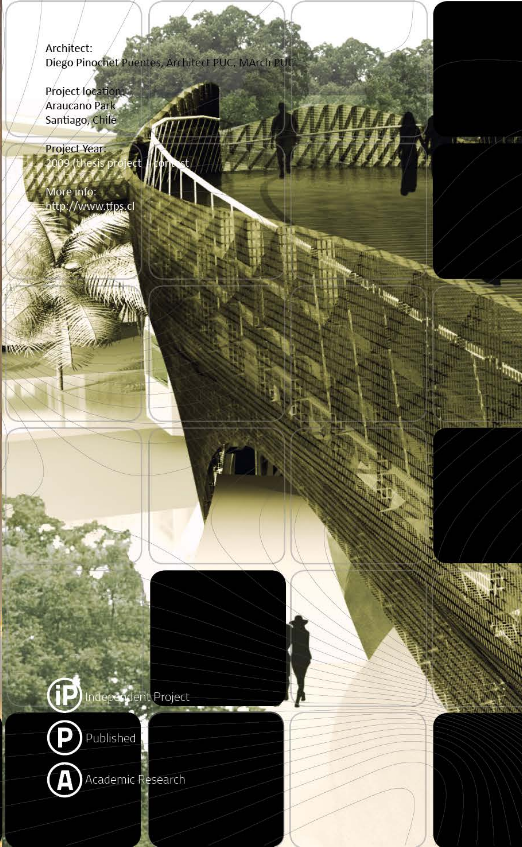
final model - fabrication templates











Architect:
Diego Pinochet Puentes, Architect PUC, MArch PUC

Project location:
Araucano Park
Santiago, Chile

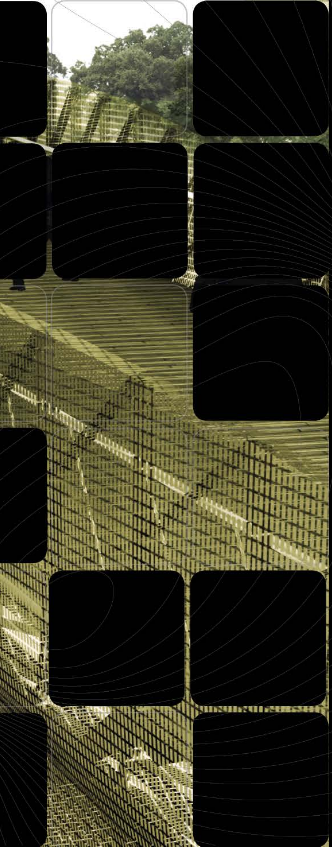
Project Year:
2009 (thesis project + contest

More info:
http://www.tfps.cl

iP Independent Project

P Published

A Academic Research



PARQUE ARAUCANO BRIDGE

The Parque araucano bridge, was part of a research about parametric tools incorporated to architecture.

The architectonic interest of the global proposal, relies on the possibilities to attend to different urban's discontinuity situations , through design systems that can respond to specific contexts.

This particular urban discontinuity, suggest a common problem that is the need for connection of two places, and that can be resolved through multiple operations. But in this case, attending to specific local variables that can emerge as a particular project.

This project emerges as one of the possible outputs of the application of a group of parametric digital tools developed in rhunoceros 4 and catia for the generation of a design interface that allows the designer to produce a correct flow from the 3d model to cnc machines.

The design system for the bridge takes specific variables of the context, such as people traffic, landscape, sights, structural and municipal regulatory constraints.

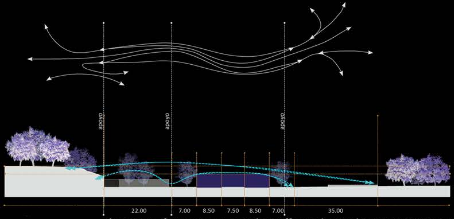
The main design system works at three layers.

1- Structure: based on generative components as an efficient structure that can be fabricated by cnc machines.

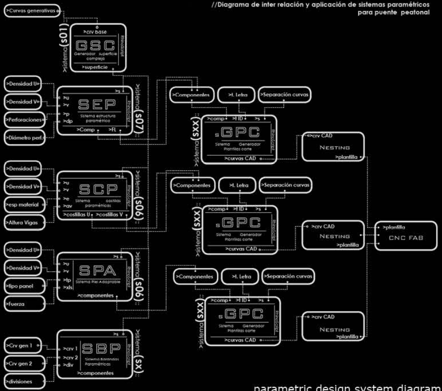
2- Skin: Based on tessellation and fabrication strategies to create an adaptive skin to the global bridge form. based on insolation parameters.

