

國立交通大學

建築研究所

碩士論文

流變建築
Fluctuation

研究生：陳揚升

指導教授：龔書章 教授

中華民國一百年二月

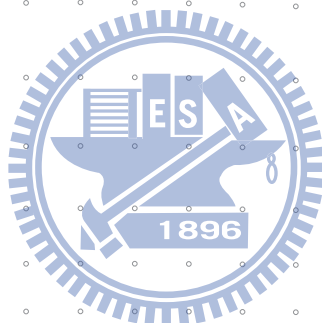
摘要

/ 流變建築

“fluctuate”有波動、不規則變化以及流動的意思，在這裡最貼切的意思是指變化，即變化是萬物存在的形式。而流變學所研究的是物體在外力作用下，物體的變形以及流動的學科。對於在設計方法上，則橫跨各種不同領域研究因子結合建築空間的操作模式，而提出相對應的空間呈現方式。

「建築流變」是以上述理論為基礎所呈現的設計研究方法及過程，由對於週遭外在的影響因子，從材料、自身、基地環境、都市現象、對應到建築的相對關係，進而轉化為抽象空間概念並找出其發展性作為設計方法的依據，對於建築形式所產生的形變行為及組織方式的探討。

本文以Next/Nest構/巢探討人與空間之間的模糊邊界，透過人的動作與材料的特性對於自身邊界的擾動所創造出位於台北捷運地下街的隧道裝置藝術。Soft and Hard Redefinition 與 bibliothe' que 分別以不同的出發點嘗試以基地週遭環境因子對於建築形體的擾動為實驗目的。The Vertical Village則是探討非正式的都市現象企圖以bottom up 的方式，探討人口增長而對於社群空間連結方式的影響。



Abstract

Fluctuation

“Fluctuate” means irregular changes and flow, and here the most appropriate meaning is change that is how everything exists. Rheology is the study of deformation and the flow of objects under the external force. In terms of design methodology, it involves different field of theories and combines with architecture operation, then giving the corresponding space performance.

“Fluctuation” is based on the above theory and presented by the design research methods and process. By the impact of external factors, through different observations, it goes from material, body, environment and urbanism, corresponding to the relative relationship of architecture. Transform these factors to the concept of abstract space and identify their development as the basis for design methods. Discuss how the architecture form of deformation behavior and composition will be.

This portfolio uses the project “Next/Nest” to discuss the blurring boundary between body and space. By using human movements and material properties, we create the tunnel installation art for body boundary fluctuation in MRT Taipei easy mall. Project “Soft and Hard Redefinition” and project “bibliothe'que” are based on different theories, using environmental factors around the site for disturbing the form of architecture as the aim of experiment. “The vertical Village” is a project about informal urbanism by using the “bottom up” logic to discuss the emergent space for social fluctuation.



Abstract	i. ii.
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BODY, NEST, and COMPUTATION >>

Next/Nest

Optional Studio
(M.Arch1 3rd)
-----2010 Spring

001-034



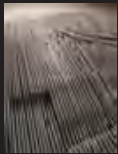
THE VERTICAL VILLAGE>>

an emergent space for social fluctuation

Optional Studio
(M.Arch1 3rd)
----2009 Spring

035-062





SOFT & HARD REDEFINITION >>

Phase Diagram & H₂O pavilion 063-090

Optional Studio
(M.Arch1 3rd)
-----2009 Fall



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-----2008 Fall



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NCTU GIA >>
2007-2010

Contents







Next/Nest
(2010 Spring)

Optional Studio

Tutor | Keisuke Toyoda, David Hong

Partners | Guan-Yu Lin, Yi-Hong Lin (Phase III)

Location >> MOCA, Taipei
MRT Taipei Easy Mall R9

Studio Introduction >>

The pavilion designed and constructed as a result of NCTU's spring studio final production. The studio is themed by computational design and fabrication, and 6 students are divided into two teams, each required to design and build a small structure based on their research and experiments equipped with Rhino and Grasshopper studies as well as primitive creature analysis. The two small pavilions are exhibited at MOCA Taipei Studio space during July-August, 2010 - exhibition is supported by MOCA and Taipei City Government.

Description >>

The design theme of this project is based on the blurring boundary between body and space or environment. By using continuous dynamic silhouettes to create the form of the tunnel, which followed with the fabrication method of dynamic transforming. The forms morph from one typology of a body action (sitting, squatting or scrawling .etc) into another in one continuous form.

Along with the definition of the form, which followed with the nature of PVC pipe material (soft and transparent) to achieve the effect of disturbance the boundary and making it blurred.





Phase 1

Creature Study >>
Rhino & Grasshopper
Software Training
4 weeks



Phase 2

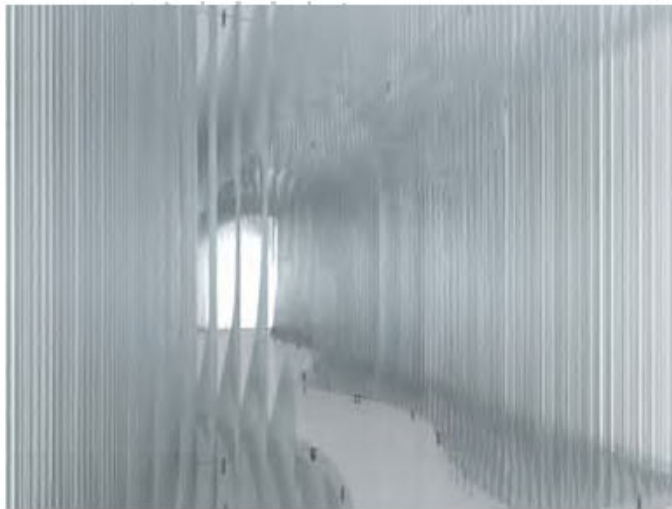
Material Study >>
Furniture Design
Special Methods
of Construction
6 weeks



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Phase 3

Pavilion:
Body, Nest and
Computation >>
Computational Design
& Fabrication
6 weeks



Phase 1

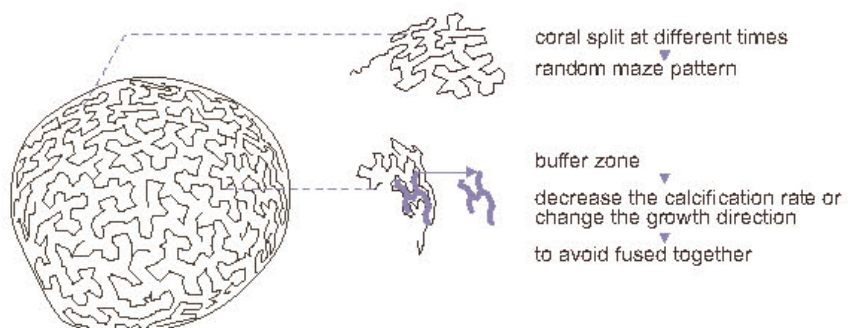
Creature Study >>
Rhino & Grasshopper
Software Training

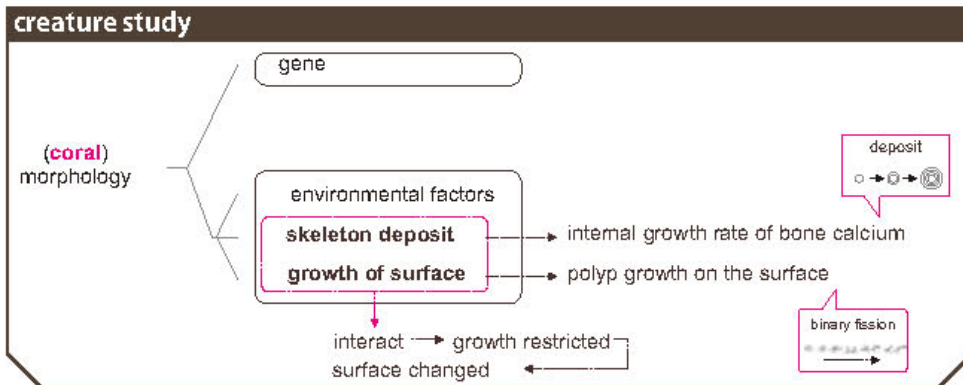


brain coral pattern

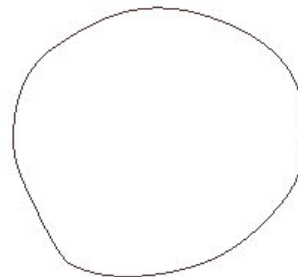
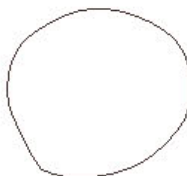


inborn growth regulation factor

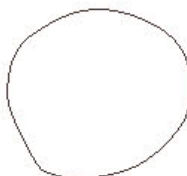
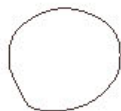




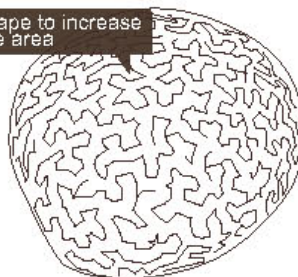
growth of surface rate =
skeleton deposit rate



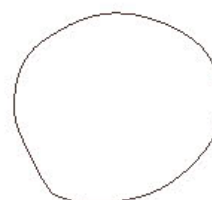
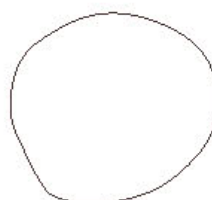
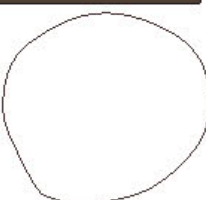
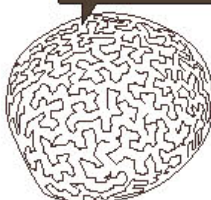
growth of surface rate >
skeleton deposit rate



convex shape to increase
the surface area



unfold brain cortex :
triple surface then the internal surface area

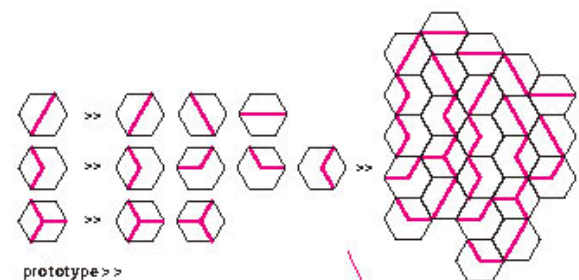
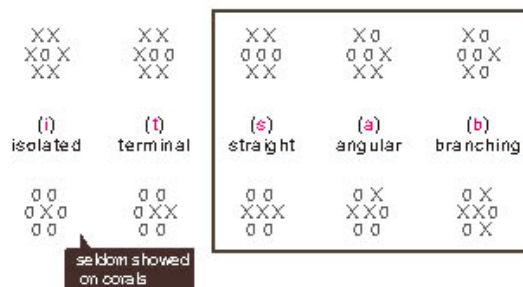
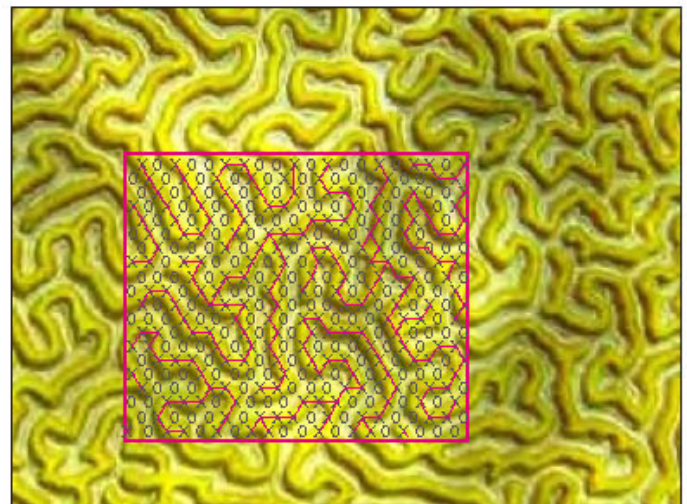
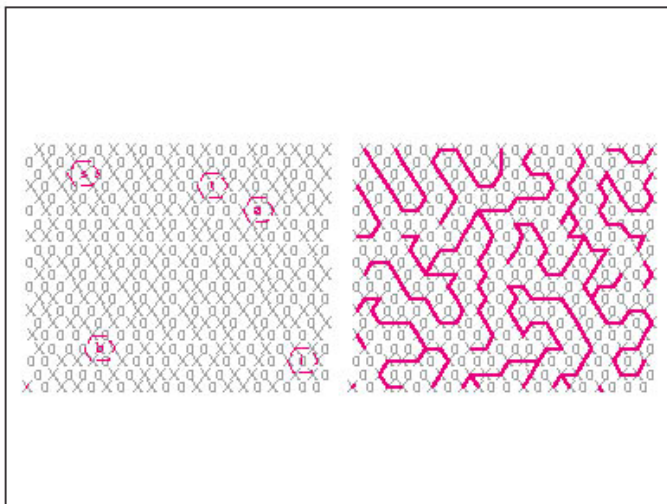
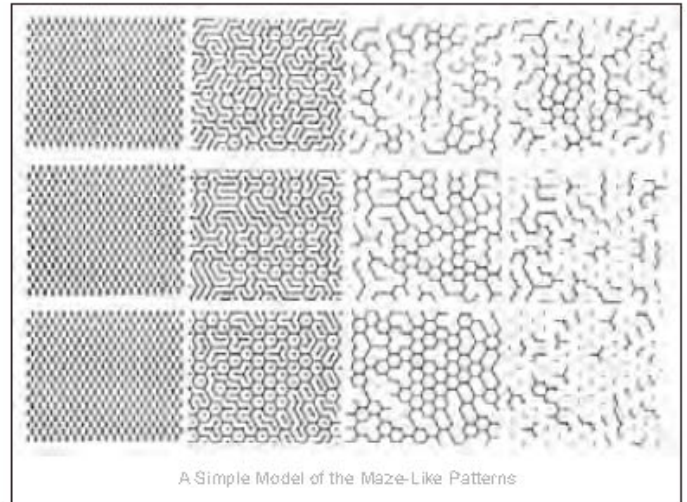
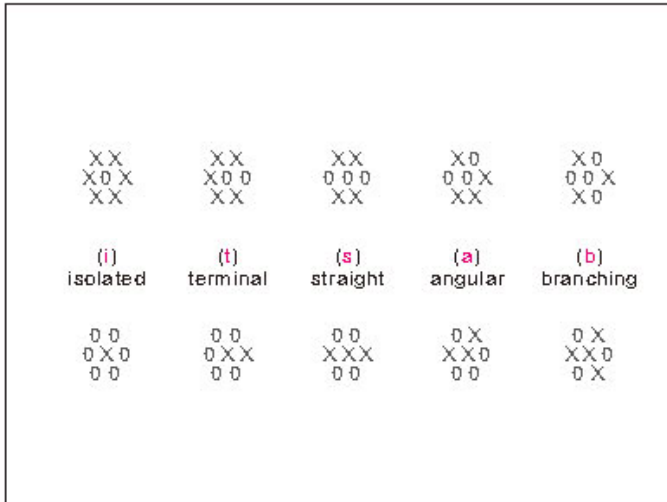


surface and volume ratio



Phase 1

Creature Study >> Rhino & Grasshopper Software Training

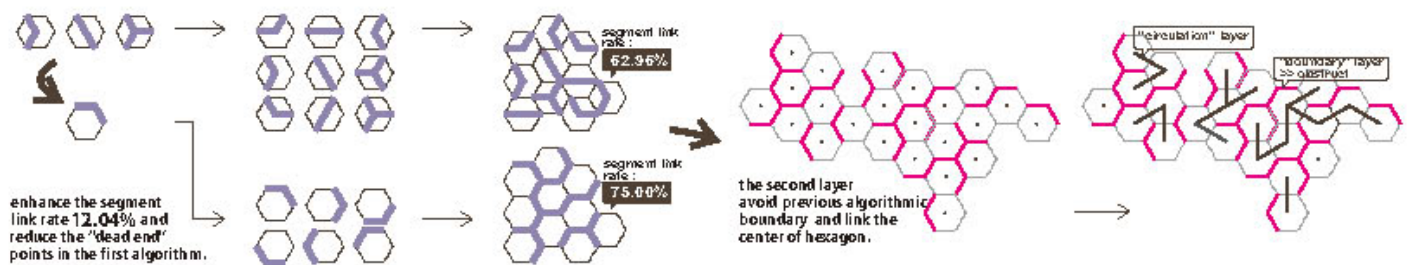
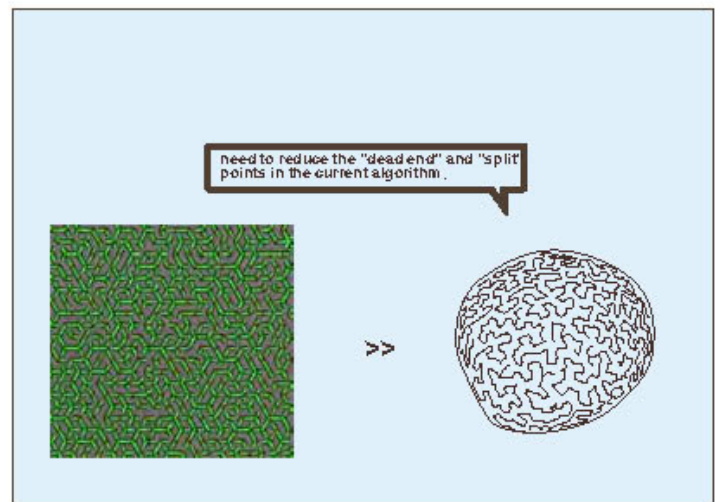
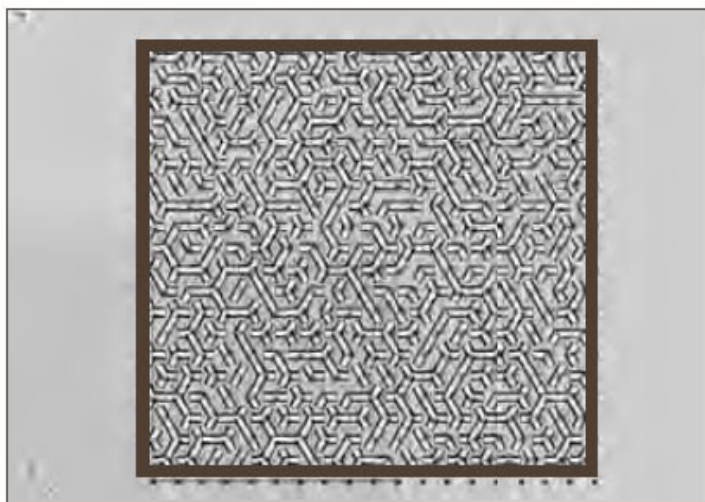
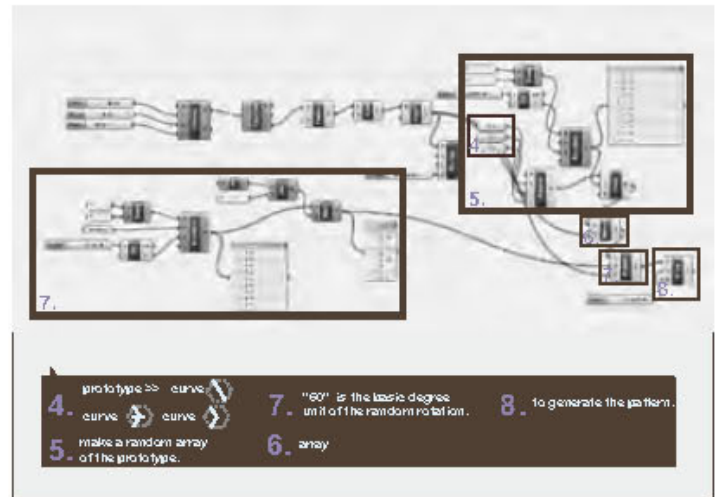
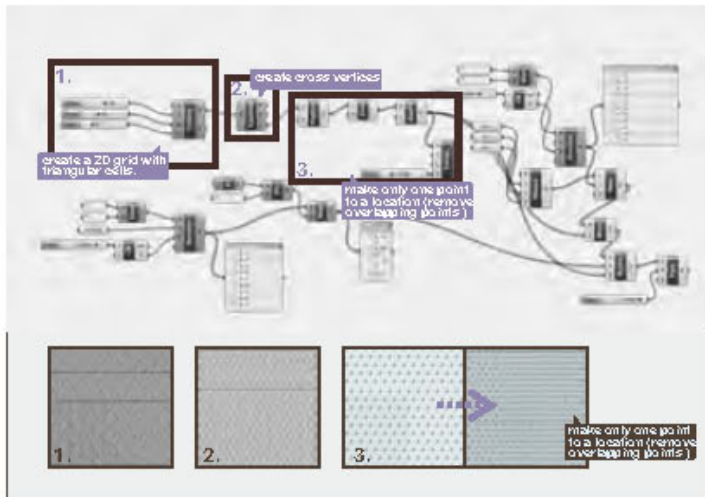


to Simplify Maze-Like Patterns

is not available that endpoints of triangle's elements are same. (avoid the 60-degree angle, it'll make a surface not a line.)