3- Floor Structure: based on a gridshell structure, for its capabilities of resistance and adaptability to complex forms.

site view


apoyo
apoyo
apoyo
22.00
7.00
8.50
7.50
8.50
7.00
35.00

diagrams from views, people traffic and regulatory restrictions

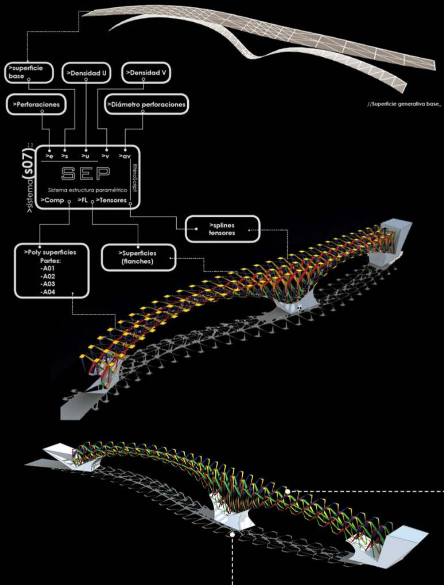


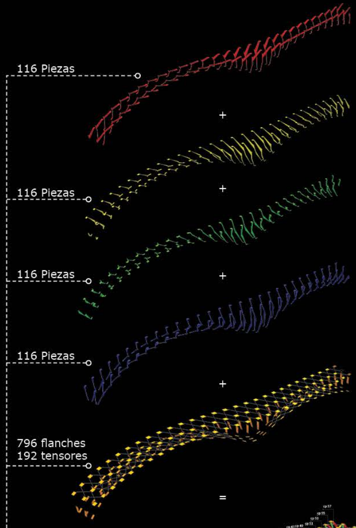
//Diagrama de inter relación y aplicación de sistemas paramétricos
para puente peatonal

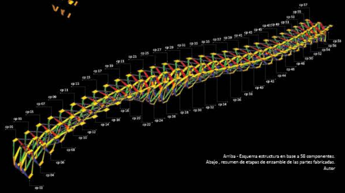
>Curvas generativas
>sistema(s01)
>crv base
GSC
Generador superficie compleja
>superficie
RhinoScript
>Densidad U
>Densidad V
>Perforaciones
>Diámetro perf.
>s
>u
>v
>p
>dp
SEP
Sistema estructura paramétrico
>Comp
>FL
>sistema(s07)
>Densidad U
>Densidad V
>esp material
>Altura Vigas
>s
>u
>v
>e
>av
SCP
Sistema costillas paramétricas
>costillas U
>costillas V
>sistema(s06)
>Densidad U
>Densidad V
>tipo panel
>Fuerza
>s
>u
>v
>tp
>xls
SPA
Sistema Piel Adaptable
>componentes
>sistema(s06)
>Crv gen 1
>Crv gen 2
>divisiones
>s
>crv 1
>crv 2
>div
SBP
Sistema Barandas Paramétricas
>componentes
>sistema(sx)
>Componentes
>I. Letra
>Separación curvas
>sistema(sxx)
>comp
>I ID
>s
sGPC
Sistema Generador Plantillas corte
>curvas CAD
>crv CAD
Nesting
>plantilla
>plantilla
CNC FAB

parametric design system diagram

Structure generation


//Superficie generativa base_
>superficie base
>Densidad U
>Densidad V
>Perforaciones
>Diámetro perforaciones
>e
>s
>u
>v
>av
>sistema(s07)::
SEP
Sistema estructura paramétrico
RhinoScript
>Comp
>FL
>Tensores
>splines tensores
>Poly superficies
Partes:
-A01
-A02
-A03
-A04
>Superficies (flanches)


116 Piezas
+
116 Piezas
+
116 Piezas
+
116 Piezas
+
796 flanches
192 tensores
=



Arriba - Esquema estructura en base a 58 componentes.
Abajo , resumen de etapas de ensamble de las partes fabricadas.
Autor

//Fabricación_ → //Pre ensamble 01_ → //Pre ensamble 02_ → //Ensamble en Obra_

>1342 partes → >116 partes → >58 partes → >1parte

-116 piezas a-01
-116 piezas a-02
-116 piezas a-03
-116 piezas a-04
-696 flanches
-192 tensores

-58 componentes c1
-58 componentes c2

-58 componentes

-1 estructura

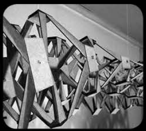
+384 uniones

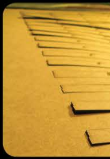
+232 uniones

+116 uniones en _obra 58 de tipo U1 y 58 tipo V1, divididas en 10 etapas de ensamblaje in situ

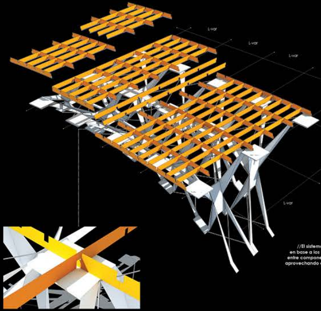
+616 uniones

scale prototypes

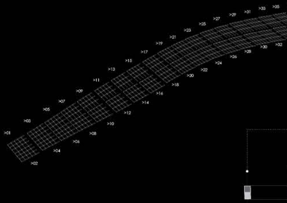


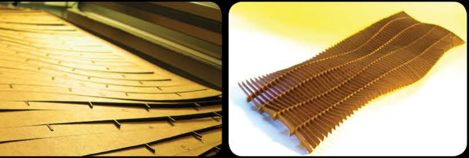


secondary structure diagrams


L-var
L-var
L-var
L-var

//El sistem
en base a los
entre compone
aprovechando

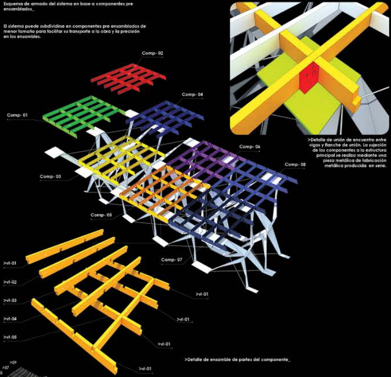




prototype fabrication

Esquema de armado del sistema en base a componentes pre ensamblados_

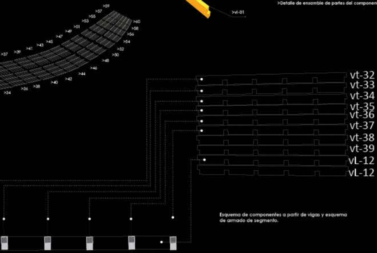
El sistema puede subdividirse en componentes pre ensamblados de menor tamaño para facilitar su transporte a la obra y la precisión en los ensambles.


Comp- 02
Comp- 04
Comp- 01
Comp- 06
Comp- 08
Comp- 03
Comp- 05
Comp- 07
>vl-01
>vl-02
>vl-03
>vl-04
>vl-05
>vl-01
>vl-01
>vl-01
>vl-01

>Detalle de unión de encuentro entre vigas y flanche de unión. La sujeción de los componentes a la estructura principal se realiza mediante una pieza metálica de fabricación metálica producida en serie.

a genera una serie de costillas
largos entre flanches de unión
entes de la estructura principal
estos como apoyo del sistema
de envigado de piso

>Detalle de ensamble de partes del componente_


>59
>57
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>37
>60
>58
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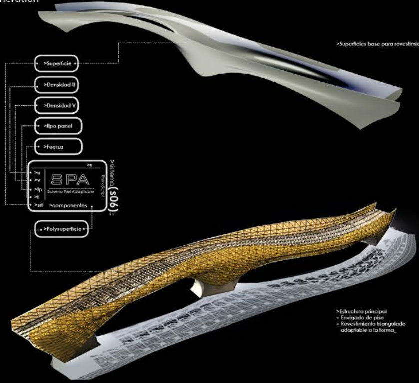
>54
>52
>50
>48
>46
>44
>42
>40
>38
>36
>34
vt-32
vt-33
vt-34
vt-35
vt-36
vt-37
vt-38
vt-39
vL-12
vL-12

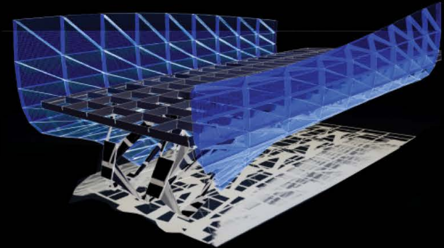
Esquema de componentes a partir de vigas y esquema de armado de segmento.