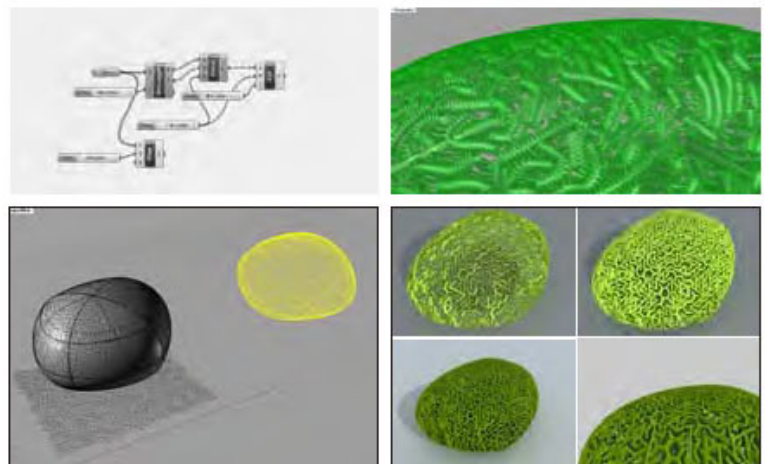
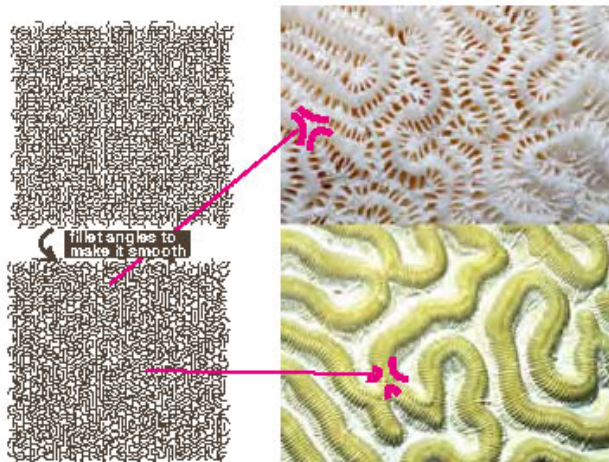
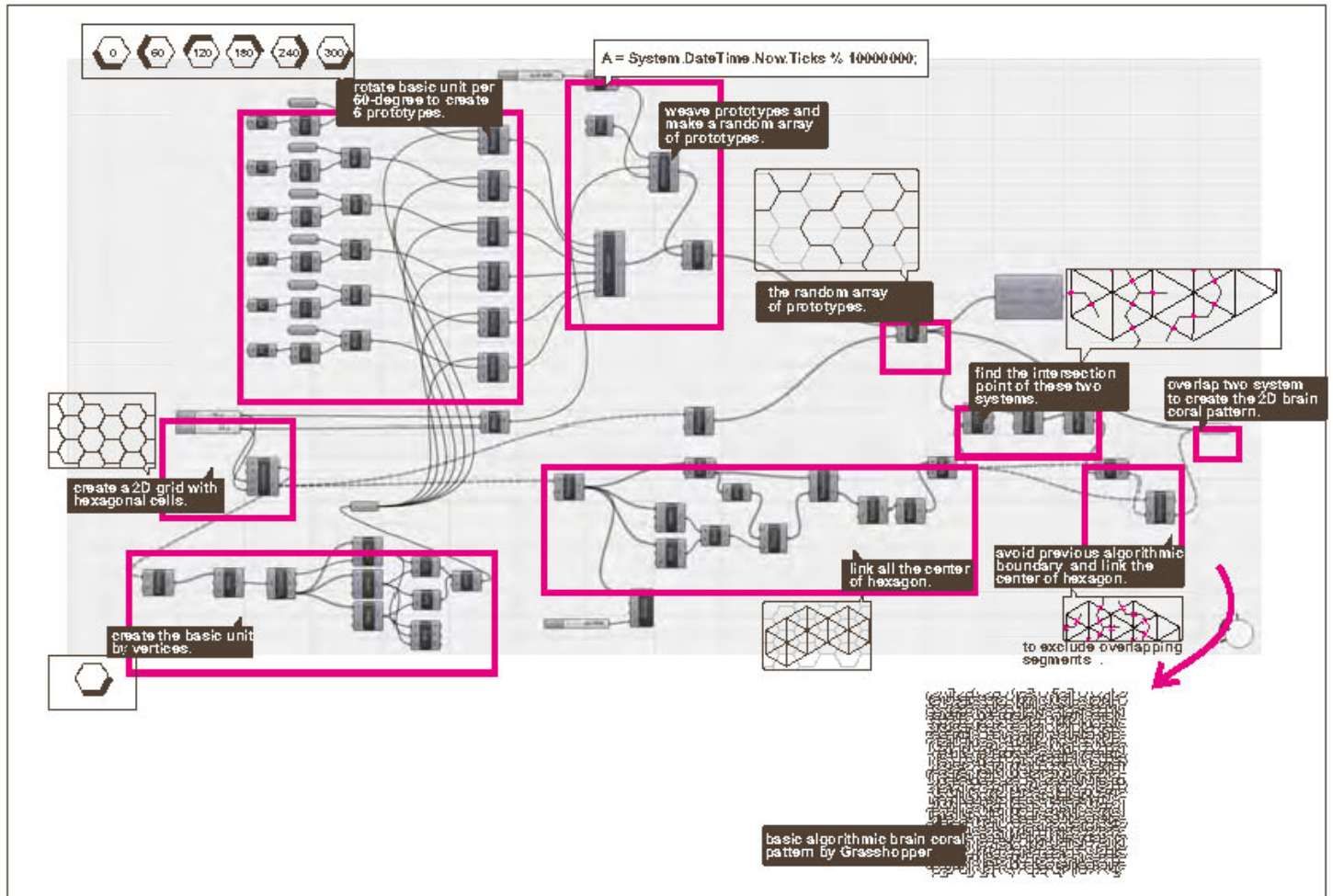
strategy

first to make three prototypes and then create a 2D grid with triangular cells, find each endpoint of triangle then randomly put the prototype on it and randomly rotate the prototype. (but the problem is the geometric model is too fragmented, each prototype needs to avoid isolating.)



Phase 1

Creature Study >>
Rhino & Grasshopper
Software Training



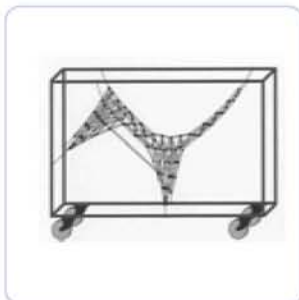


brain coral pattern



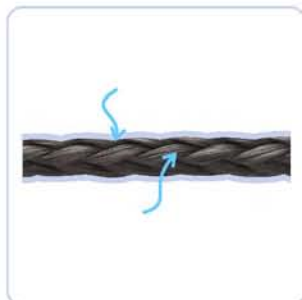
Phase 2

Material Study >> Furniture Design Special Methods of Construction



The limp braided chair is saturated in an epoxy solution, hung within a frame in the desired form, and placed in a room heated to 80° C. until the rope (silky carbon fiber covered by a cotton-like, soft aramid sleeve) becomes rigid and extremely strong.

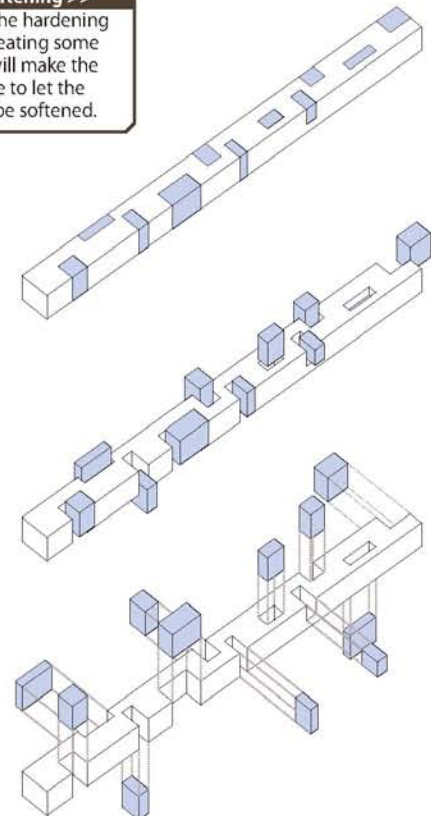
material hardening >>
by using epoxy resin penetrated into the fiber of the rope and occupied the aperture to let the rope lose the space to active.



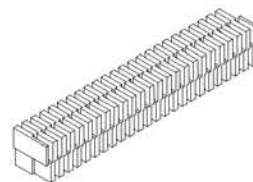
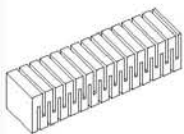
material softening >>

instead of the hardening concept, creating some apertures will make the active space to let the rigid body be softened.

<< material softening
material hardening >>



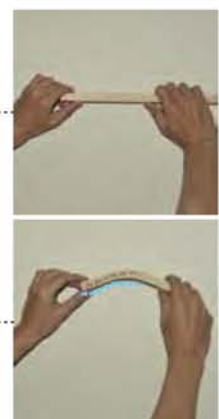
material softening >> kerfing

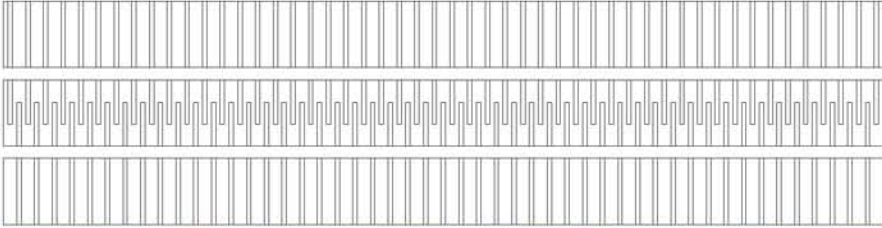


2D bending 2-side >>
because both sides have "bending - space" to bend, the wood stick can be curved in two directions.

2D bending 1-side >>
kerfing on one side will make the wood stick be curved in one fixed direction.

3D bending all-sides >>
a spring-like wood stick by using the kerfing method will get more freedom in bending directions.



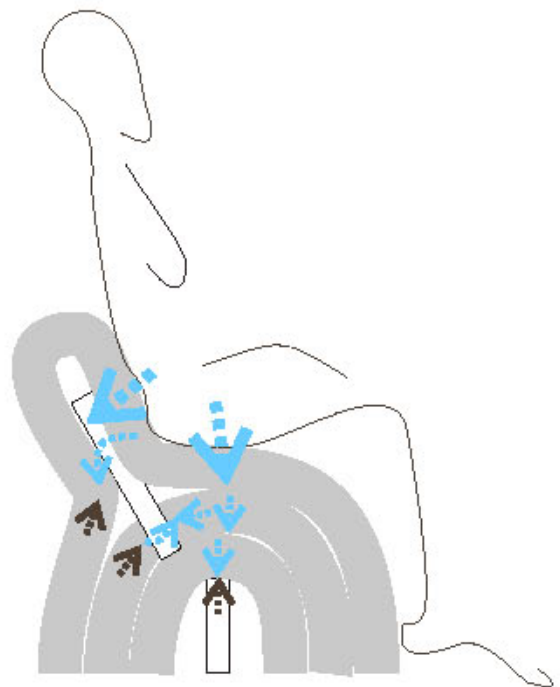
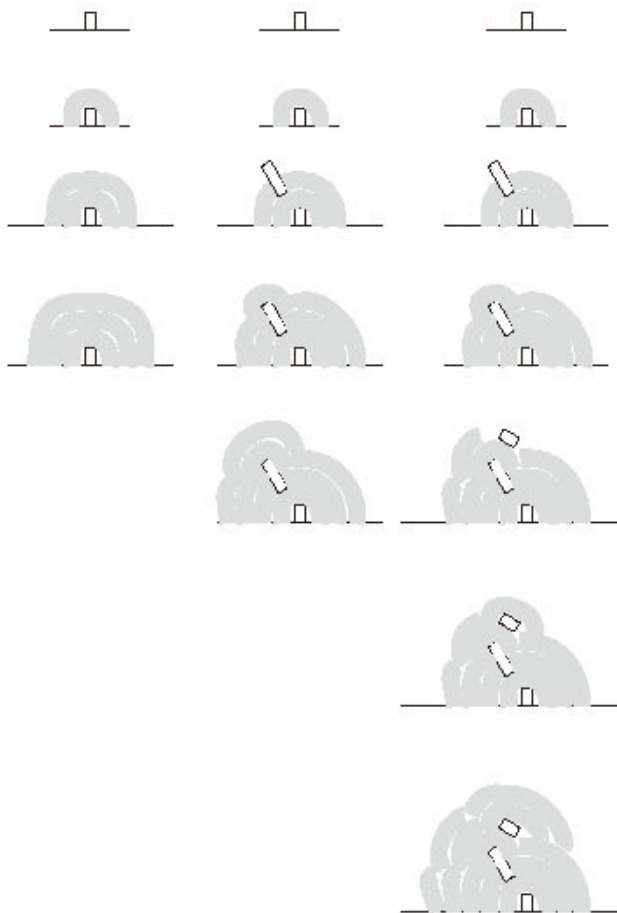
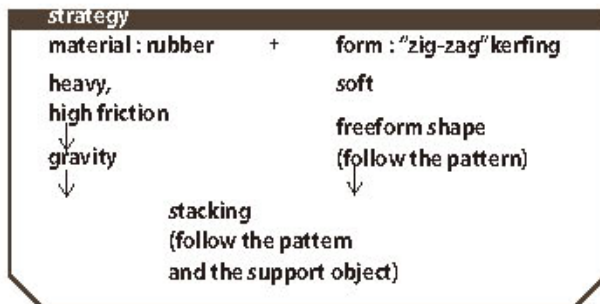


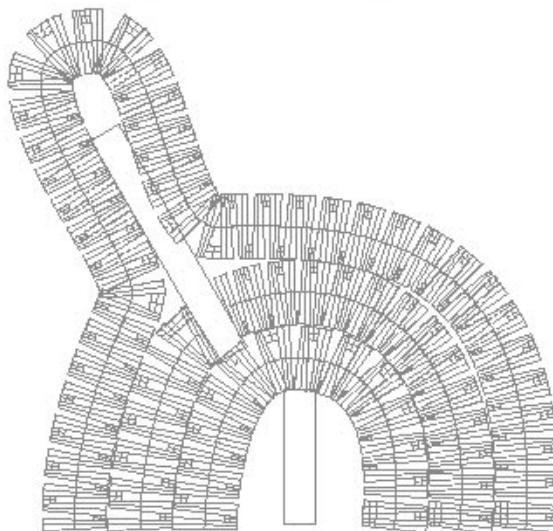
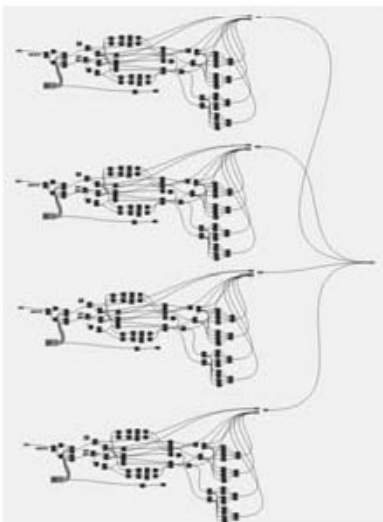
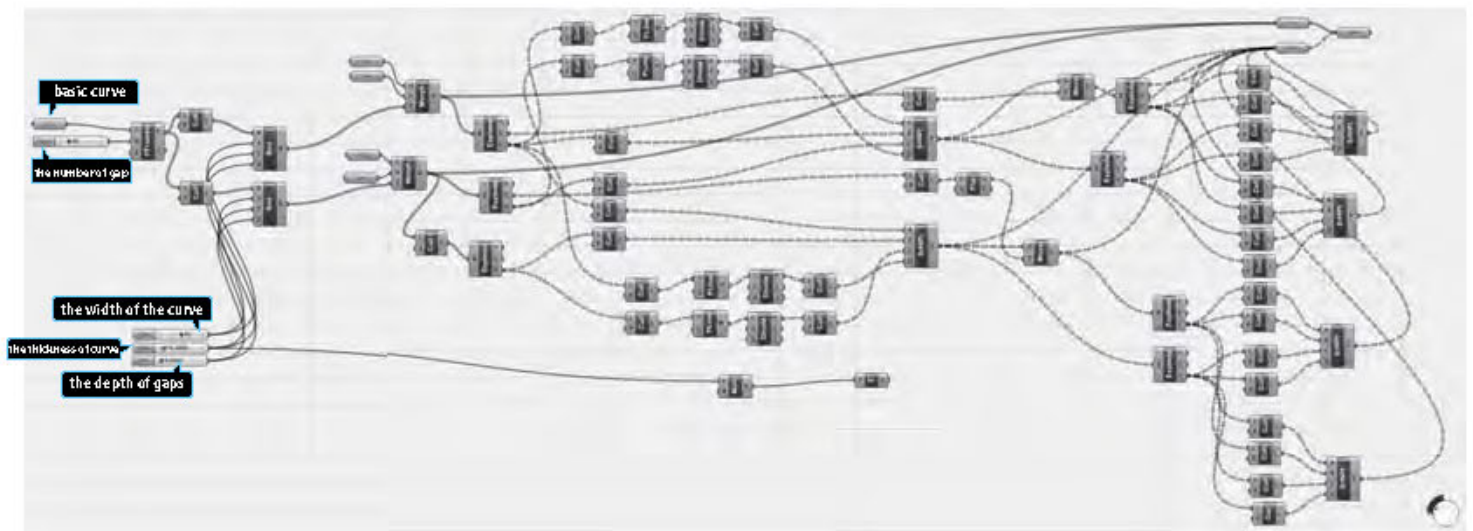
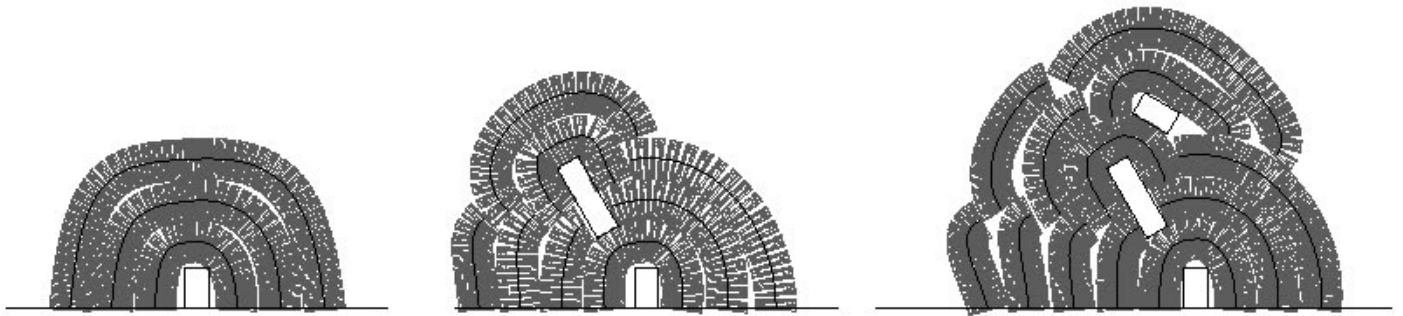
the red wire occupied kerfs so the wood stick bend to the other side.



Phase 2

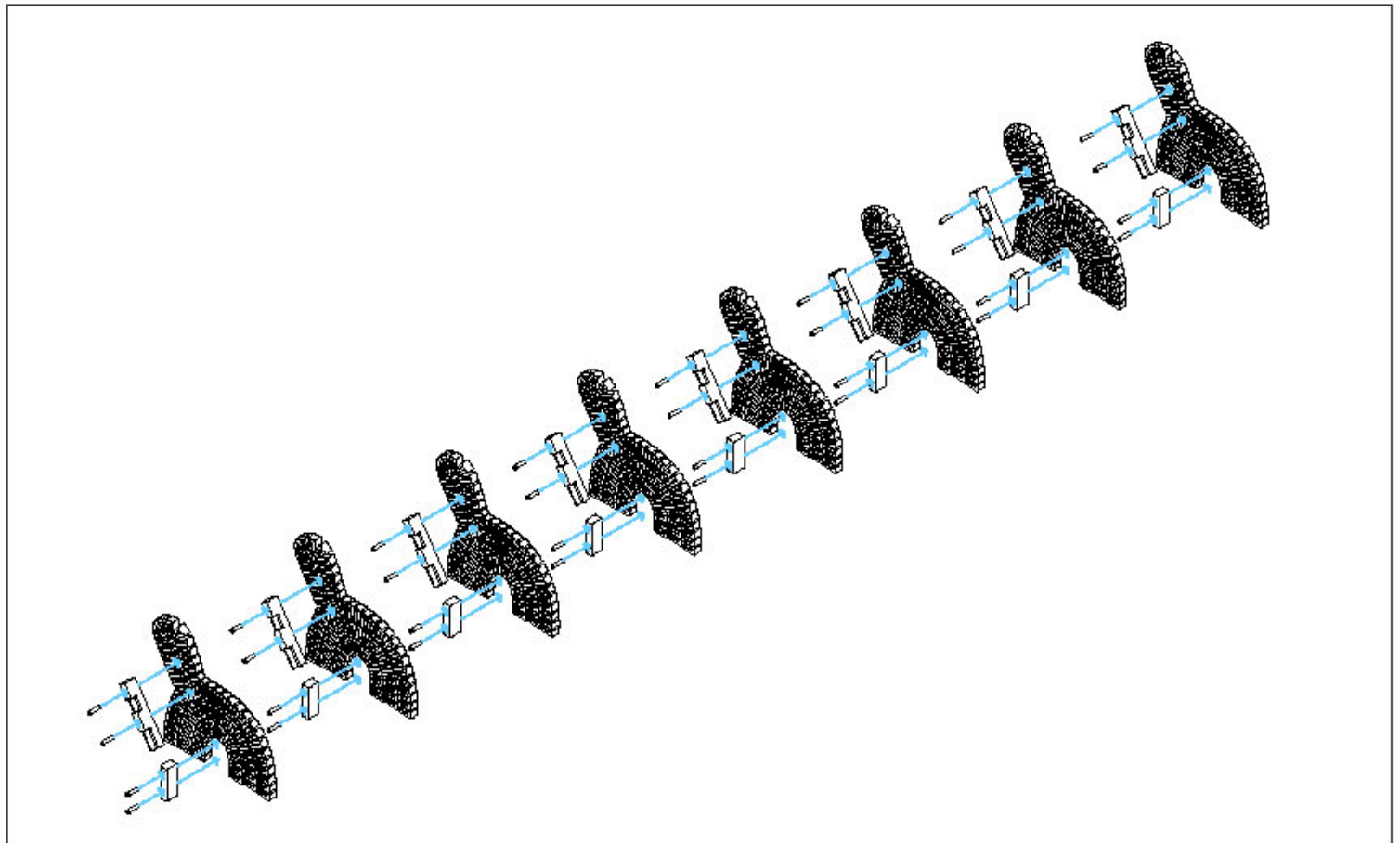
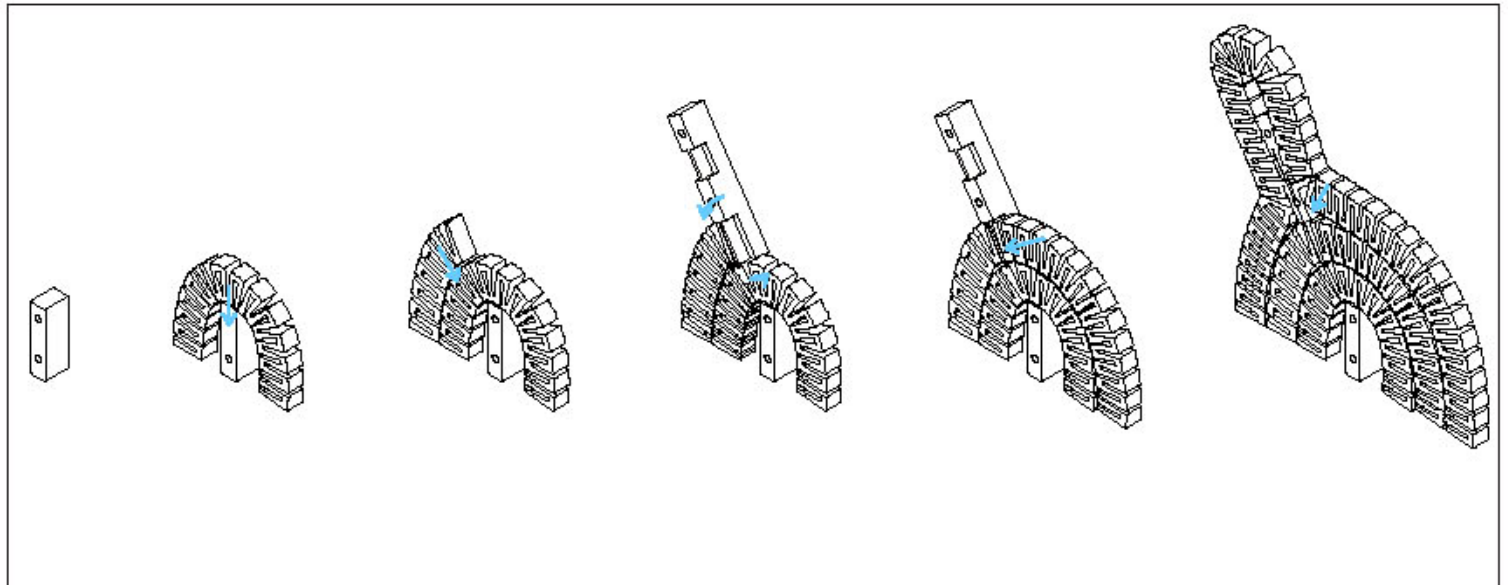
Material Study >>
Furniture Design
Special Methods
of Construction