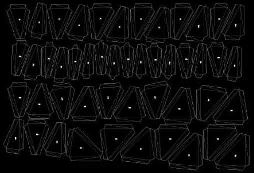
Skin generation

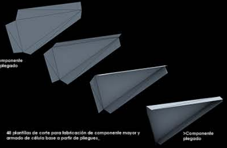

>Superficie
>Densidad U
>Densidad V
>tipo panel
>Fuerza
>s
>u
>v
>tp
>f
>srf
SPA
Sistema Piel Adaptable
RhinoScript
>componentes
>sistema(s06)::
>Polysuperficie

>Superficies base para revestimiento_

>Estructura principal
+ Envigado de piso
+ Revestimiento triangulado adaptable a la forma_



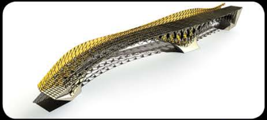


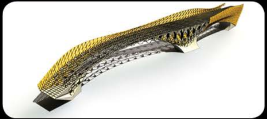


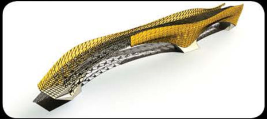
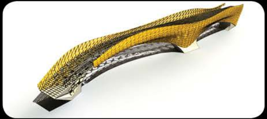
>Componente desplegado

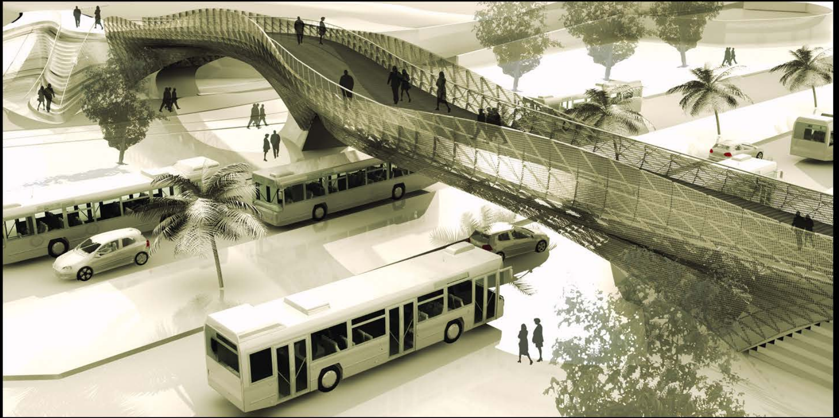
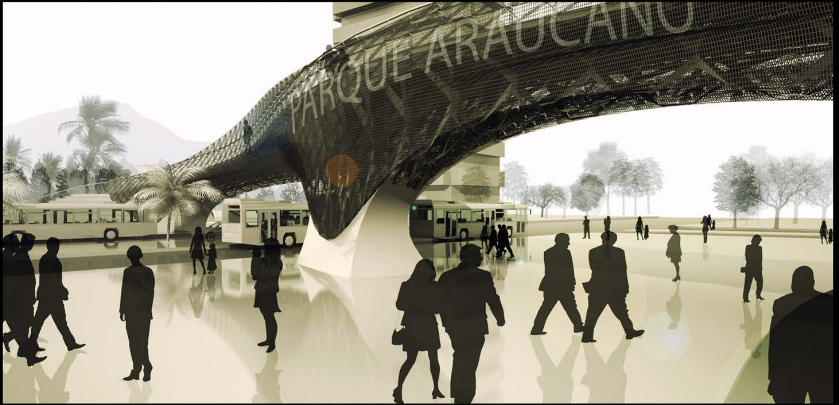
48 plantillas de corte para fabricación de componente mayor y armado de célula base a partir de pliegues_

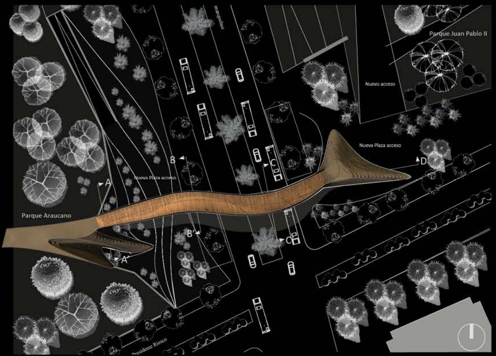
>Componente plegado



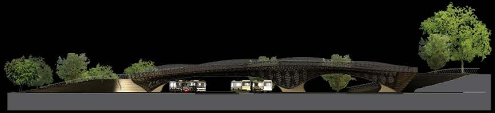


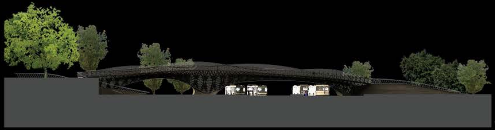


PARQUE ARAUCANO


manquehue
Parque Juan Pablo II
Nuevo acceso
Nueva Plaza acceso
B
C
D
A
Nueva Plaza acceso
Parque Araucano
B'
C'
A'
Presidente Riesco