Phase 2

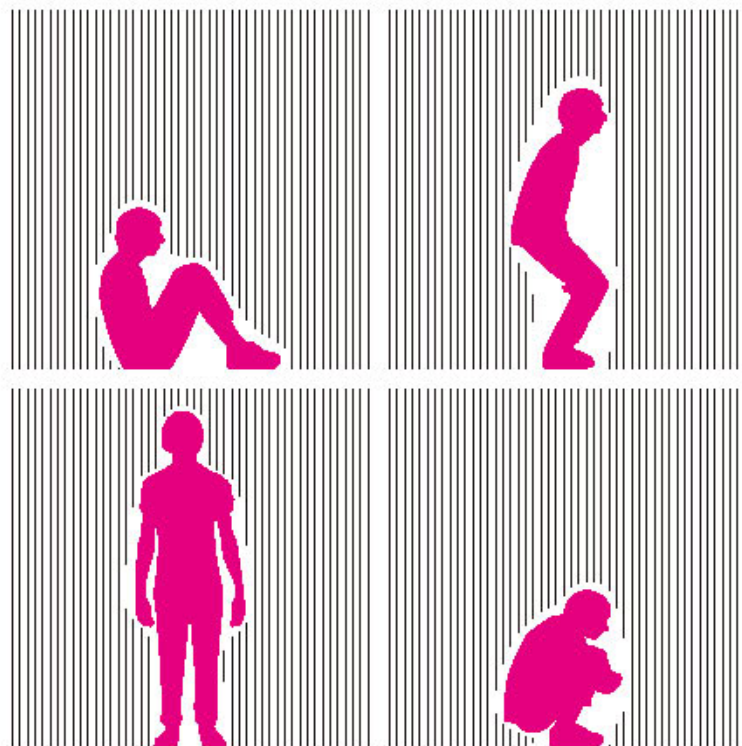
Material Study >>
Furniture Design
Special Methods
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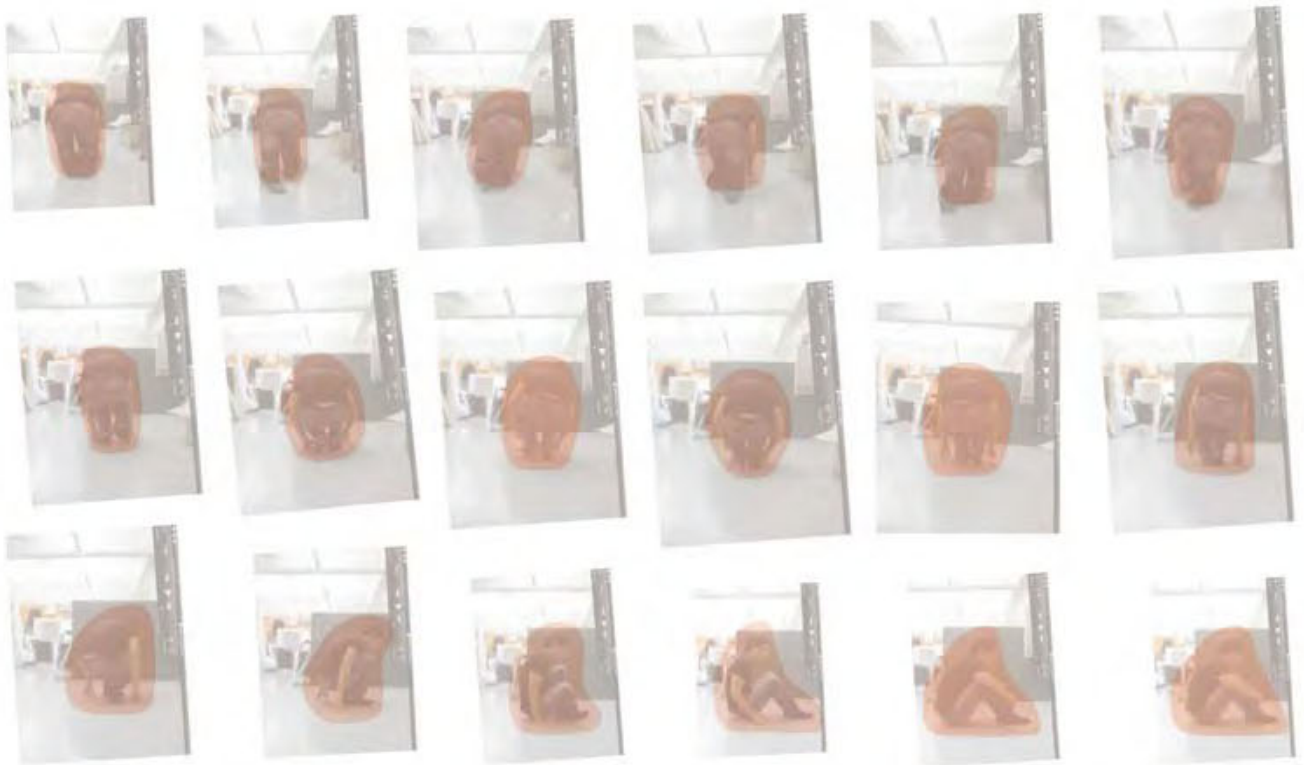
Phase 3

Pavilion:
Body, Nest and
Computation >>
Computational Design
& Fabrication



we extend the human body boundary and use it to define the space which also define by the transparent tube people inside are in the space within a space that create a sense of coated room that you can hide yourself in



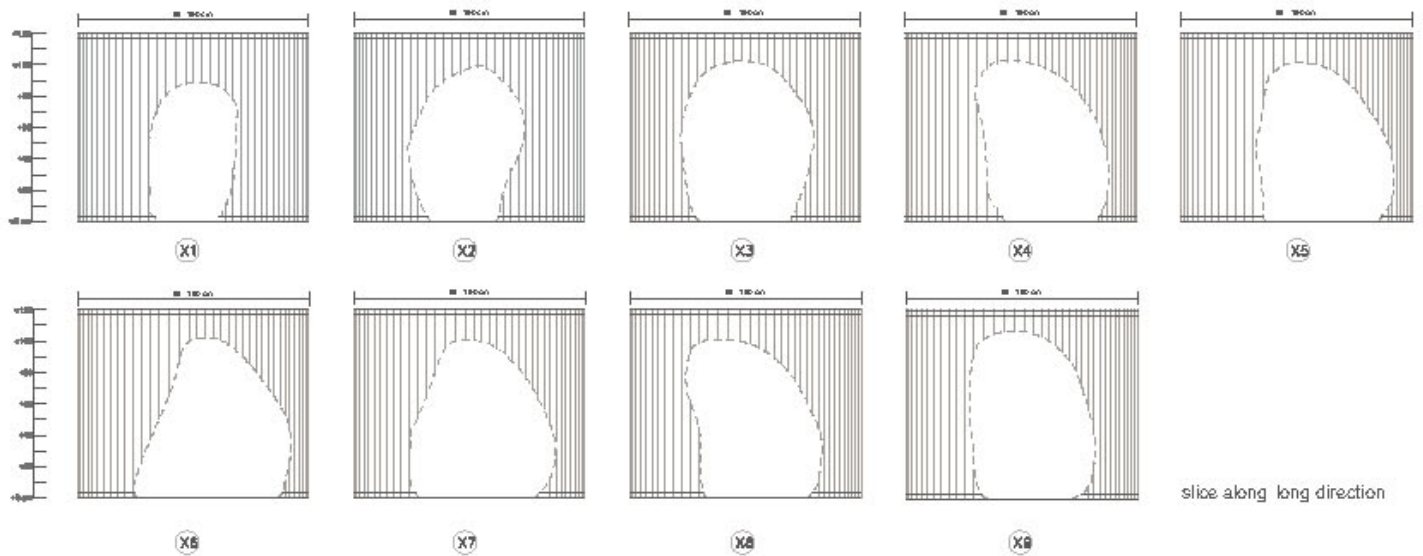
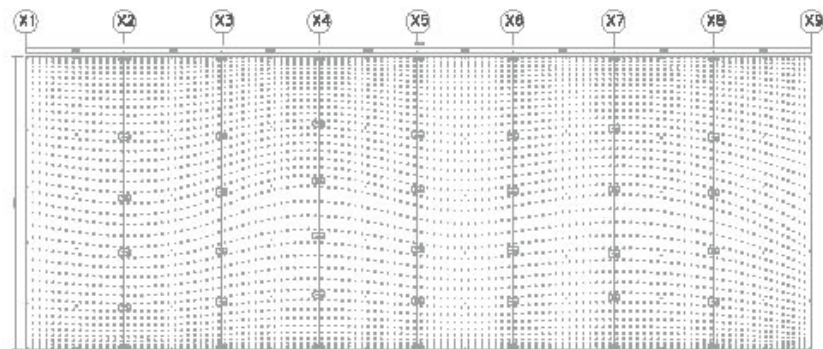
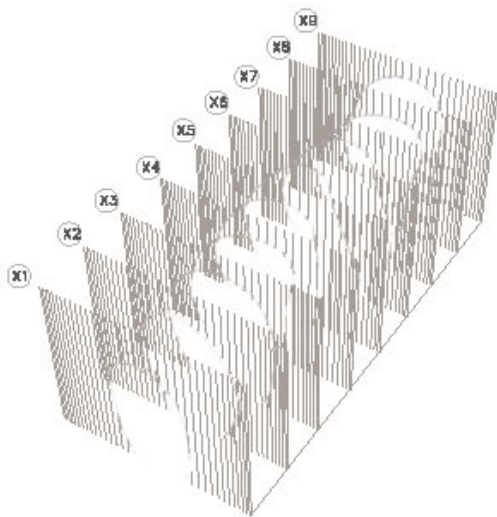


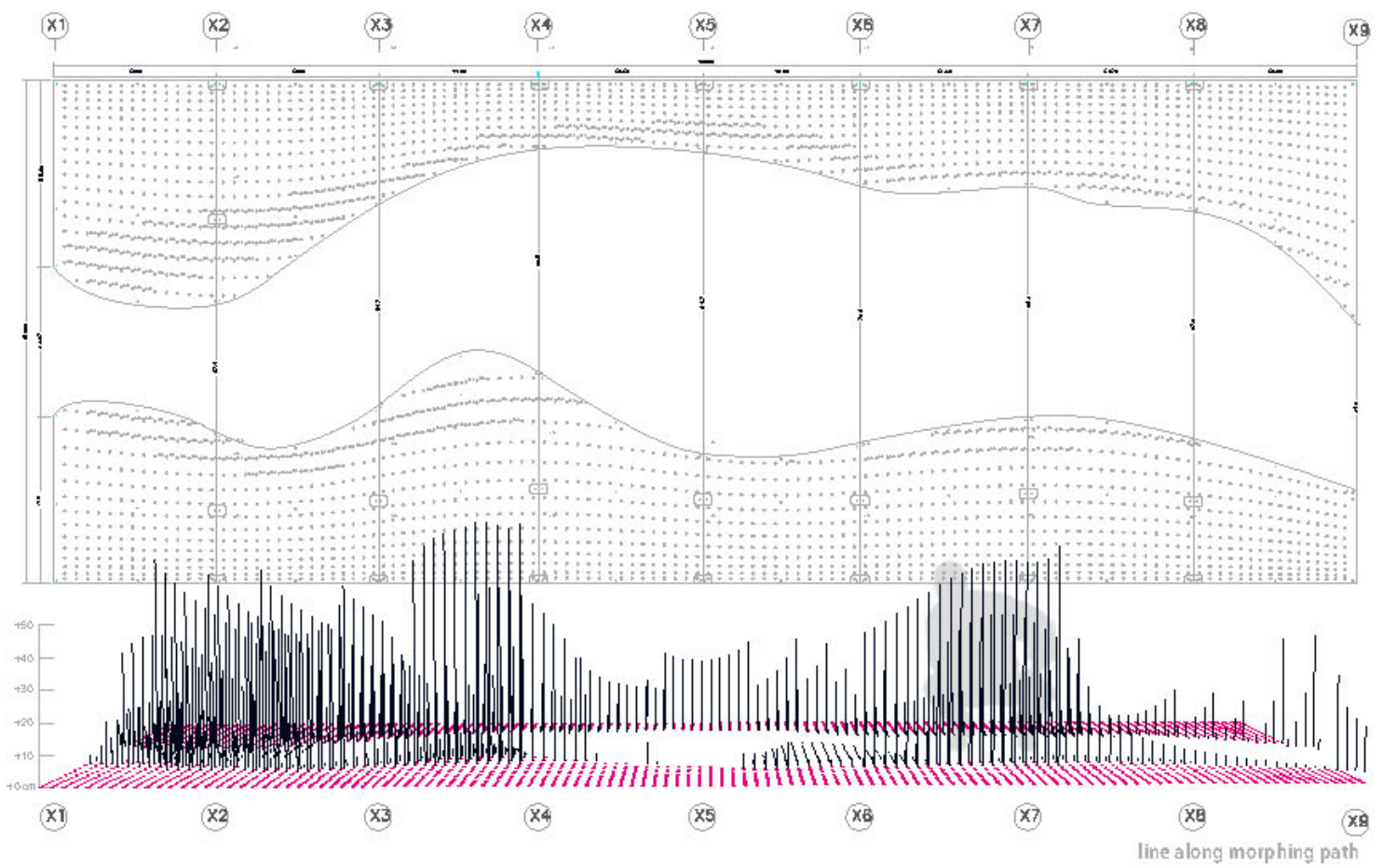
a series of movement of hiding into a small space define a series of boundary



Phase 3

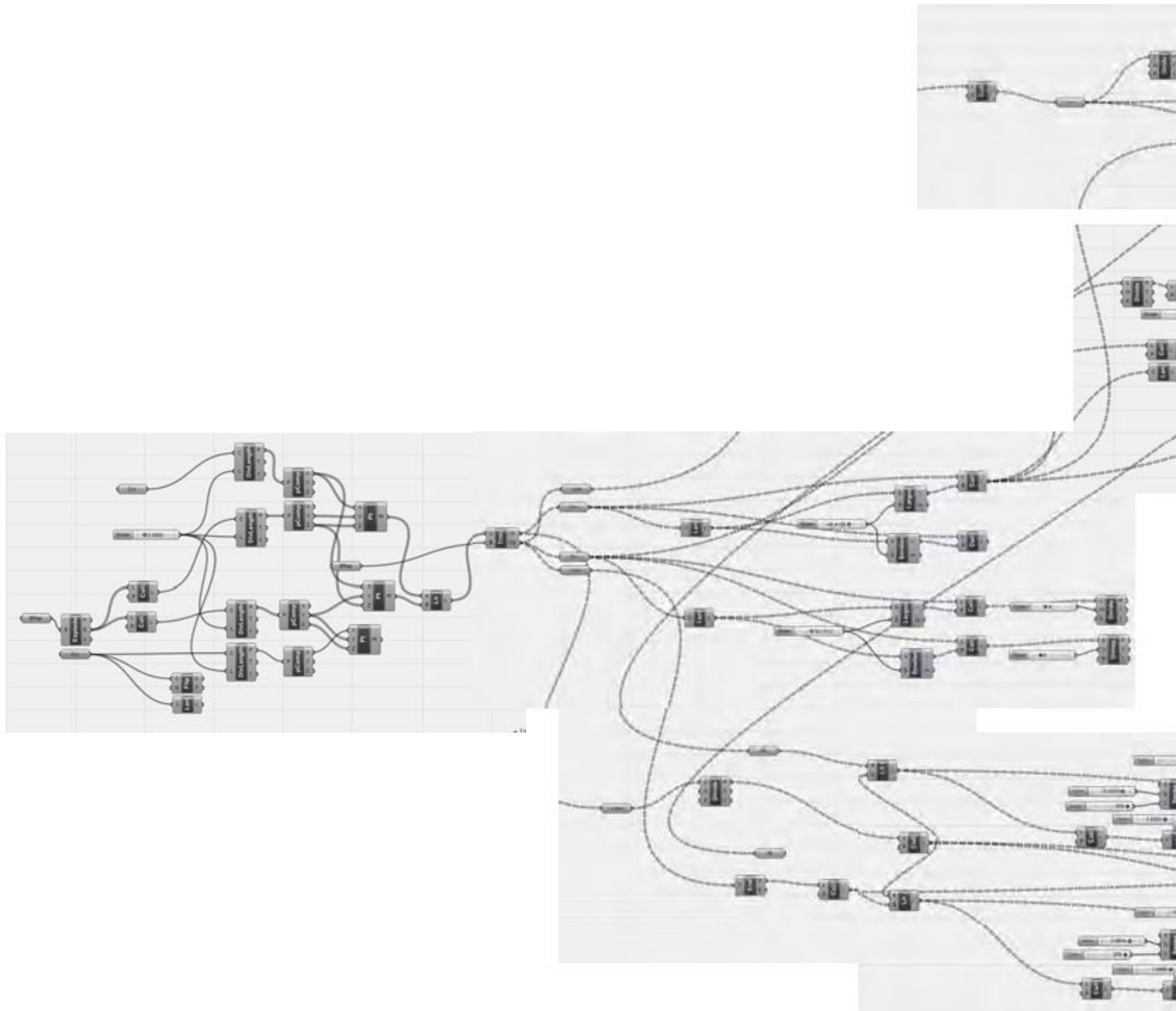
Pavilion:
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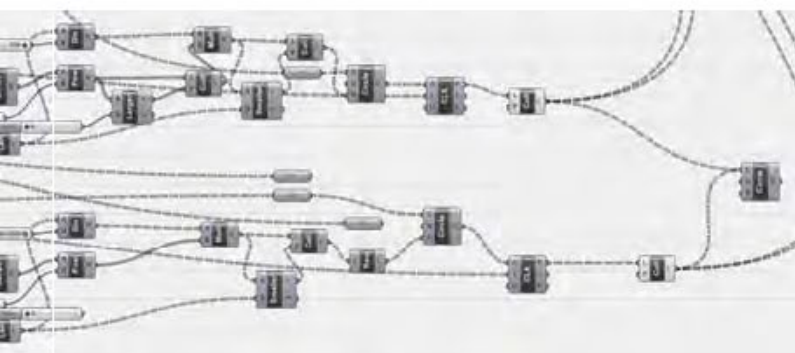
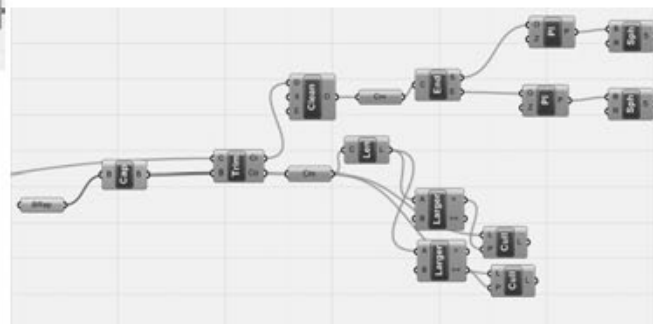
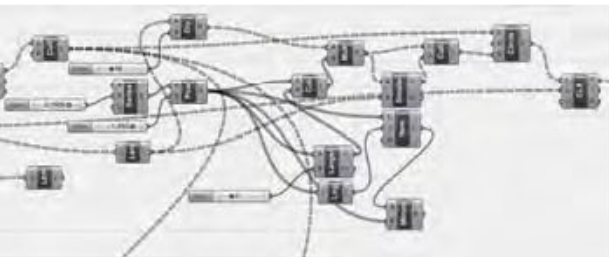