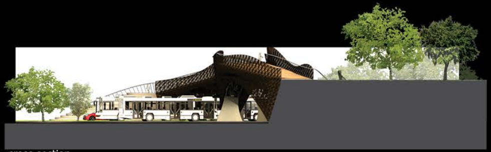
plan view



north elevation

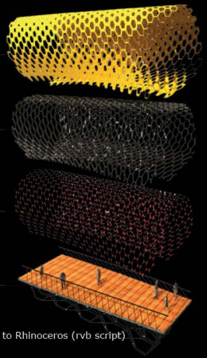


south elevation



cross section

Adaptive skin option - isometric



> Componentes de piel hexagonal_

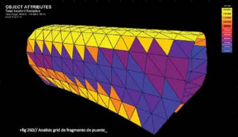
> Vigas de malla hexagonal

> Conectores ensamblables de malla hexagonal

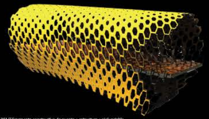
> Fragmento de puente en base a estructura de componentes, envigado de piso , entablado y barandas.

+fig 263// perspectiva explotada de fragmento de puente. autor

Adaoptive skin - Ecotect to Rhinoceros (rvb script)

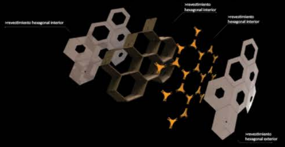

OBJECT ATTRIBUTES
Total Incident Radiation

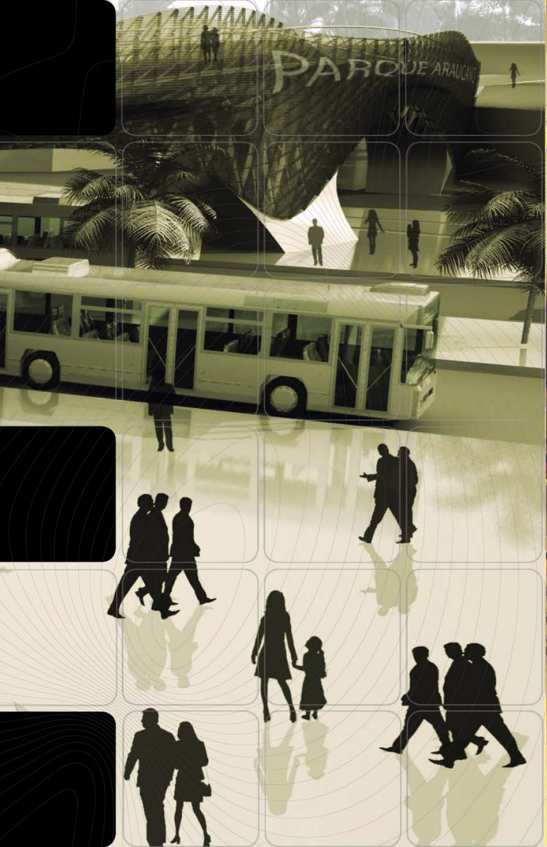
+fig 260// Analisis grid de fragmento de puente_



+fig 261// Fragmento constructivo de puente + estructura + piel variable_

Adaptive skin - Constructive system


>revestimiento hexagonal interior
>revestimiento hexagonal interior
>revestimiento hexagonal interior
>revestimiento hexagonal exterior


PARQUE ARAUCANO

Design
Onur Yüce Gün [MIT]
Alexandros Tsamis [MIT + DO Design Lab UAI]
Carolina Pino [DO Design Lab UAI]
Diego Pinochet [DO Design Lab UAI]

Year:
2012 (May - June)

Implementation
Onur Yüce Gün (Parametrics+Fabrication+Construct
Diego Pinochet (Parametrics+Fabrication+Construction)
Carolina Pino (Electronics)
Gian Paolo Rondanelli (Electronics)
Jose Merino (Interface Design).

Theoretical Investigation
Alexandros Tsamis
Onur Yuce Gun
Carolina Pino

Workshop Instructors
Onur Yuce Gun (Scripting + Parametrics)
Diego Pinochet (Scripting)
Carolina Pino (Electronics)

Workshop Participants:
Alberto Dentice
Alvaro Parraguez
Constanza Fredericksen
Enrique Mc Manus
José Miguel Benavides
Luciano Achurra
Luis Alberto Echeverría
Marcelo Morstadt
María Francisca Valenzuela
Patricio Aguirre
Ricardo Dorado

Installation workforce
Master of science in design Students - UAI (adolfo Ibañez University

Ⓒ Collaboration

Ⓑ Built

Ⓟ Published

Ⓐ Academic Research

photo Onur Yücesan

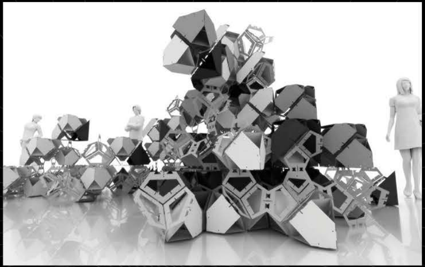
SYNTHETIC NATURES

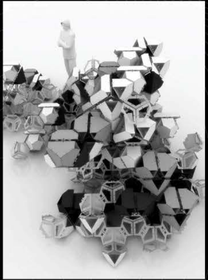
Synthetic Natures is an experimental installation that aims to generate an interactive ecosystem via custom utilization of subsequent spatial components. Contemporary techniques of design, computing and fabrication are employed to crystallize ever-changing spatial conditions via use of parametric versions of conventional platonic geometries and their truncated counterparts. Although limited in number, the algorithmic distribution and configuration of these parts, guided by a voxel space, help develop divergently rich micro-environments. The custom successive properties of voxels [derived from the installation space], while determining the physical conjugates of the digital information, help render a characteristic geometric configuration: clear patterns of faces, edges and volumes transform into a labyrinthine of regulation.

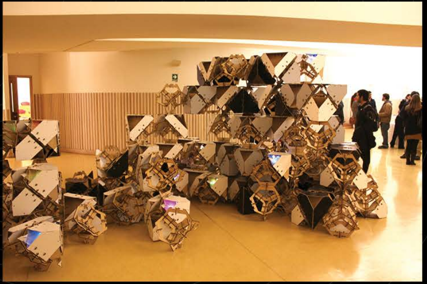
In this very labyrinthine some pockets function as recursive inhabitable environments. Mushrooms, fed on the byproduct of CNC machining (sawdust), bloom in strategically placed pockets. This sustainable lifecycle also reports about its local conditions via humidity and temperature sensors. As these conditions could be checked via twitter, the reverse interaction could also be achieved by tweeting color codes to the LED lights placed in every mushroom pocket.

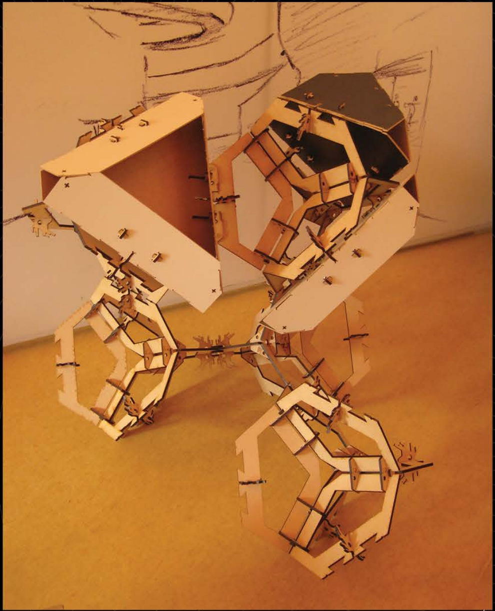
The equilibrium of any social, political, economic system depends on its ability to develop strategies of survival. Sharing, swapping, trading appears to be the most common of these strategies among living systems. Mycelium is an organic organization that can develop informatics network among its cells for its well-being. Its behavior is read similar to Internet's: mycelium stores the information and registers it to protect the land of infections (*) and maintain balance in the ecosystem. Its flower, the mushroom is the visible product of it. In Synthetic Natures, we recast this network of organisms. Each mushroom pocket, due to its location and situation in the overall installation, sustains in varying conditions. Altogether they create an interactive network.