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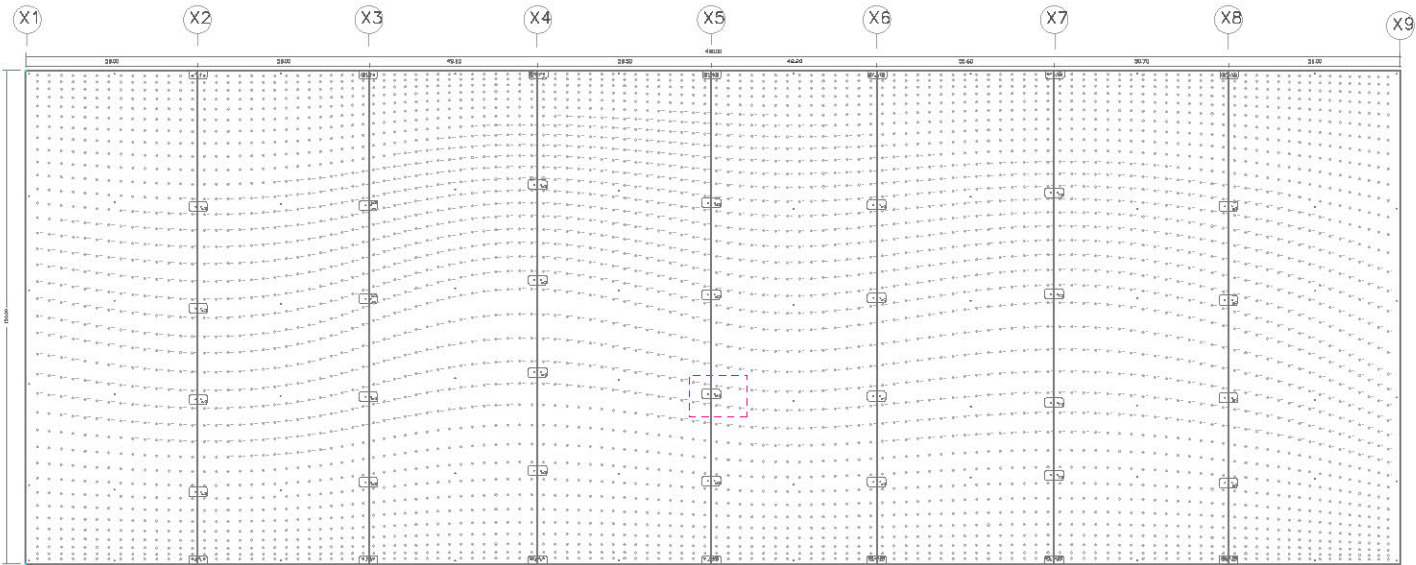
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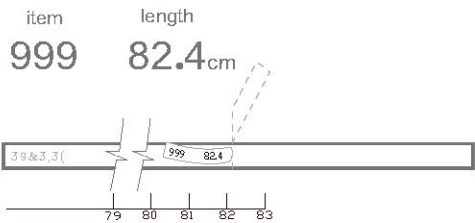
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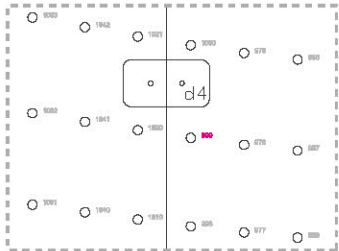


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949	39.6	993	50.9	1037	82.8
950	45.0	994	56.9	1038	86.5
951	50.1	995	61.5	1039	79.6
952	55.3	996	68.0	1040	85.9
953	60.8	997	77.5	1041	80.3
954	67.2	998	86.8	1042	85.5
955	77.0	999	82.4	1043	47.9
956	85.9	1000	68.7	1044	24.8
957	82.5	1001	60.6	1045	19.3
958	89.7	1002	30.9	1046	18.5
959	95.6	1003	18.0	1047	18.4
960	26.0	1004	16.7	1048	19.2
961	20.9	1005	18.1	1049	51.2
962	17.9	1006	16.6	1050	23.8
963	15.1	1007	20.4	1051	27.5

check length list



set position and cut

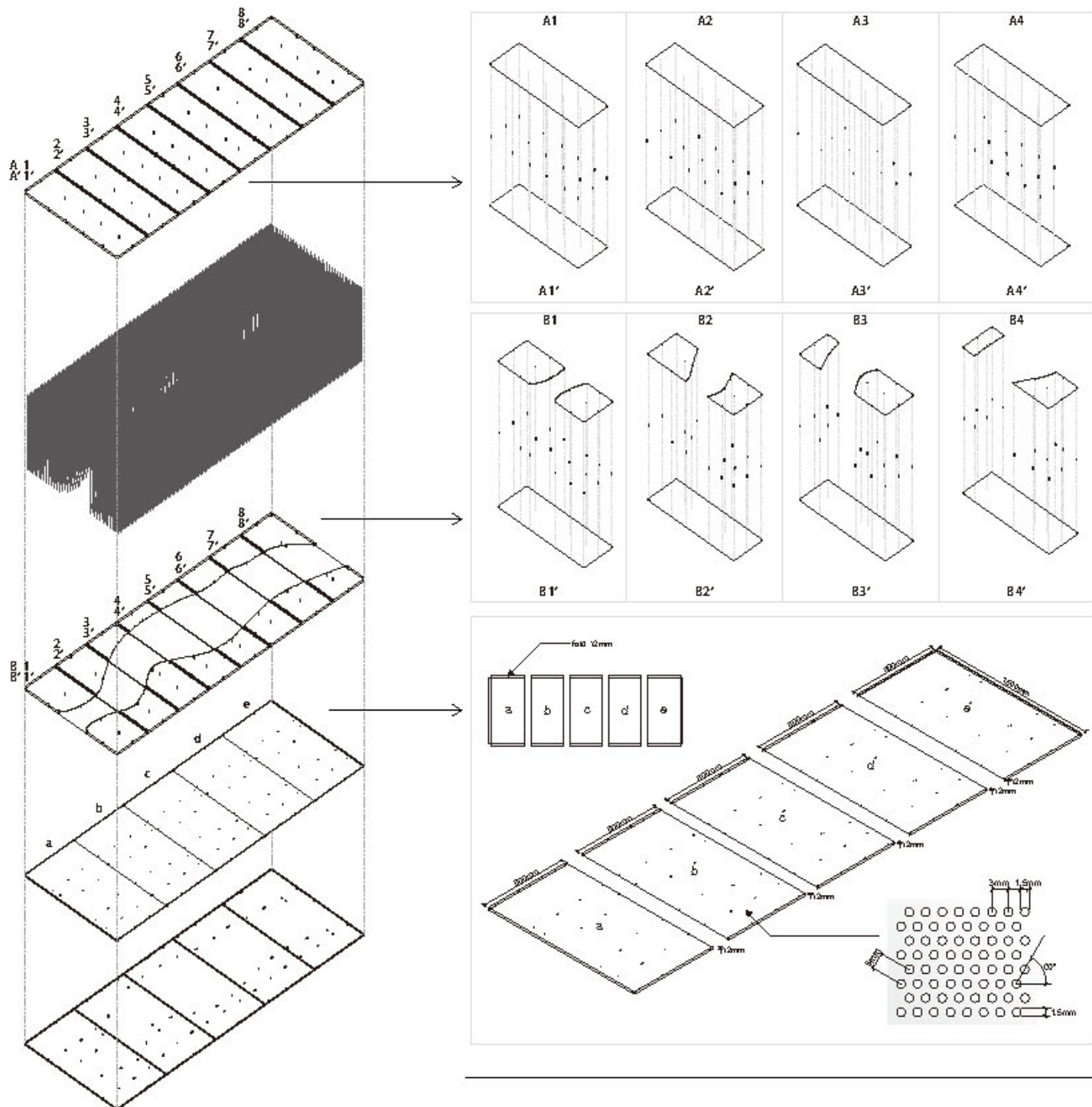


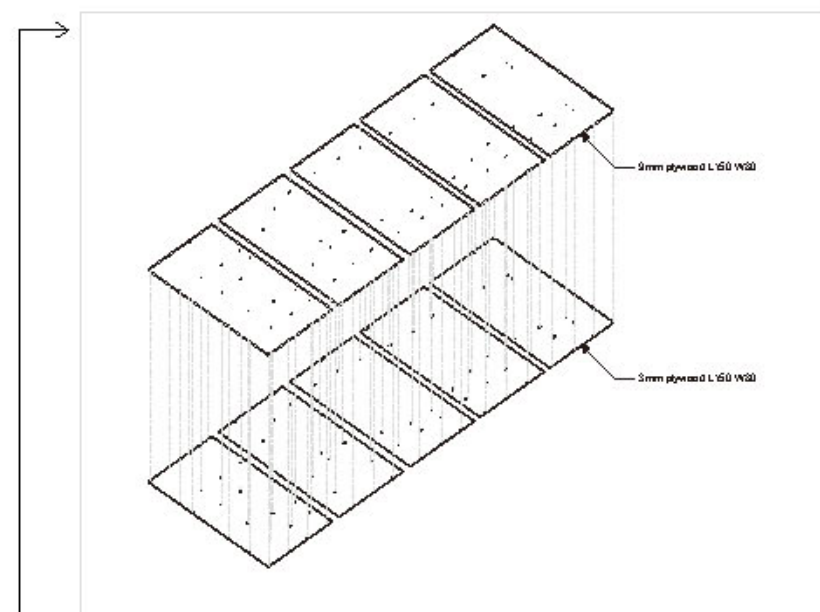
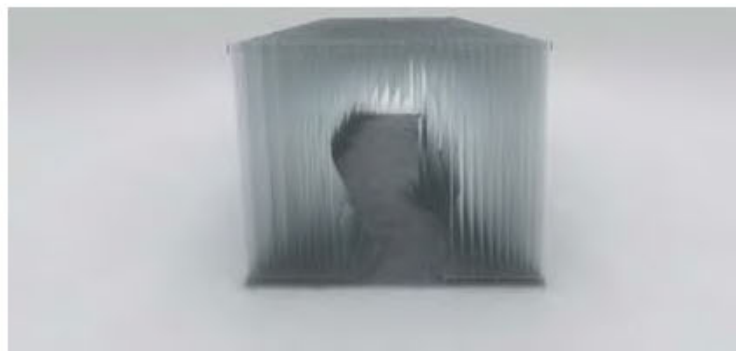
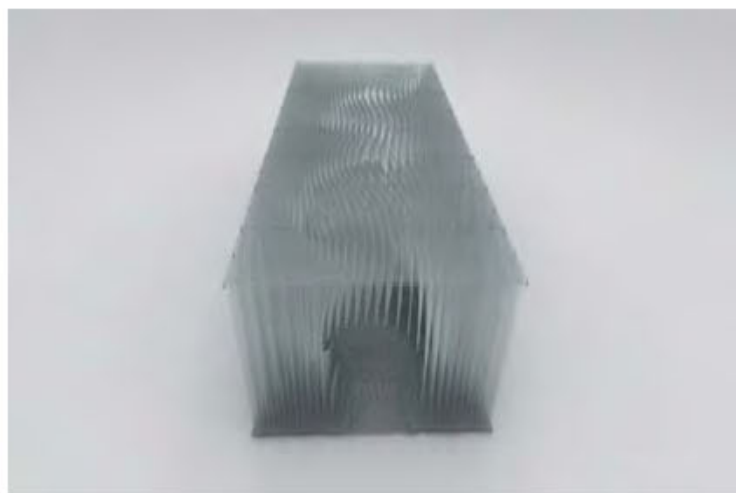
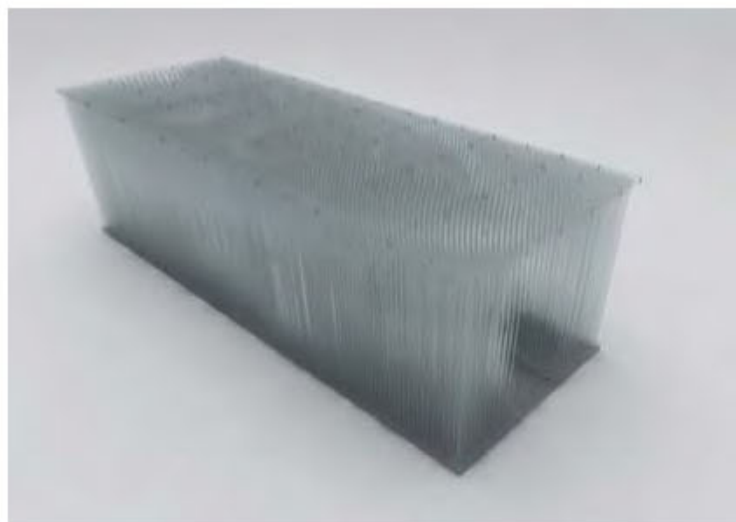
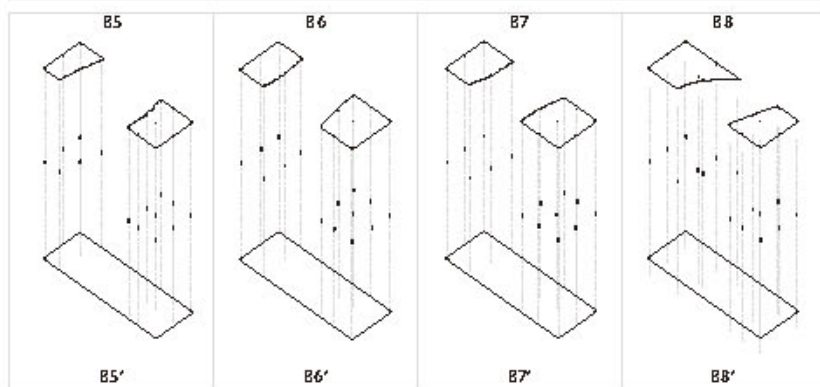
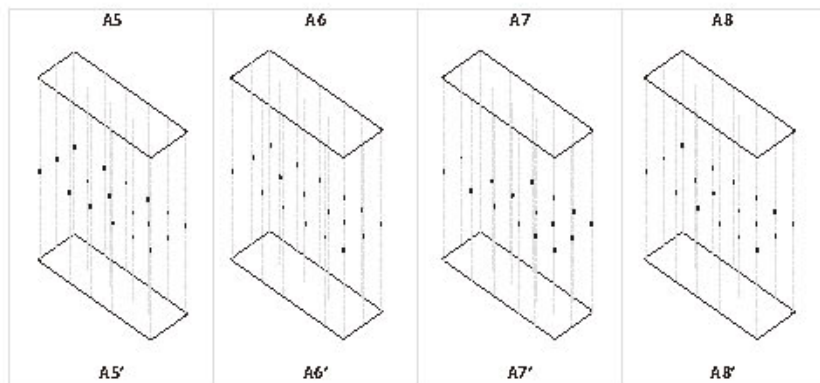
assemble into "999" hole



Phase 3

Pavilion:
Body, Nest and
Computation >>
Computational Design
& Fabrication

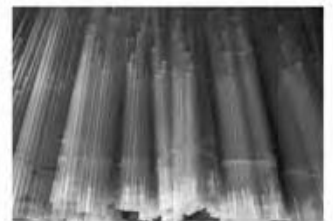




Phase 3

Pavilion:
Body, Nest and
Computation >>
Computational Design
& Fabrication





Phase 3

Pavilion:
Body, Nest and
Computation >>
Computational Design
& Fabrication



Architizer
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Projects

BACK

Taiwan NCTU Spring 2010 Studio

★★★★★ 3 votes

Taipei

A project by: [kesuke toyoda](#), [david hong](#)

[Architecture](#), [Interior](#), [Installation](#)

About

NCTU(National Chao-Tung University/国立交通大学建筑研究所)
Spring Studio 2010 Team LLC: 陳鴻升, 林冠宇, 林宜弘 Team
ACL: Carl Christofferson, 楊子亮, 陳秉儒

Two pavilions designed and constructed as a result of NCTU's spring studio final production. The studio is themed by computational design and fabrication, and 6 students are divided into two teams, each required... [read more](#)

Location	MOCA Taipei Taipei
Client	National Chao-Tung University
Building status	student work
Site type	urban
Budget total	6000 USD

Project Leader

[kesuke toyoda](#)
tokyo, japan
As Studio Instructor

[david hong](#)
As studio instructor

Team

[Add yourself as a Team member](#)

Consultants

[Were you involved as a consultant?](#)

Photostream

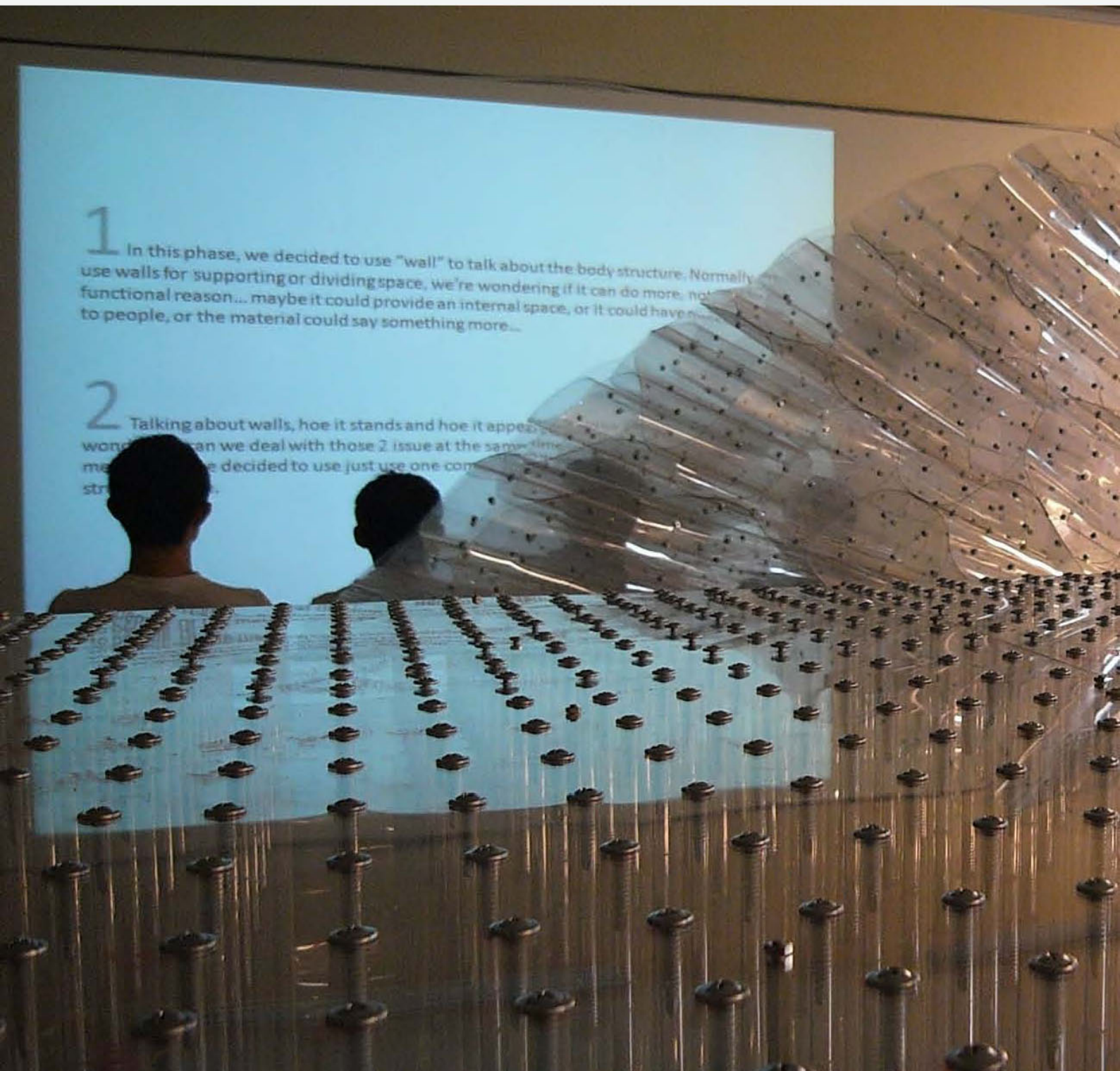
[Upload your own fan images for this project](#)





Phase 3

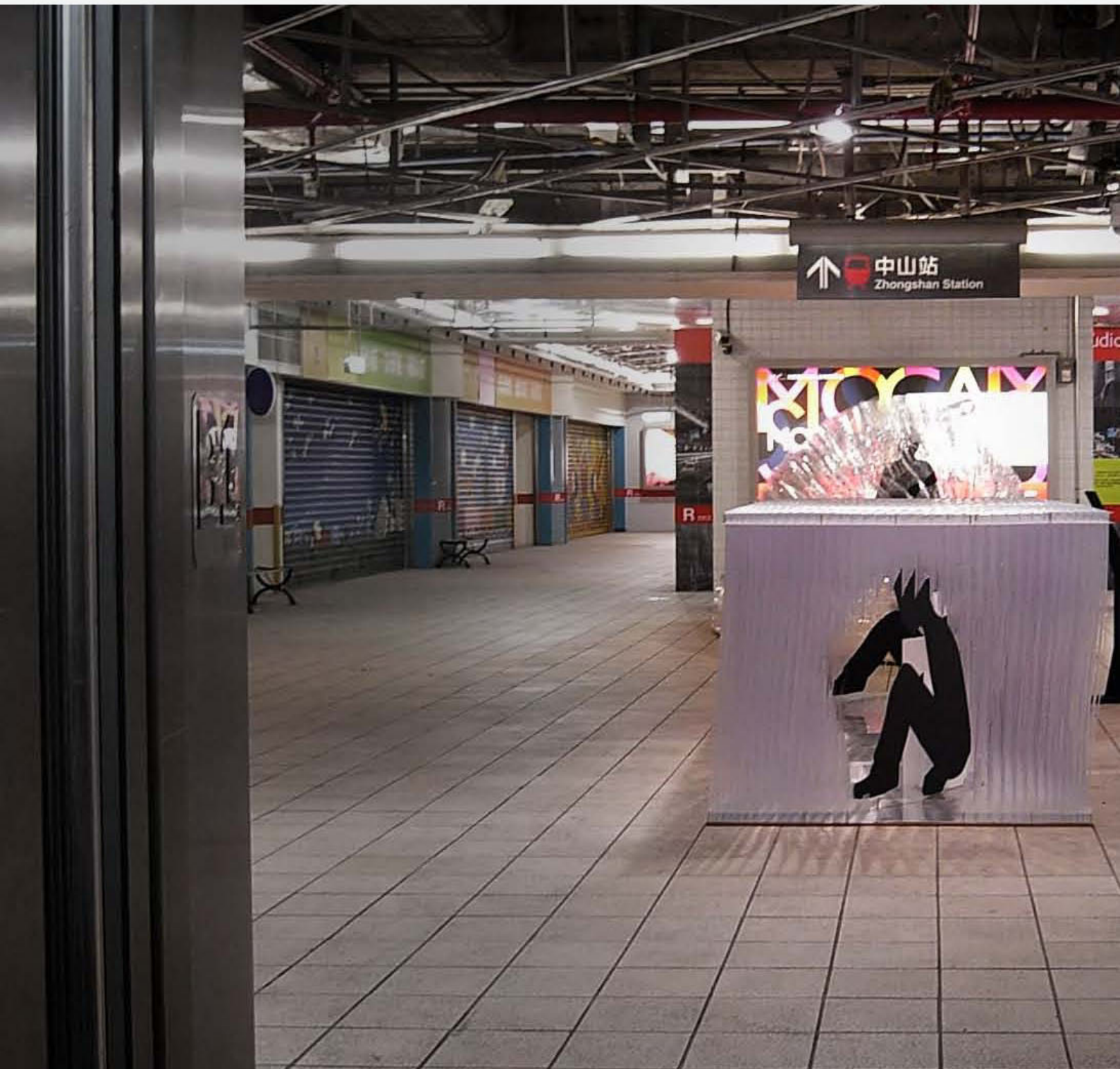
Pavilion:
Body, Nest and
Computation >>
Computational Design
& Fabrication