description by O. Y. Gün



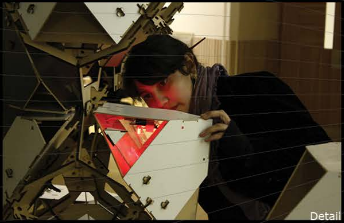




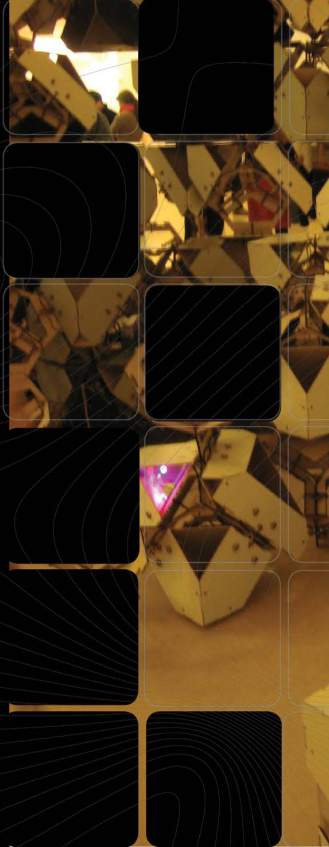


Final Installation

Detail



Detail



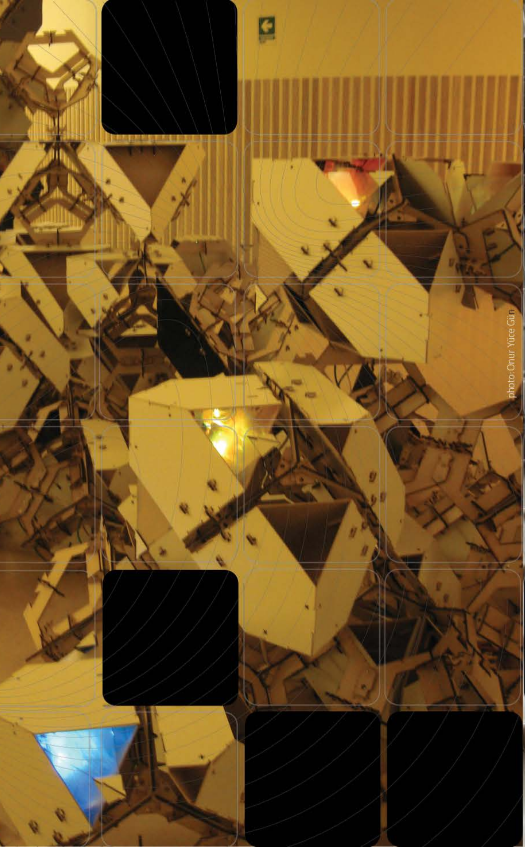


photo:Onur Yüce Gün

Teacher - Digital
Technologies in
architecture PUC 2009

ACADEMIC EXPERIENCE

Academic Experience

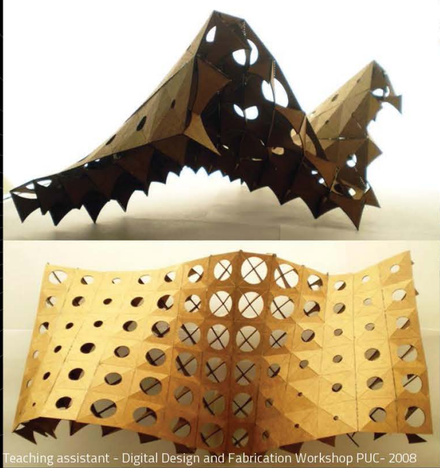
-Teacher and researcher
DO - DESIGN LAB - Universidad Adolfo Ibañez
January 2012 – Present (1 year) Santiago, chile

- Teacher - Generative and Parametric Design - Digital Fabrication
Universidad Diego Portales
March 2010 – January 2012 (1 year 11 months) Santiago, Chile

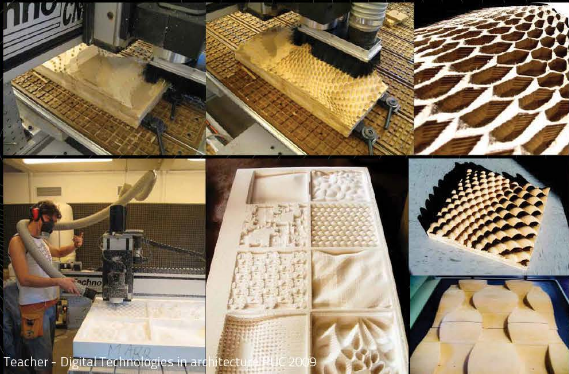
- Teacher- Building Information Modelling - Scripting - Digital Fabrication
PUC
March 2011 – December 2011 (10 months) Santiago, chile