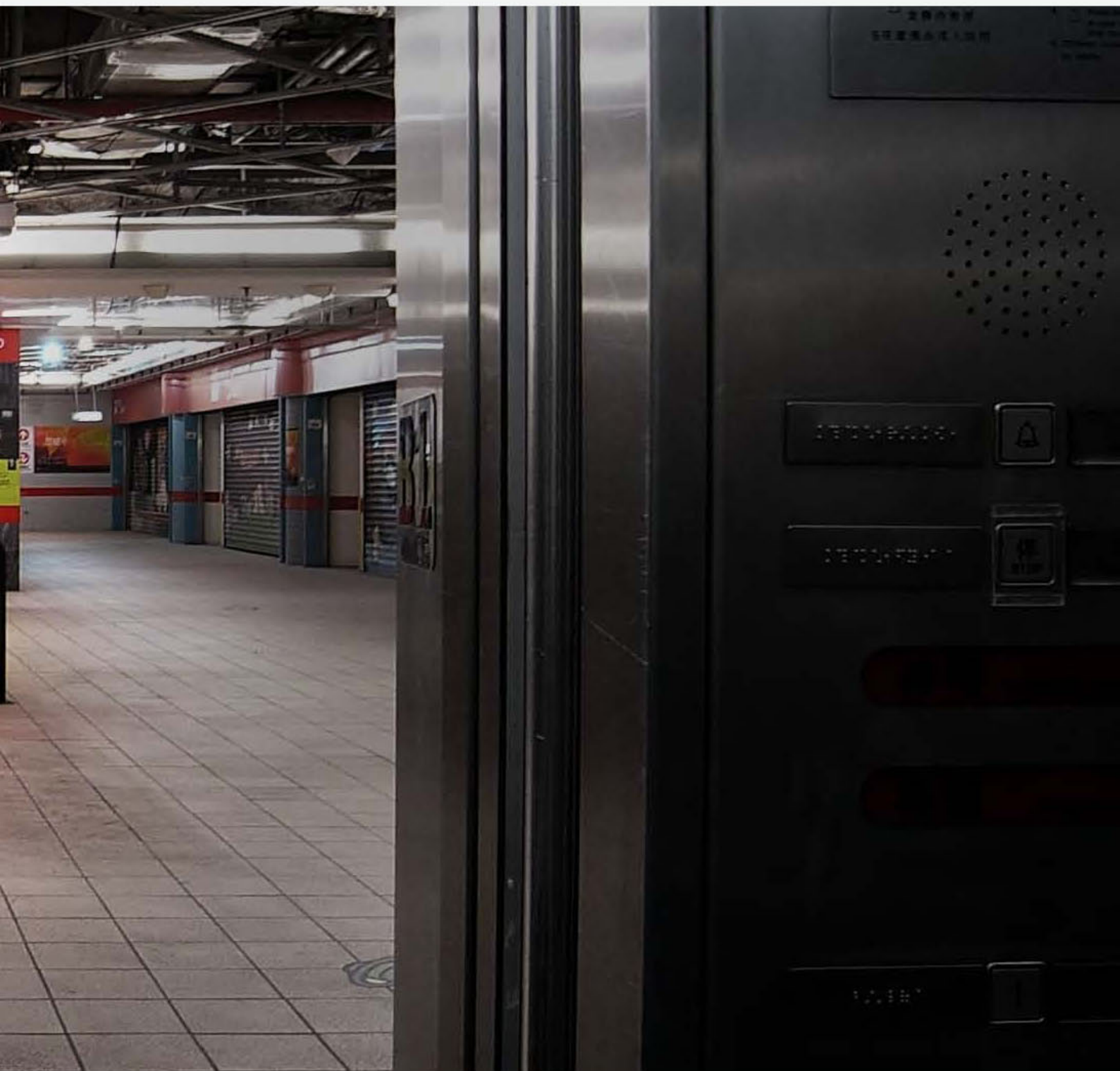




Phase 3

Pavilion:
Body, Nest and
Computation >>
Computational Design
& Fabrication







THE VERTICAL VILLAGE>>



an emergent space for social fluctuation

(2009 Spring)

Optional Studio

Tutor | K. C. Shen

Location >> Sin-Yi development district B6, Taipei

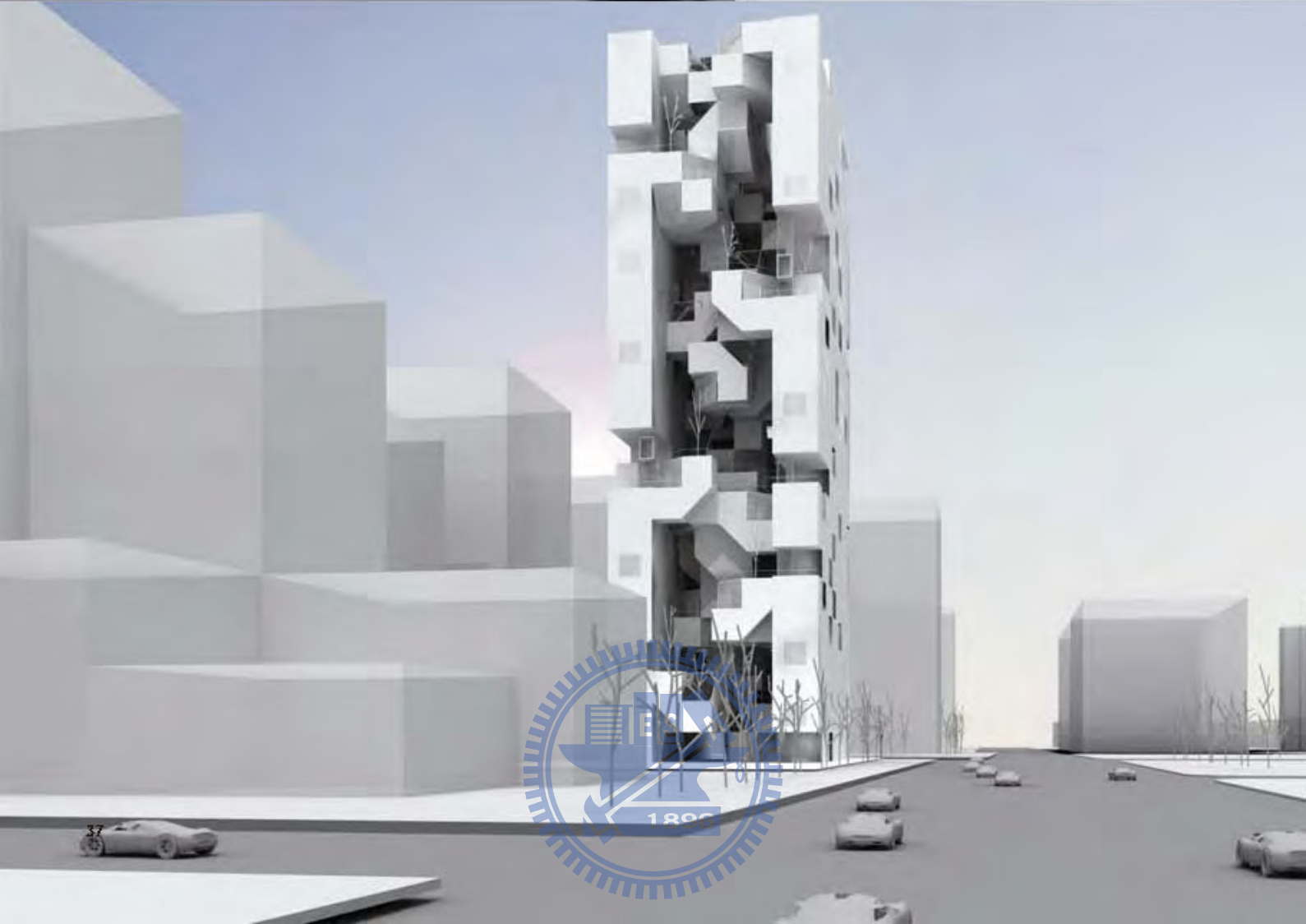
Studio Introduction >>

台灣都市化程度極高，大多數人住在都市環境中，而集合住宅又是臺灣最普遍的居住型態。集合住宅在有限的土地上容納較多的居住人口，「多層」和「共用」是其特點；相對的綠地少、私密性差、生活空間壓迫。現住的集合住宅中，人並不好，住在離地幾公尺高的樓層，靠電梯上下，因此人和土地也脫了節。在台灣的都市中，集合住宅的型態可能是不已的房地產的保守，住宅的問題似乎未必都是必然的，台灣房地產的保守，以及法規的限制，使得台灣集合住宅永遠脫不了幾種長相。台灣的住宅型態正逐漸發展為以經濟考量為主的均質模式以及違章建築的特有台灣文化，我們是否可能以其他方式來改善這些現況，是否可能以某種方式強化這些場所，使其維繫原有的活力，同時能住入高密度的容納力，兼顧經濟效益與生活品質，使一般中產階級也有機會入住在邊邊三房兩廳，違章建築的有趣性是否可能有效整頓不變的台灣特有的新建建築型態？本案希望探索可以表達台灣社會狀況的新建築型態且能擺脫傳統模式的限制。

Description >>

本案嘗試以現存台灣非正式都市現象(informal urbanism)，以南機場公寓住宅型態為出發點進行探討，根據城市空間不斷擴張的需求，面臨高密度發展的狀態，鄰里形成了相當緊密的社群關係，並也結合了極其濃厚的地方獨特性，是一種特有的「都市生態」。本案在此尋找一種方法，在未來台灣城市面臨日益增進的發展需求與台灣既有鄰里生態相互結合，以垂直向上的方式延伸鄰里聚落的發展。





THE VERTICAL VILLAGE

an emergent space for
social fluctuation >>

PHASE I

informal urbanism research:

an emergent space for social fluctuation

>> Nan Ji Chang public housing

PHASE II

high rise residential building design:

the vertical village

>> Model in Sin-Yi development district

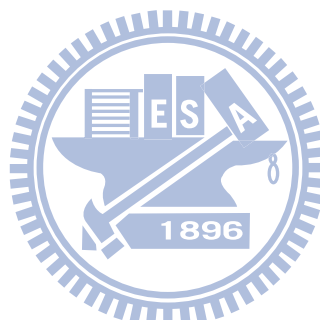


Educational Cooperation Program
MVRDV+T2F+NCTU GIA
The Vertical Village Design Studio



財團法人全坤建設文教基金會2010台灣區建築系所
學生競圖 都市集合住宅未來展入圍作品

數位資料：碩士論文 王國聰 Collaborative in Nan Chi Chang 2004





1. Plot
2. Home
3. No

PROJECT

an emergent space for
social fluctuation >>

Location : Taipei Sin-Yi development district B6

Building size: 40m x 28m x 96m

Housing units: 80 to 96 dwelling units.

Program: housing, community activity facilities

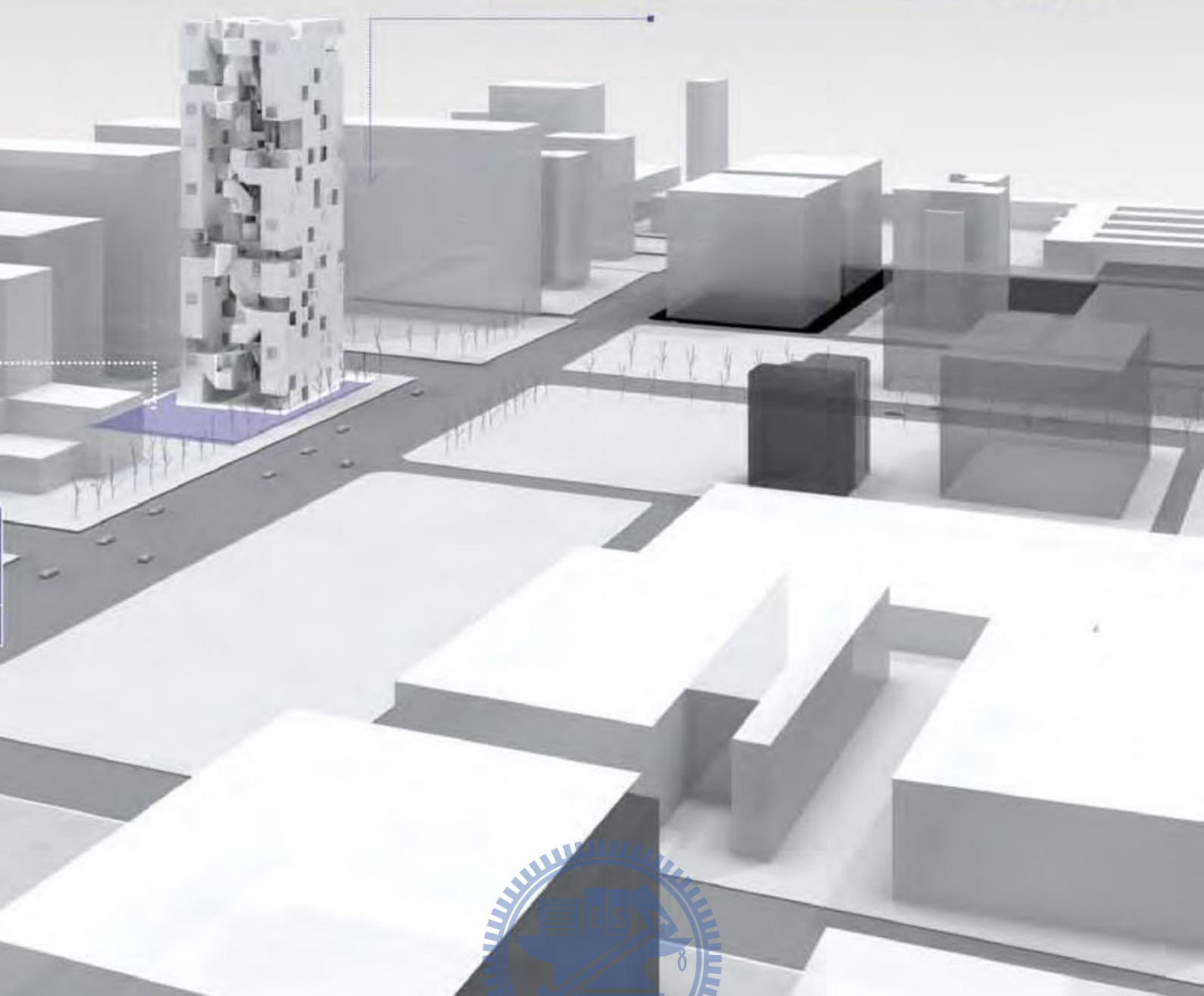
2009

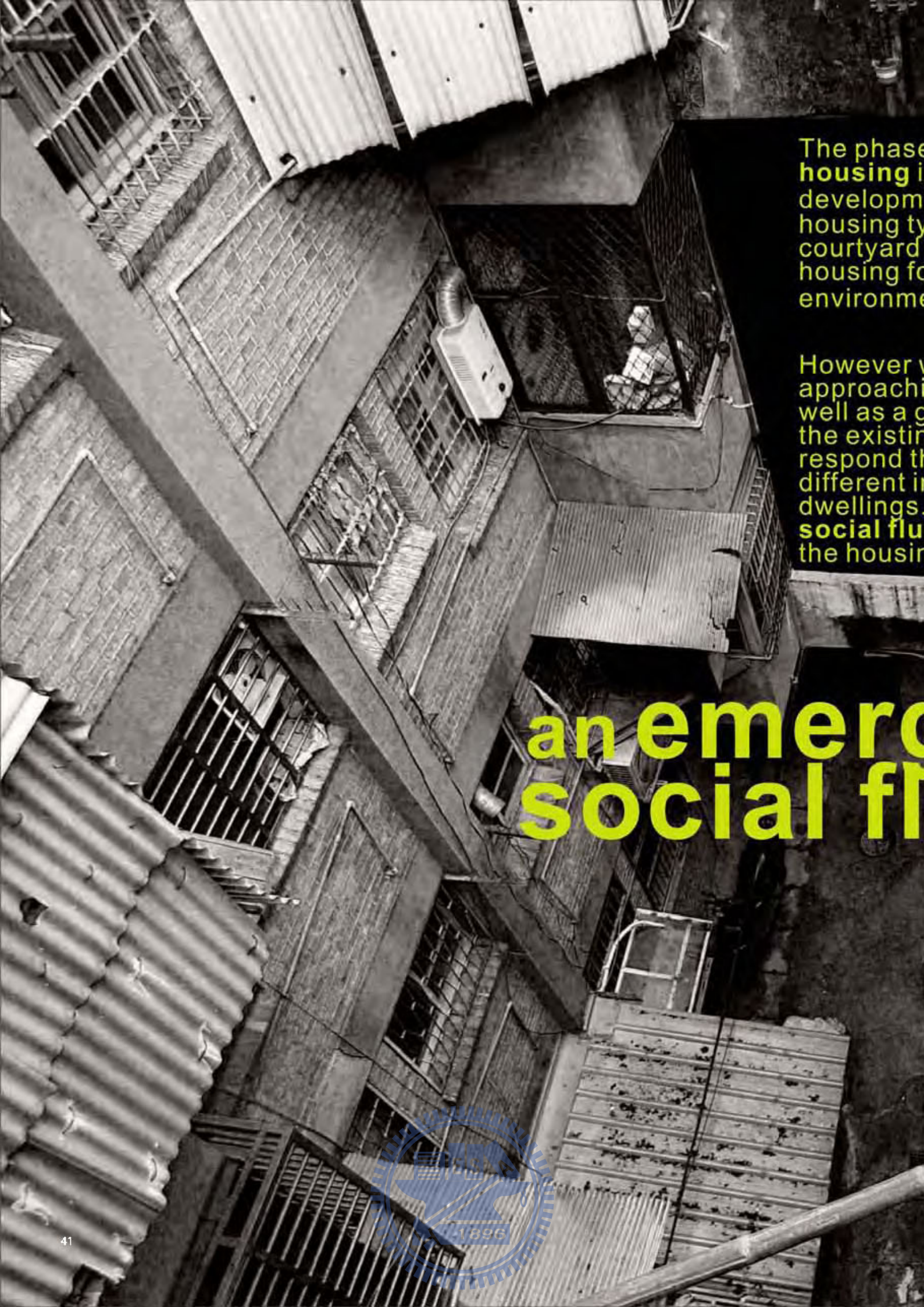
Spring&Summer
NCTU DESIGN STUDIO



lot size: 90m x 40m (3m sidewalk along two sides)
housing units: start with 50 units, later to be extended to 80 to 100 units. Up
height limit. (If it is airy and porous, it can go quite high. Limits come from the structure they choose.)

Site condition >>





The phase
housing i
developm
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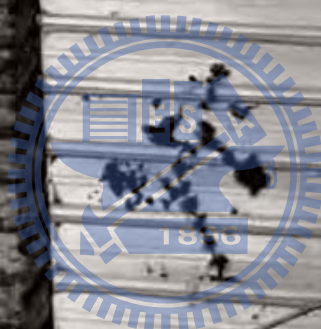




1 Nan Ji Chang public
is a beginning of the housing
ent in Taiwan in 1964. The
type changed from traditional
and row houses to the public
or cost effect and physical
mental comfort.

When the Taiwan society is
ing an aging population as
great diversity of family types ,
ing housing types are hard to
ne relationship between
nhabitants and their
The emergent space for
uctuation emerged based on
ng types here.