- Director, coordinator and teacher at Building Information Modelling diploma
Advance Modelling and Coordination of digital projects
Pontificia Universidad Católica de Chile
March 2011 – December 2011 (10 months) Santiago , Chile

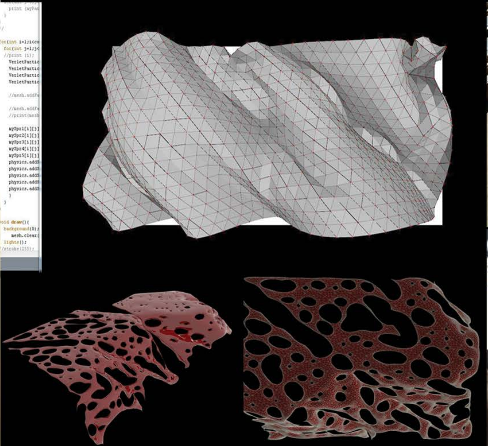
- Teaching assistant - Scripting, Digital Fabrication, Rendering, BIM
Pontificia Universidad Católica de Chile
March 2007 – December 2010 (3 years 10 months) Santiago, chile



Teaching assistant - Digital Design and Fabrication Workshop PUC- 2008



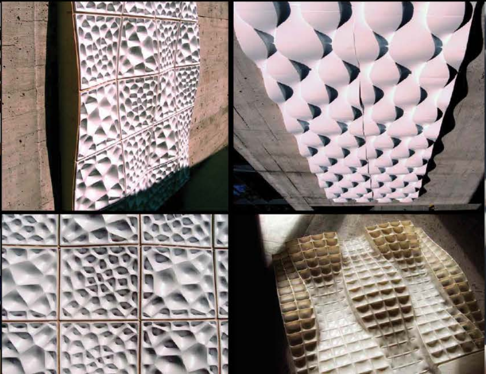
Teacher - Digital Technologies in architecture PUC 2009



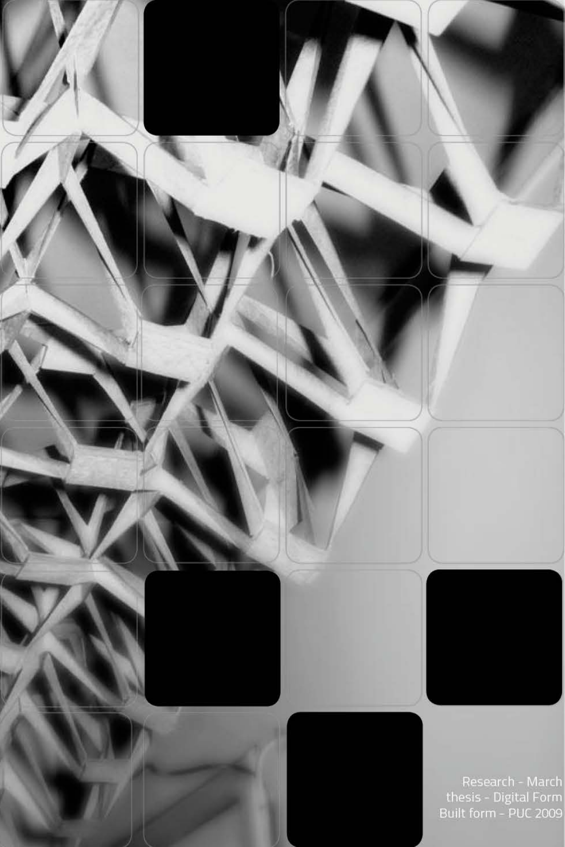
```
    print (myPa
  }
*/

for(int i=1;i<co
  for(int j=1;j<
  //print (i);
    VerletPartic
    VerletPartic
    VerletPartic
    VerletPartic

    //mesh.addFa

    //mesh.addFa
    //print(mesh

    mySpr1[i][j]
    mySpr2[i][j]
    mySpr3[i][j]
    mySpr4[i][j]
    mySpr5[i][j]
    physics.addS
    physics.addS
    physics.addS
    physics.addS
    physics.addS
    }
  }

oid draw(){
  background(0);
    mesh.clear(
  lights();
/stroke(255);
```

Research - complex self organized structures - Processing 2010

Teacher - Intensive Structures - UDP 2010



Teacher - Digital Technologies in architecture 2008



Research - March
thesis - Digital Form
Built form - PUC 2009