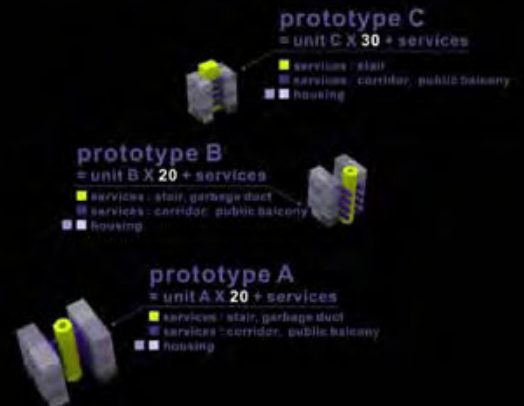
gent space for
uctuation >>



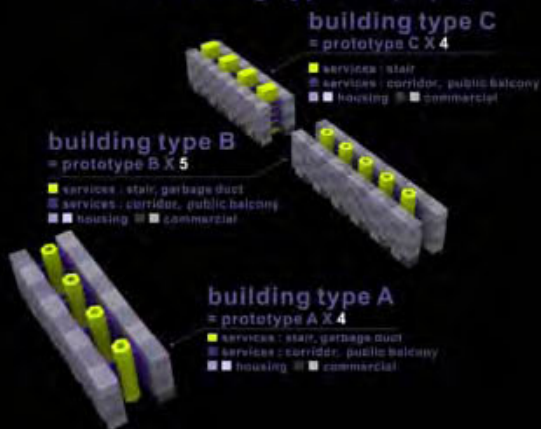
Dwelling unit types A, B, C



Prototype A, B, C



Building types A, B, C



block C

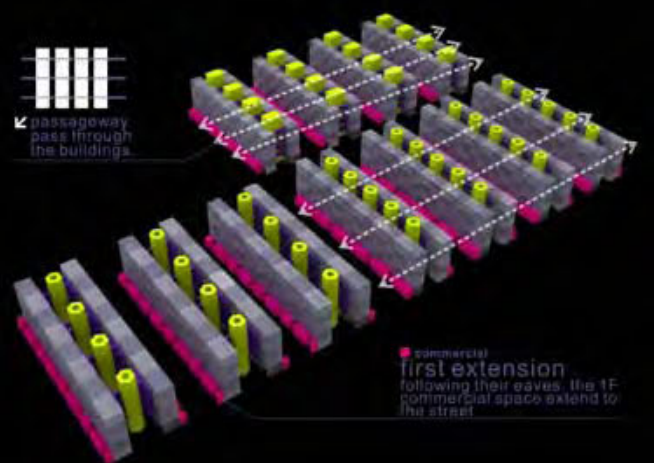
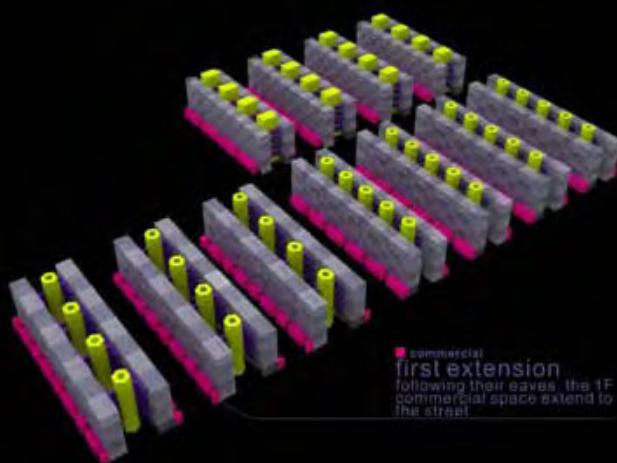
= building type C X 4

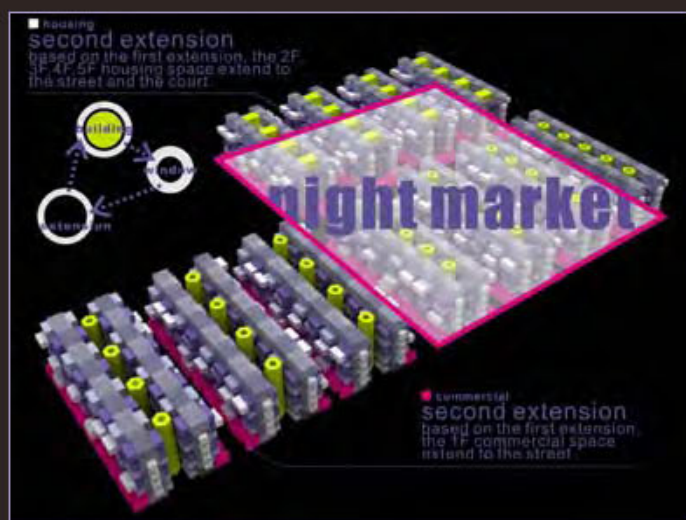
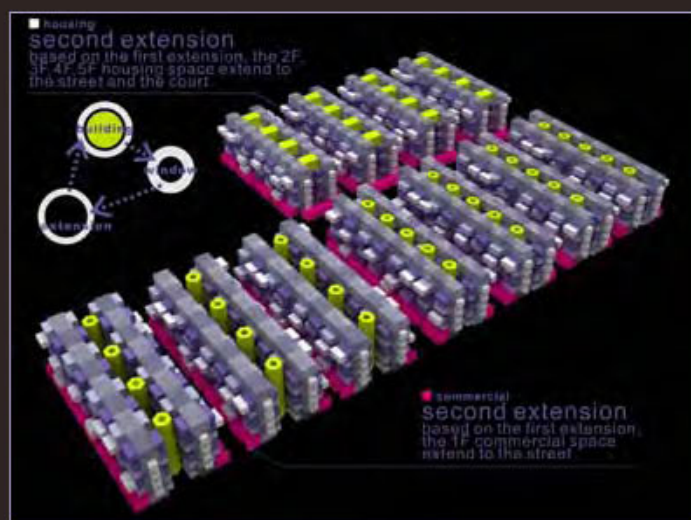
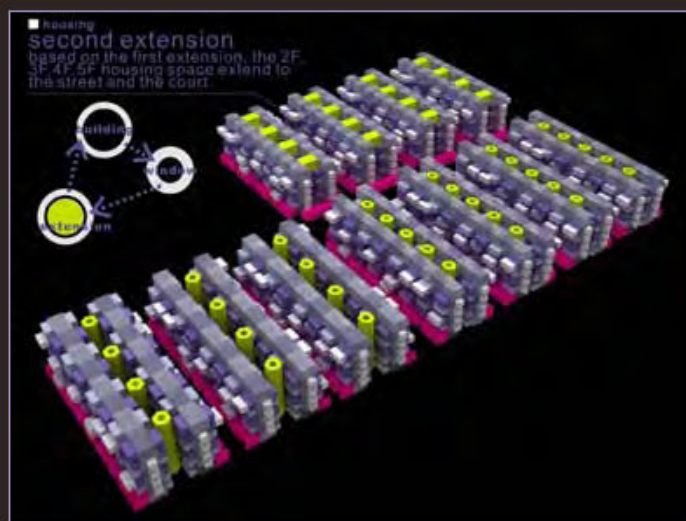
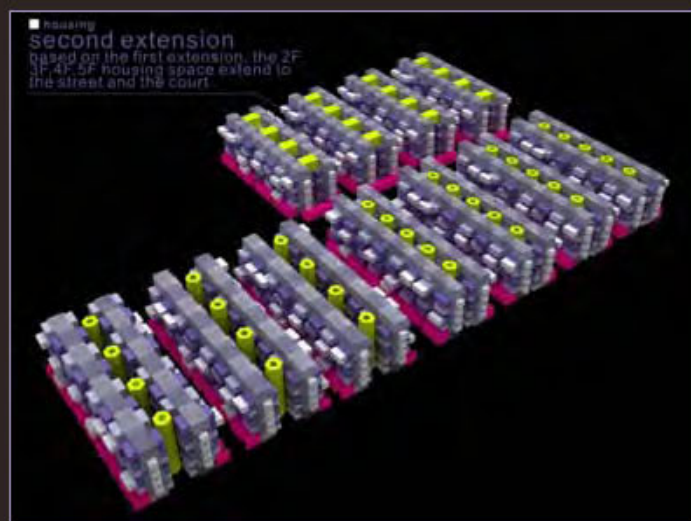
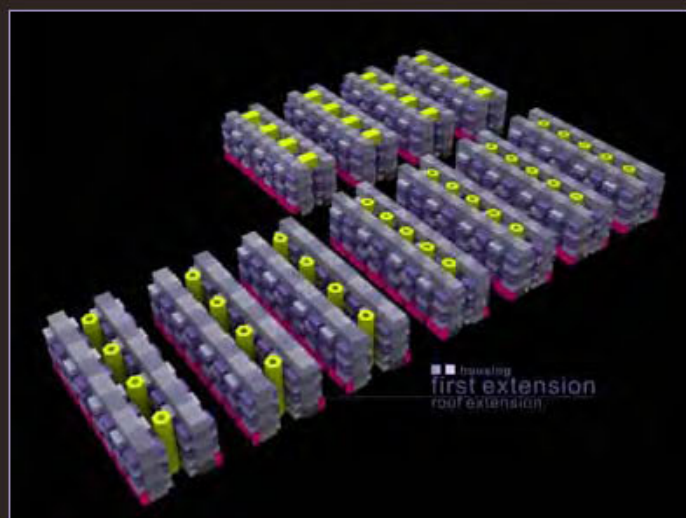
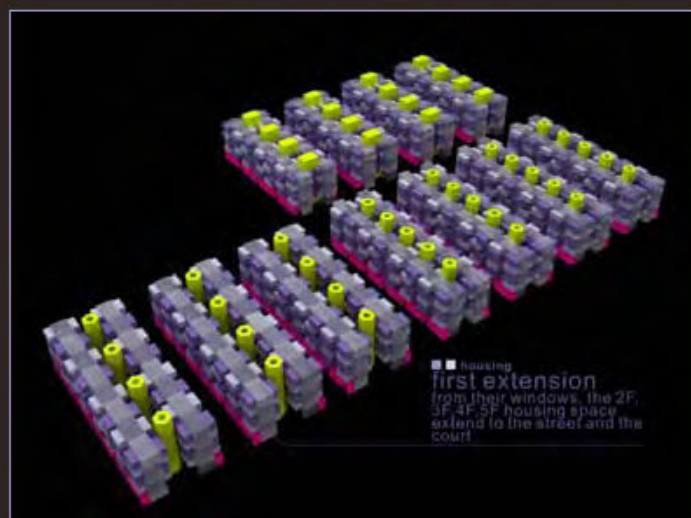
block B

= building type B X 4

block A

= building type A X 3





PHASE I
informal urbanism research:
an emergent space for social fluctuation
>> Nan Ji Chang public housing

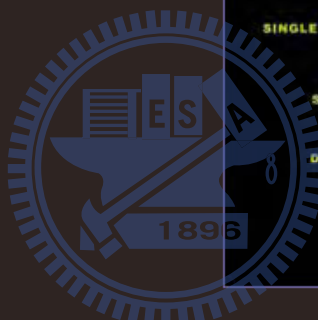
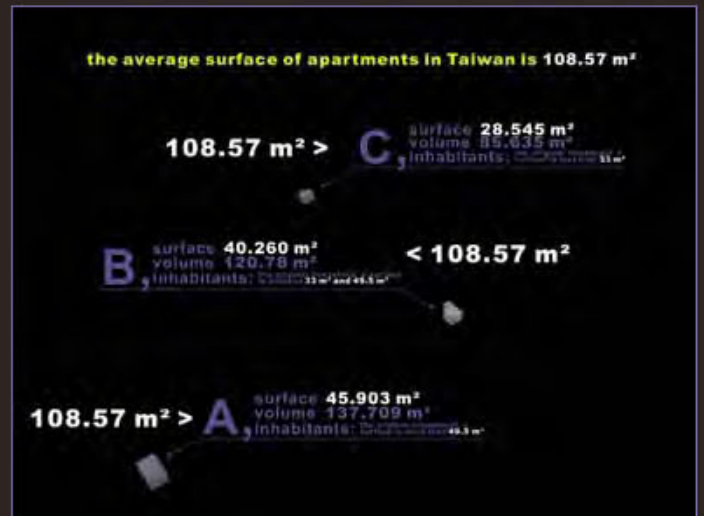
1	2	7	8
3	4	9	10
5	6	11	12

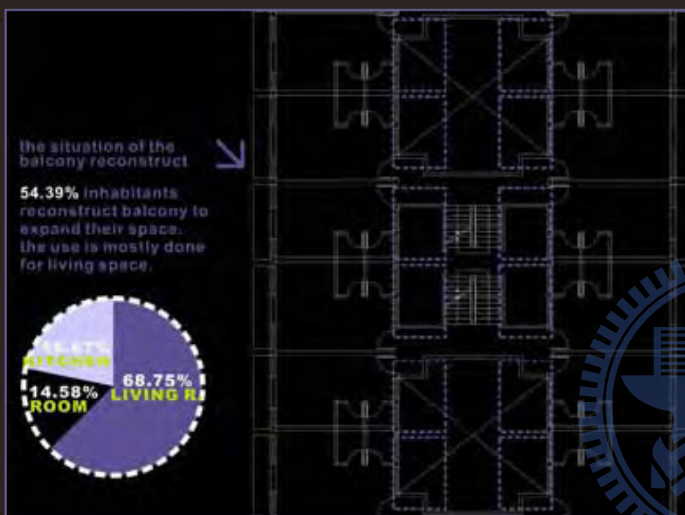
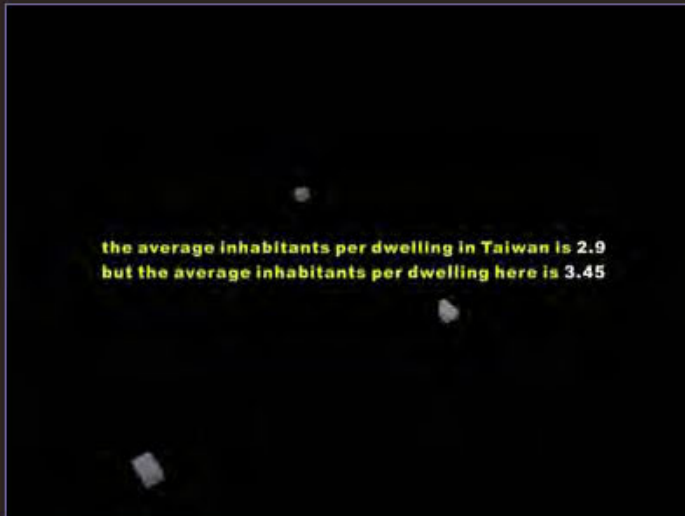
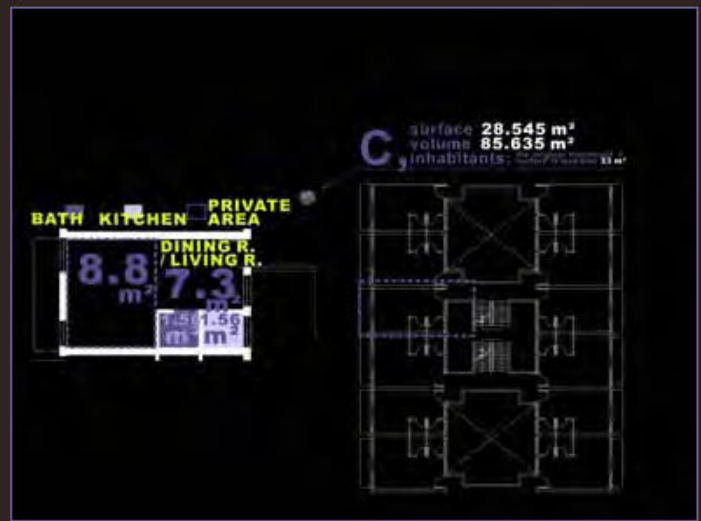
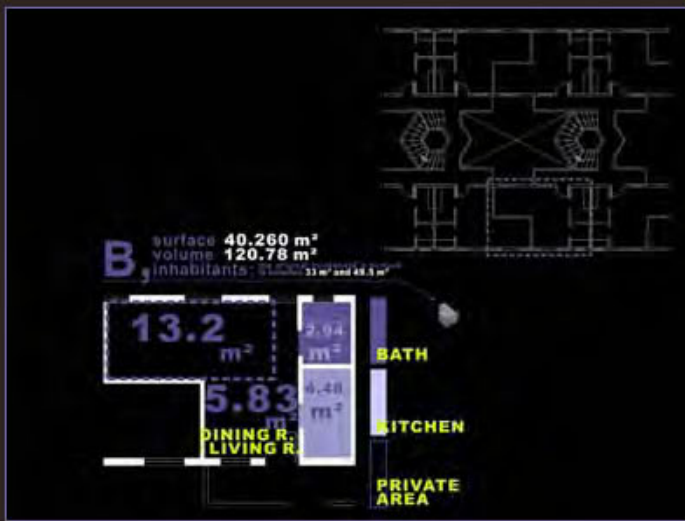




PHASE I
informal urbanism research:
 an emergent space for social fluctuation
 >> Nan Ji Chang public housing

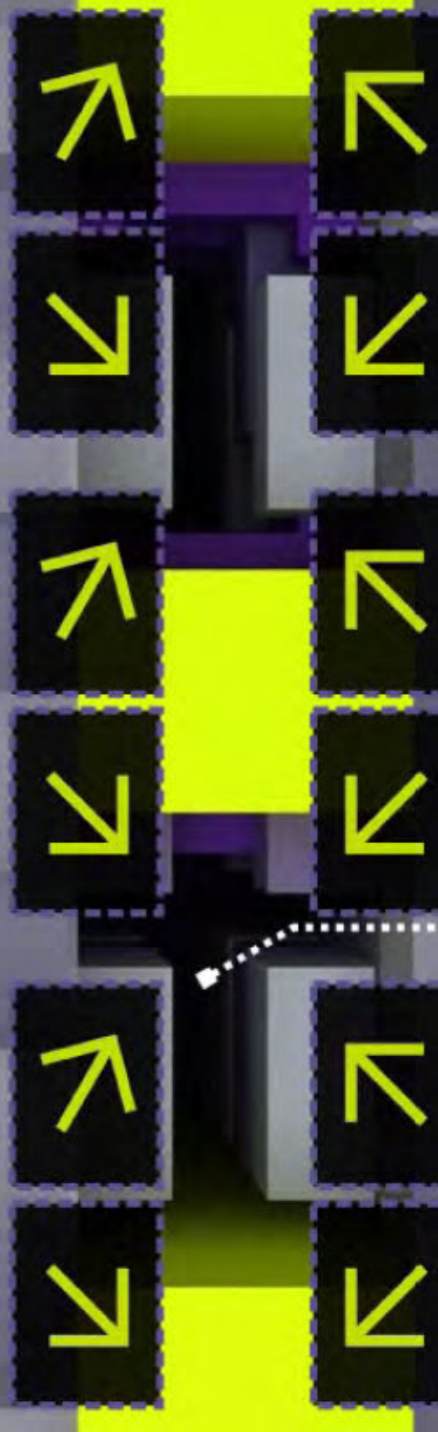
	1	2	3
	4	5	6
	7	8	9
	10	11	12





**social scenarios:
public space as a
living room.**

the extended living
space generation
made the neighborhood
relationship more
complexity.

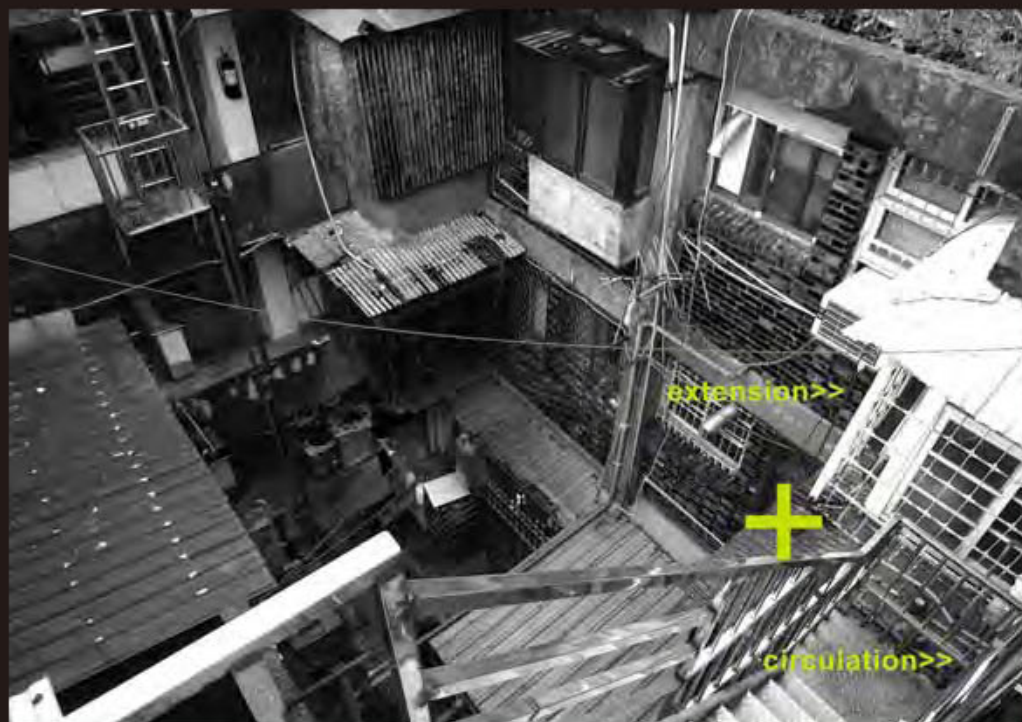


居民彼此間的互動：
公共空間就是超大的起居室，
中庭增建的空間以非私密的性質為主，
增建與增建之間使居民的互動較以往
單純為動線的方式更為複雜。



居民彼此間的互動：
同一層樓的居民共同使用公共空間
作為晾衣用途，使鄰居接觸的時間
變多，除了使用動線的相遇外，提
供了更多接觸的機會，例如一起晾
衣服。

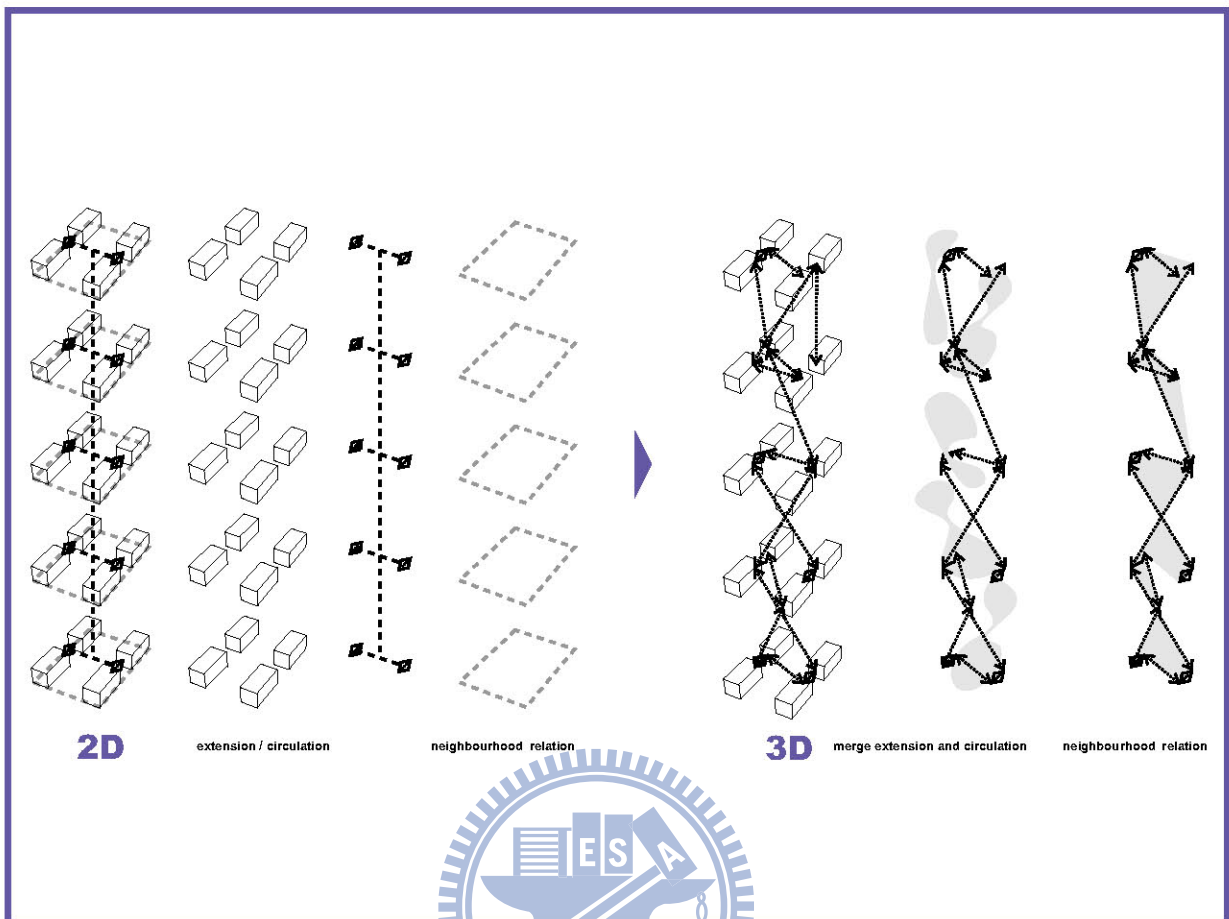
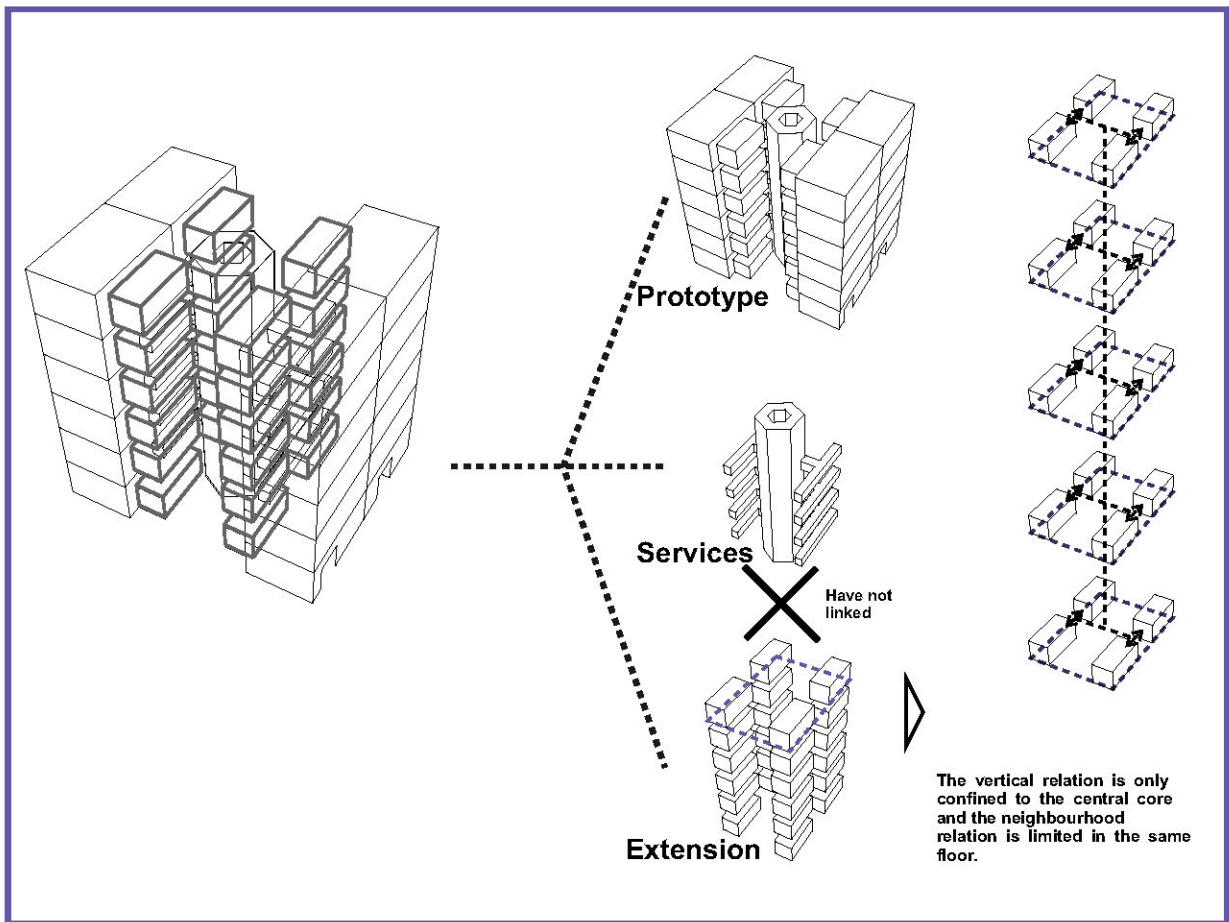


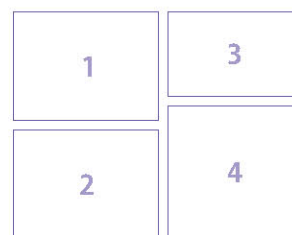
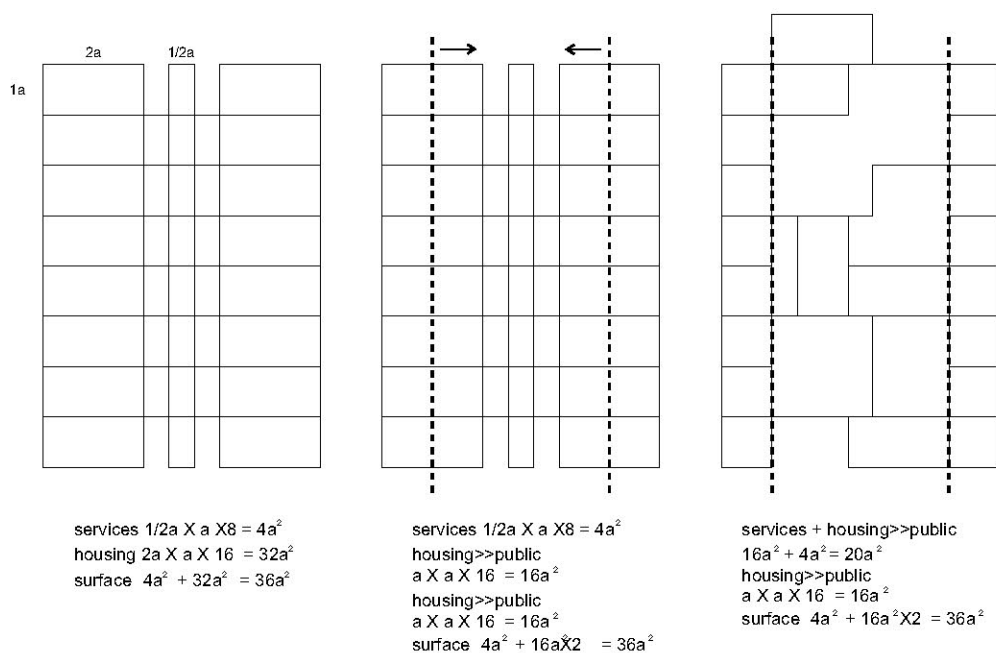


都市經驗：
南機場公寓有著相當具有生命力的增
建以及本身特殊的樓梯構造，這對於
與增建可以做有效的整合，將會是一
種符合台灣社會與文化的新建築型態

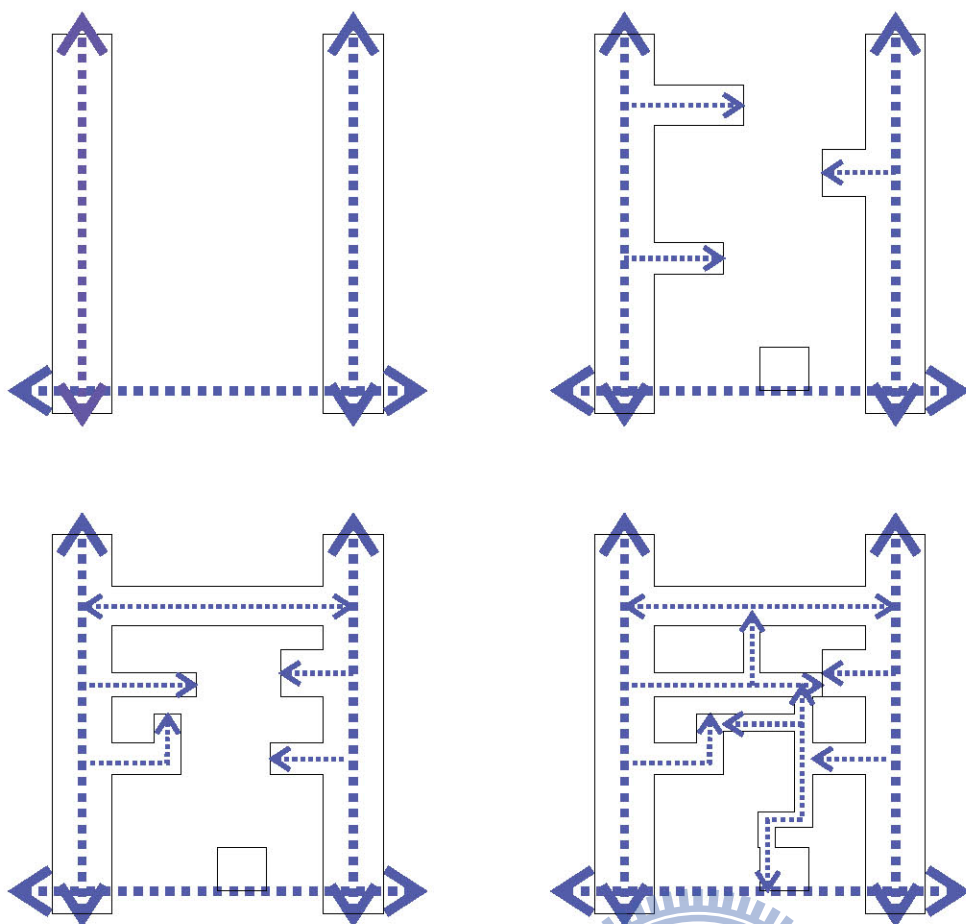
都市經驗：
面對都市建築場景，將因這建築利用
增建的設備進行垂直性的移動





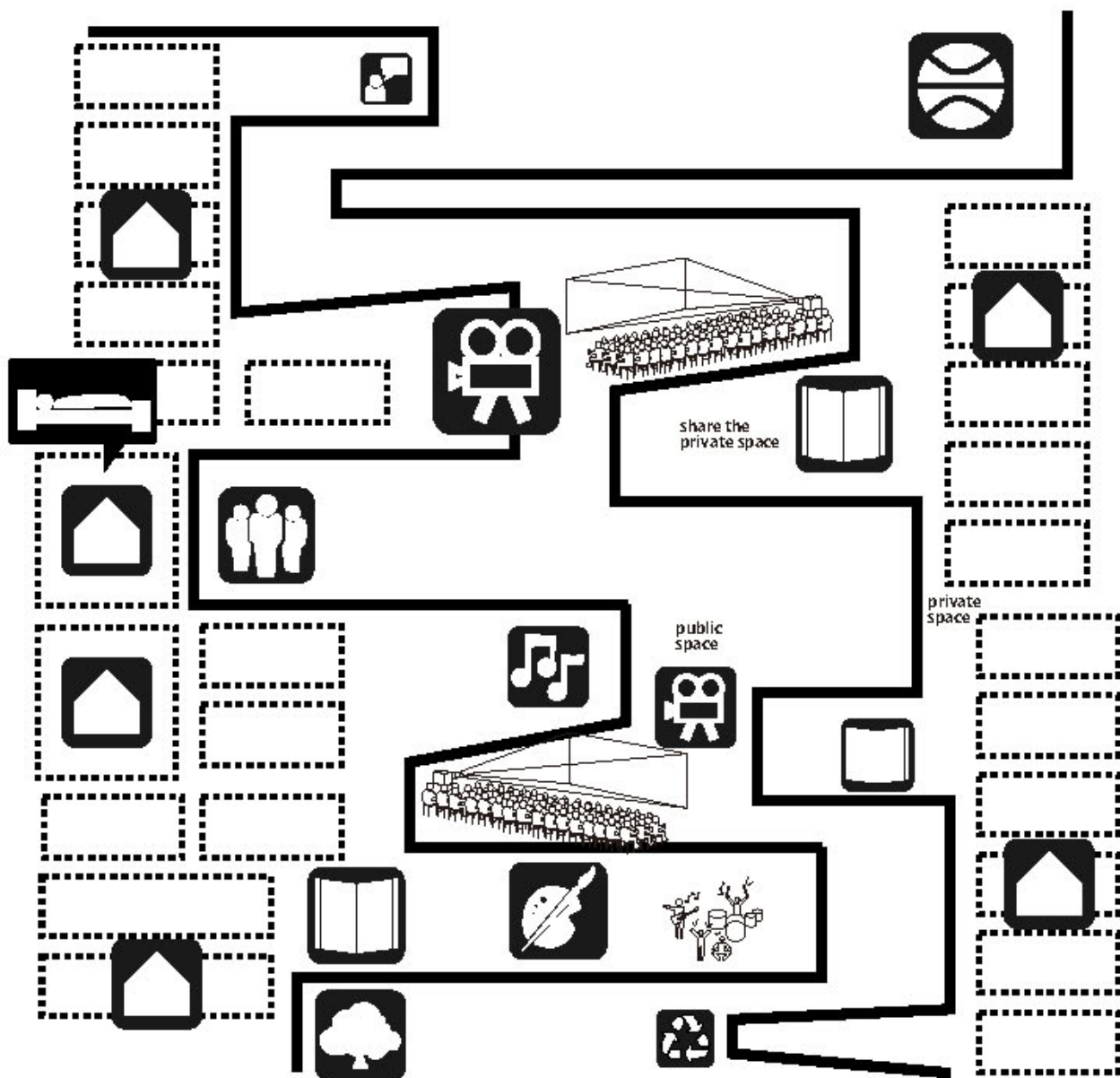


- 1 現有台灣住宅形式，服務核(動線)與居民的私自增建並無有效整合，導致各種問題，以及被稱為“都市之癌”。此外居民的鄰里互動關係僅限於單一樓層，較無與其他樓層居民互動的機會。
- 2 傳統台灣集合住宅鄰里關係侷限於同一樓層，是一種2D平面的鄰里關係。然而對於2030年，家庭人數越來越少，以及單身、高齡的趨勢下，鄰里互動顯得更為重要，對於未來住宅的想像，希望是一個3D的立體鄰里關係，空間彼此有最多樣性的影響。
- 3 相較於現有的住宅模式，若每戶可釋放出非私密空間(例如起居室)，並在空間上做排列組合的調整，將可在容積不變的狀態下達到高度有趣的鄰里關係，也是在過去所提出的共同住宅概念。
- 4 隨著鄰里變動所浮現出來的空間：隨著居民的增建，改變了原有制式動線的型態，然而在增建與增建之間所圍塑的空間，將有成為鄰里公共空間的潛力。



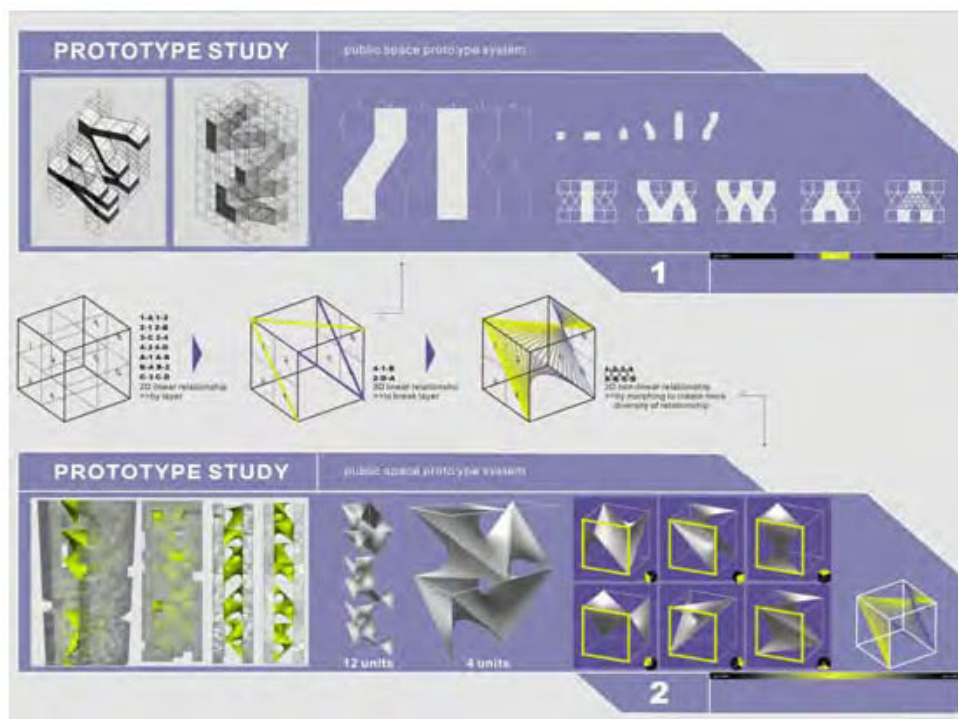
emergent space and circulation for social fluctuation





generating social scenarios





PROTOTYPE STUDY 1

以平行四邊形的模矩排列方式將現有鄰里連結方式打破所提出的單元模型，鄰里關係由同一層樓的平面關係變為立體連結關係，不過連結方式還是一戶對一戶的線性關係。

+

PROTOTYPE STUDY 2

將鄰里關係從線性關係變成3D的面狀連結，並發展出某一樓矩的多種排列可能。

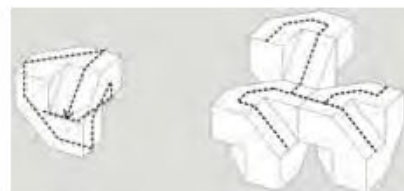
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PROTOTYPE STUDY 3

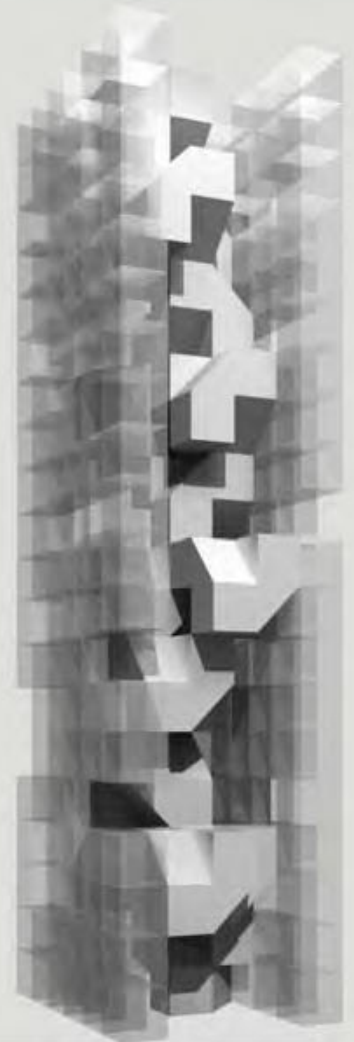
將模矩研究一的有效平面連結加上模矩研究二多層樓的連結方式，所提出的鄰里關係模型，除了綜合前兩種方式的優點外，也提供單元表層與裡層的動線使用可能。

PROTOTYPE STUDY 3

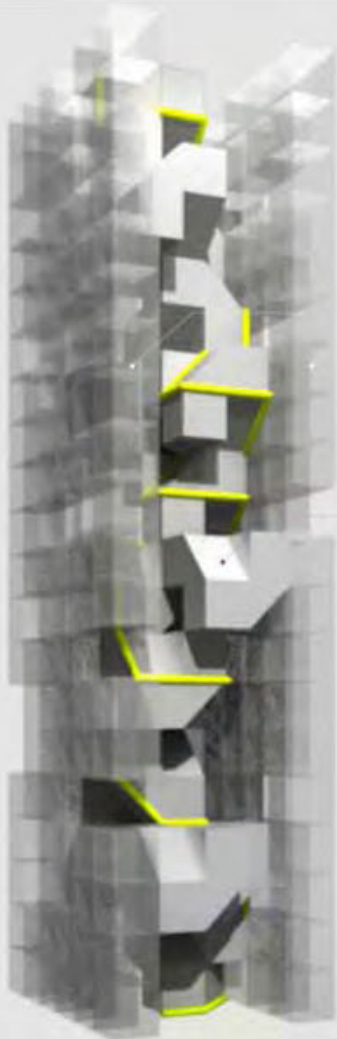
public space prototype system



PROTOTYPE STUDY 3



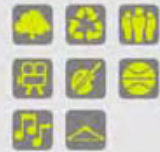
PROGRAM STUDY



Private space



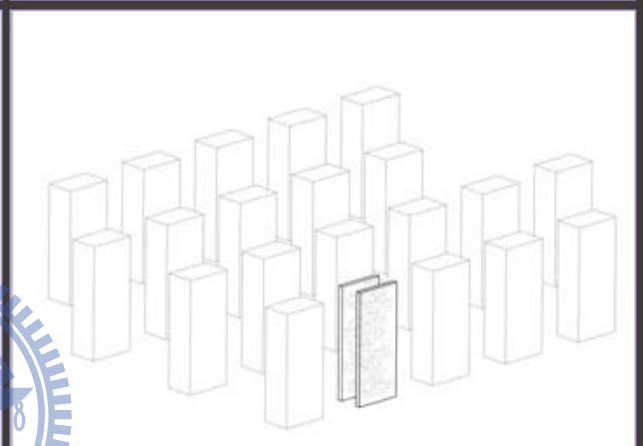
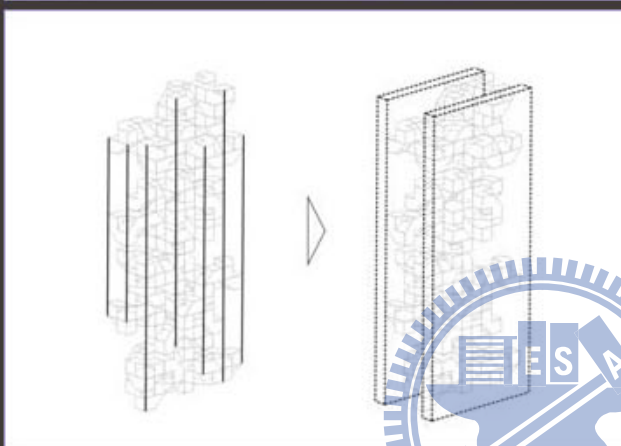
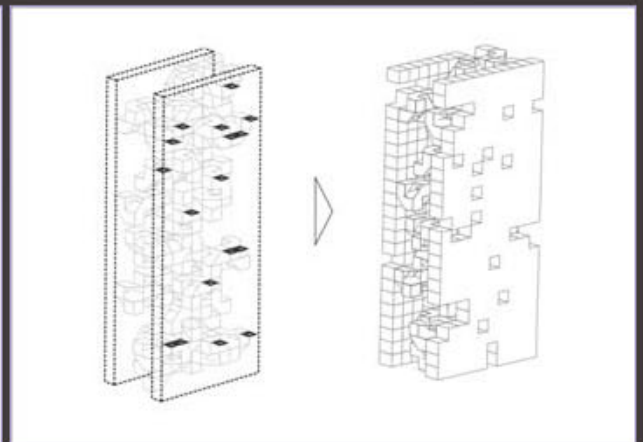
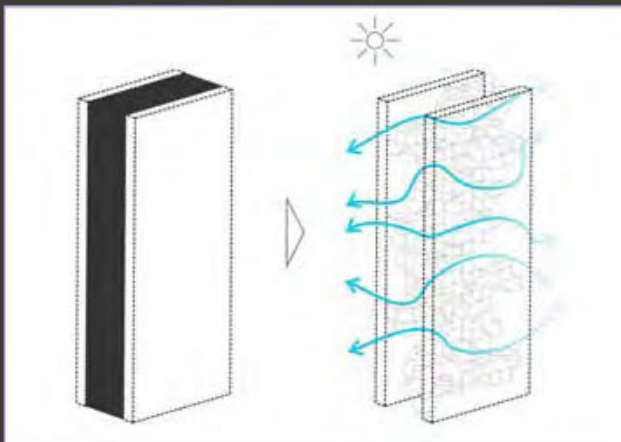
Public space

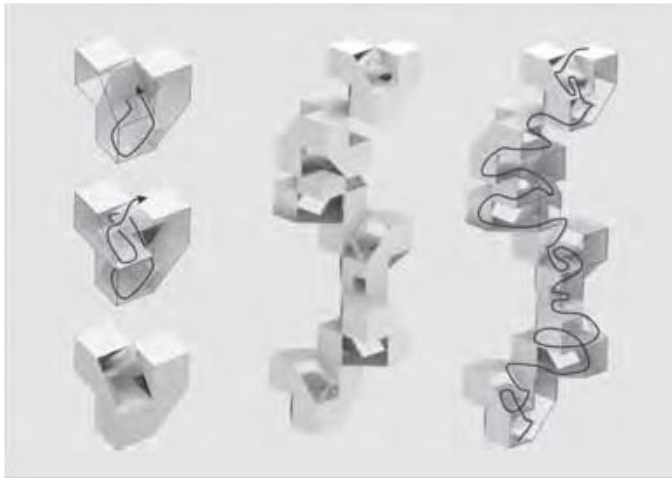


Extension



Circulation





public extension for main circulation
essentials: circulation, shop, etc.

public extension for community activity
essentials: court, reading room, etc.

community activity
essentials: theater

public or private extension living space
essentials: living room, kitchen, balcony

private living space
essentials: bed, wc, shower







West



South



East



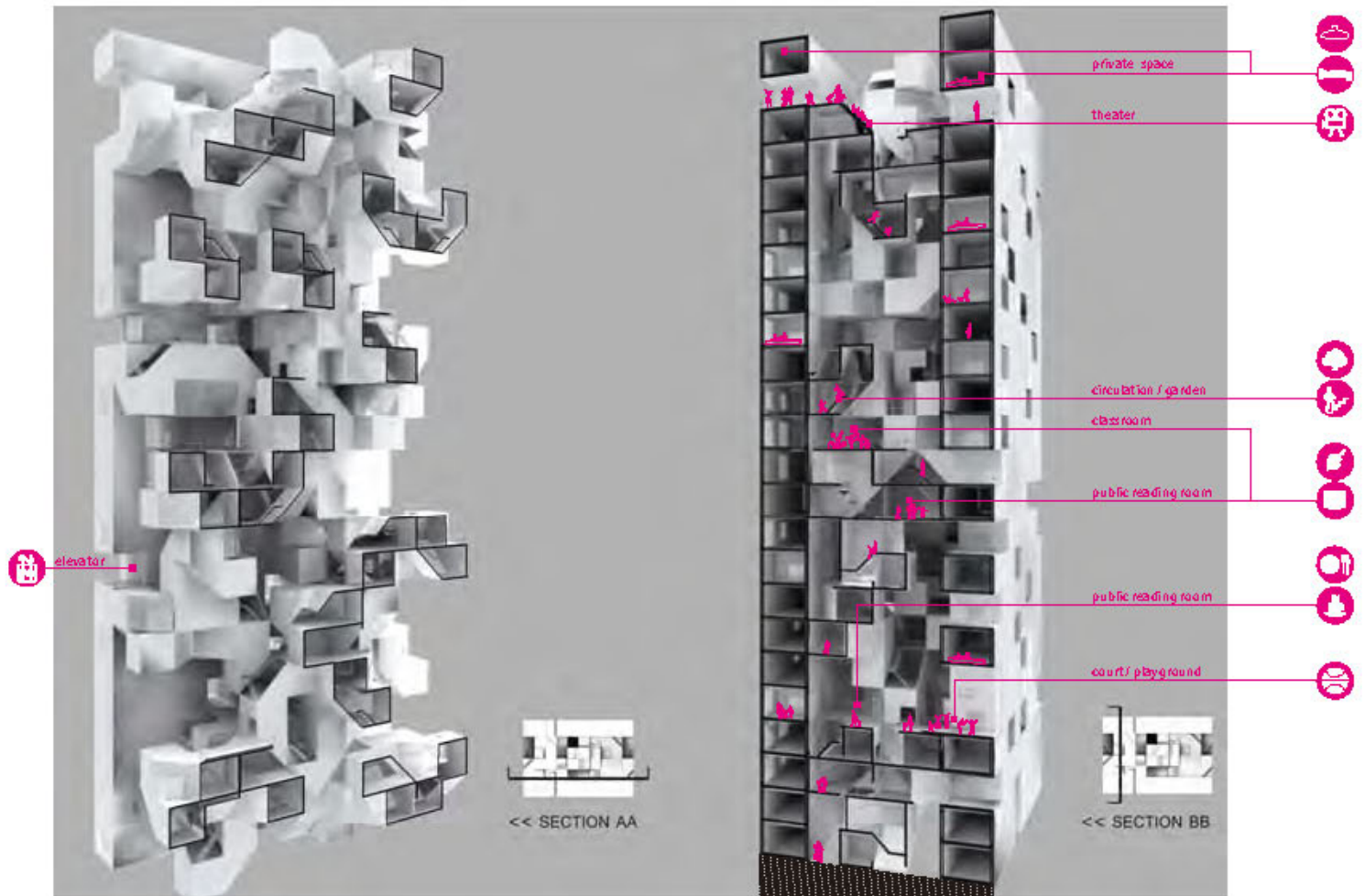
North

ELEVATION

▽ ROOF	+9.80.00
▽ 7.0F	+52.00.00
▽ 2.8F	+8.80.00
▽ 2.2F	+8.40.00
▽ 2.1F	+8.00.00
▽ 2.0F	+7.60.00
▽ 1.9F	+7.20.00
▽ 1.8F	+6.80.00
▽ 1.7F	+6.40.00
▽ 1.6F	+6.00.00
▽ 1.5F	+5.60.00
▽ 1.4F	+5.20.00
▽ 1.3F	+4.80.00
▽ 1.2F	+4.40.00
▽ 1.1F	+4.00.00
▽ 1.0F	+3.60.00
▽ 9F	+3.20.00
▽ 8F	+2.80.00
▽ 7F	+2.40.00
▽ 6F	+2.00.00
▽ 5F	+1.60.00
▽ 4F	+1.20.00
▽ 3F	+8.00.00
▽ 2F	+4.00.00
▽ 1F	0.00.00

m















SOFT & HARD REDEFINITION >>



Phase Diagram & H₂O pavilion (2009 Fall)

Optional Studio

Tutor | Kyle C. Yang + Borden Jen

Location >> Central Culture Park, Taipei

Studio Introduction >>

The studio extends the exploration of concept of “soft” in architecture design and urbanism that had taught before. The concept of a soft is been defined as a relative condition that exists in a flux mode, i.e. ever changing state. Dynamic and kinetic phenomenon is one example. Raban's soft city shows that there are two cities co-exist within one geological location, one hard and one soft. The vagueness and lack of definitions of Taiwanese cities are usually been portrait as chaotic and disordered. For example, professor Chao-lee Kuo's “Dark City” discourse has revealed the rational behind the fuzziness of the Dark, and its dialogue with the light.

Our studio this semester is aiming at exploring the state of “softness” in depth in architecture design and urbanism. We will design a small pavilion on Ha-Shan rail yard as a virtual entrance to the city. The used of either 2d methodology or 3d parametric designing tools are all acceptable to explore the possibilities.

Description >>

軟硬再定義／
三態平衡與中央藝文公園關係探討

現象觀察 >>

本案由溫度與壓力兩相對應參數對於水相態改變之現象為出發點，產生對於軟與硬本質上的探討並進而再定義其涵義。過程中歸納出表象(Literal)及現象(Phenomenal)兩個層面並進行交叉比對與分析，再對於軟與硬進行初步定義。

原型 >>

由現象觀察對於軟硬定義透過實體物理現象以及數位軟體工具的動態力場模擬研究試驗建立某種有別於一般操作手法，但可以表現現象關係的Prototype，再以此原型操作模式帶入基地求出相對應的型態呈現。

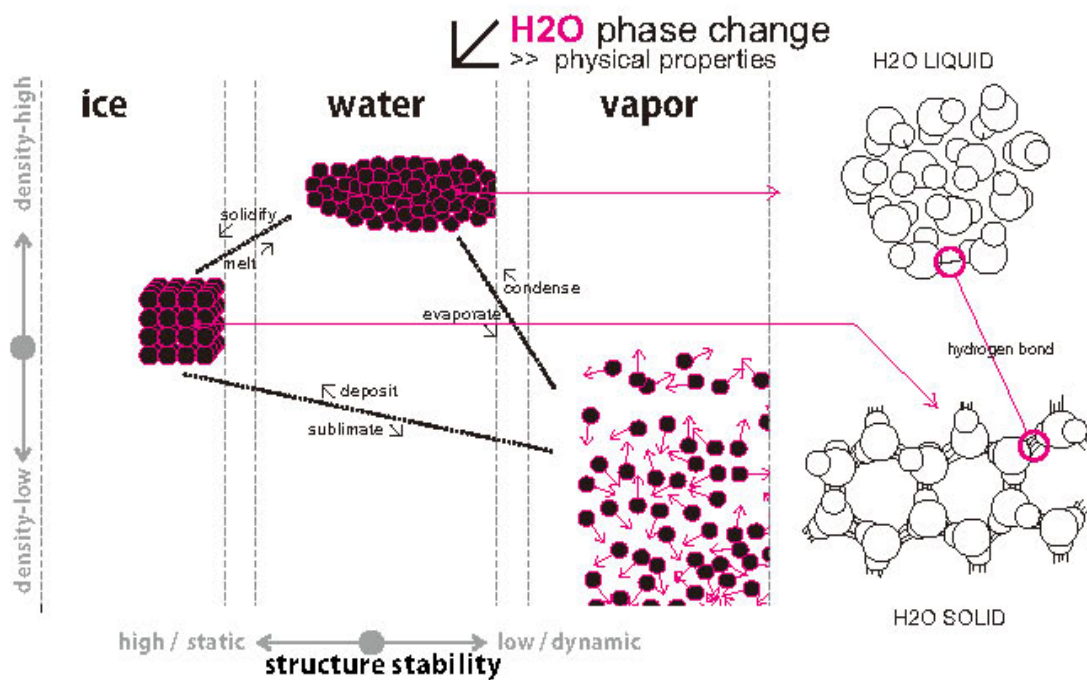
基地力量 >>

根據基地中的兩項動態因子(行人活動以及車流)相關數據，轉譯為輔助工具的參數，在電腦動態力場運算下定義此Pavilion的兩個層面的型態(動態地景及建物本體)，最後回應到基地不同區域的不同屬性中，所相對應的機能關係。看似自由的形體，其實是由兩項動態因子相對應參數對於力場影響相互衝突、碰撞的結果。如同三相圖中的兩態相鄰線以及三態共存點的關係一樣，在這些區域將是模糊及曖昧的機能邊界重疊，在此實驗空間中找出更多機能交織趣味的可能性。

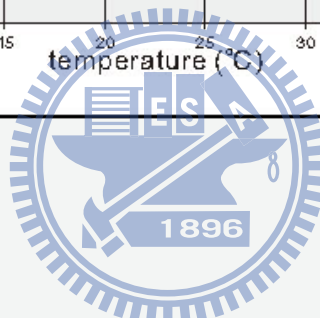
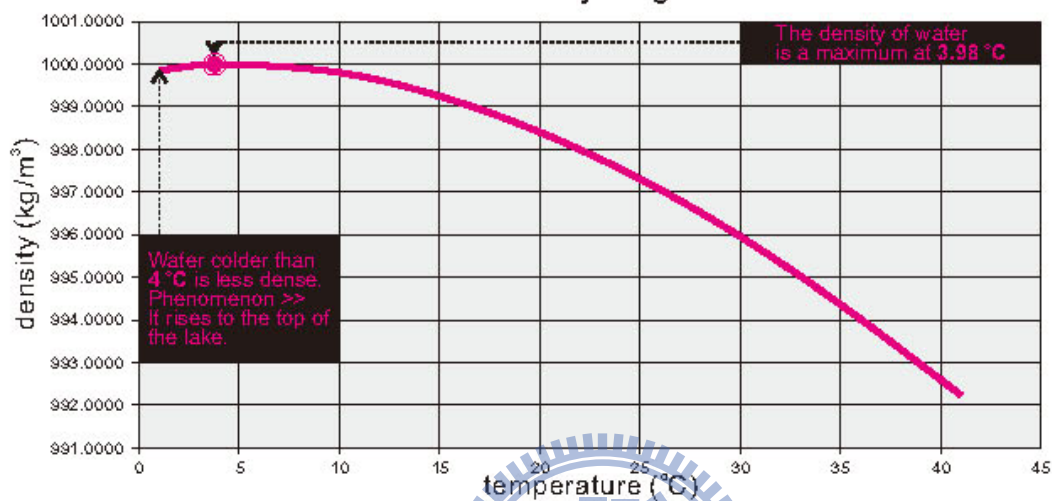


	density	hydrogen bond energy	molecular activity
vapor	low	N/A	high >>dynamic
water	high	low	medium
ice	medium	high	low >>static

2 observation & analysis



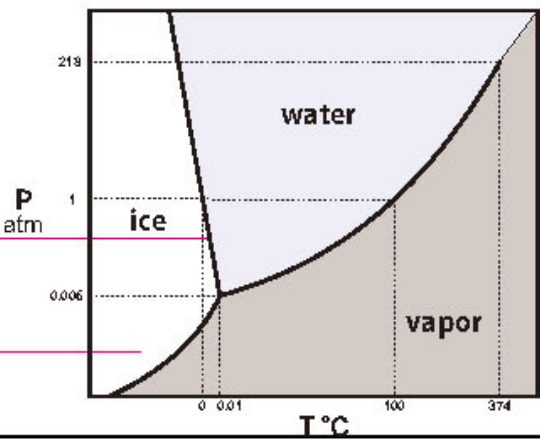
water density diagram



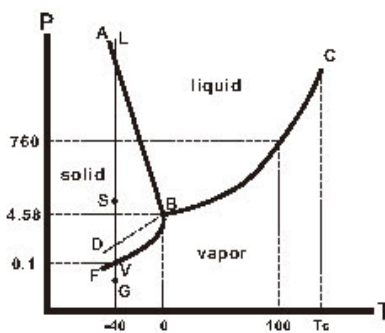
1 phenomenon



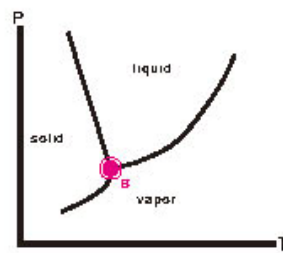
Phase diagram for the one component system H₂O.



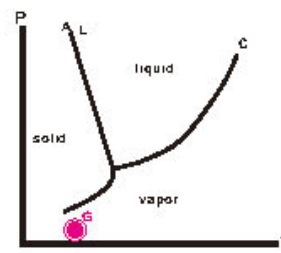
2 observation & analysis



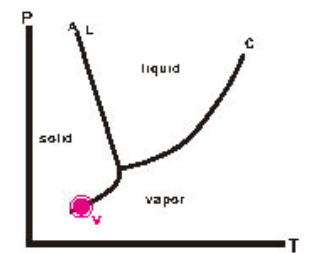
Phase diagram for the one component system H₂O.



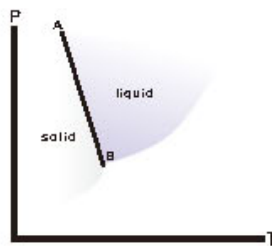
Point B >> P=3, C=1, f=0



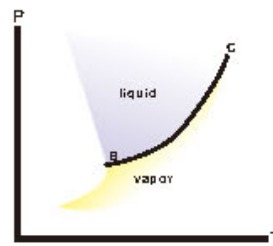
Point G >> P=1, C=1, f=2



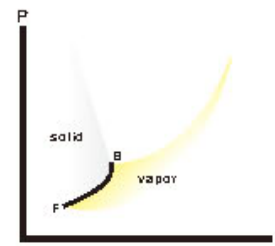
Point V >> P=2, C=1, f=1



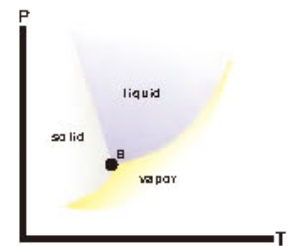
Line A-B >> equilibrium curve of solid and liquid



Line B-C >> equilibrium curve of liquid and vapor



Line B-F >> equilibrium curve of vapor and solid



Point B >> equilibrium point of solid, liquid and vapor

Gibbs' phase rule >> $f = C - P + 2$

parameter

f >> degree of freedom, variance
Number of intensive variables that can be changed independently without disturbing the number of phases in equilibrium.

C >> the number of chemically independent constituents of the system. for H₂O phase C=1

P >> the number phase can be formed
2 >> a constant (2 variables (T&P))

degree of freedom
f=0
f=1
f=2

possible independent variables

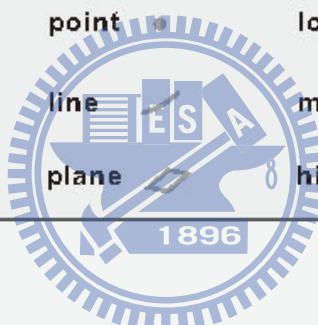
system is invariant
system is univariant
system is divariant

geometric relation of state change

point
line
plane

state stability

low >> dynamic
medium
high >> static



3 definition

phenomenal

	density	hydrogen bond energy	molecular activity
vapor	low	N/A	high >>dynamic
water	high	low	medium
ice	medium	high	low >>static

literal

	possible independent variables	geometric relation of state change	state stability
degree of freedom f=0	system is invariant	point •	low >>dynamic
f=1	system is univariant	line 	medium
f=2	system is divariant	plane 	high >>static



high molecular activity >> **dynamic** structure >> literal **SOFT**

low molecular activity >> static structure >> literal **HARD**

low state stability >> **dynamic** point relation >> phenomenal **SOFT**

high state stability >> static plane relation >> phenomenal **HARD**

definition

redefine the soft and hard condition by literal and phenomena, then control the condition of point, line and plane to explore the relative relationship and composition between soft and hard.

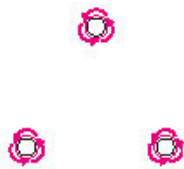
SOFT >> _____ dynamic point relation

HARD >> _____ static plane relation

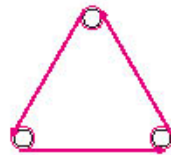


4 transformation

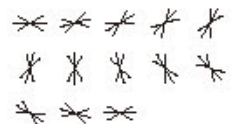
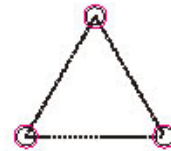
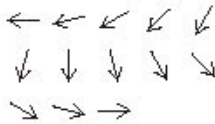
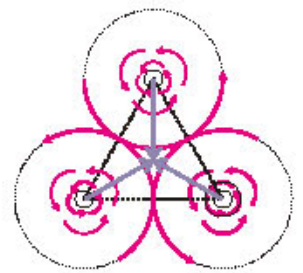
dynamic point relation >>
Rotary Force



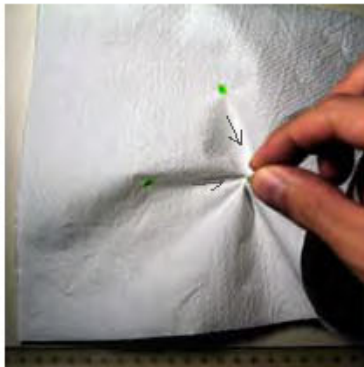
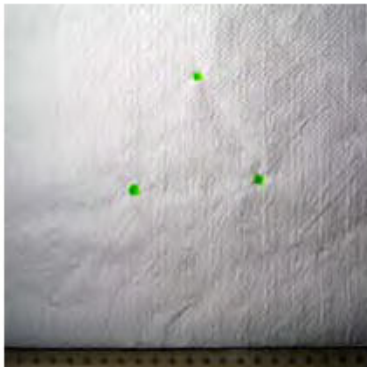
dynamic linear relation >>
Linear Motion



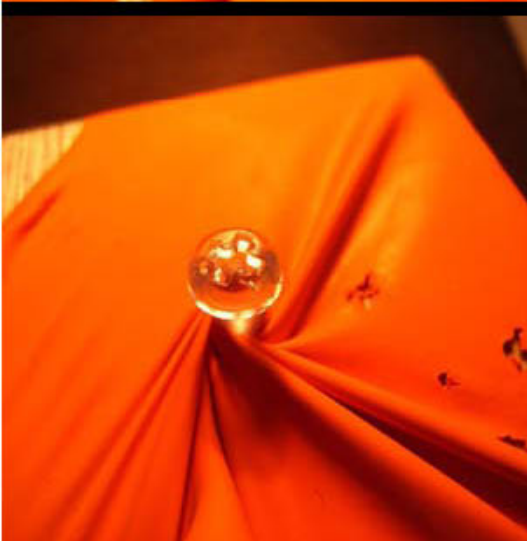
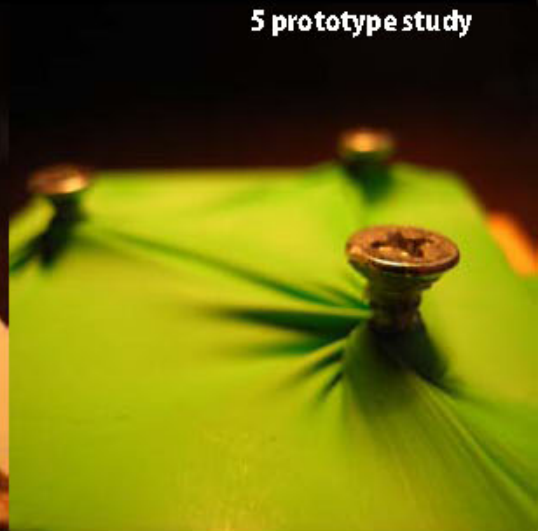
static plane relation >>
Internal Balancing system



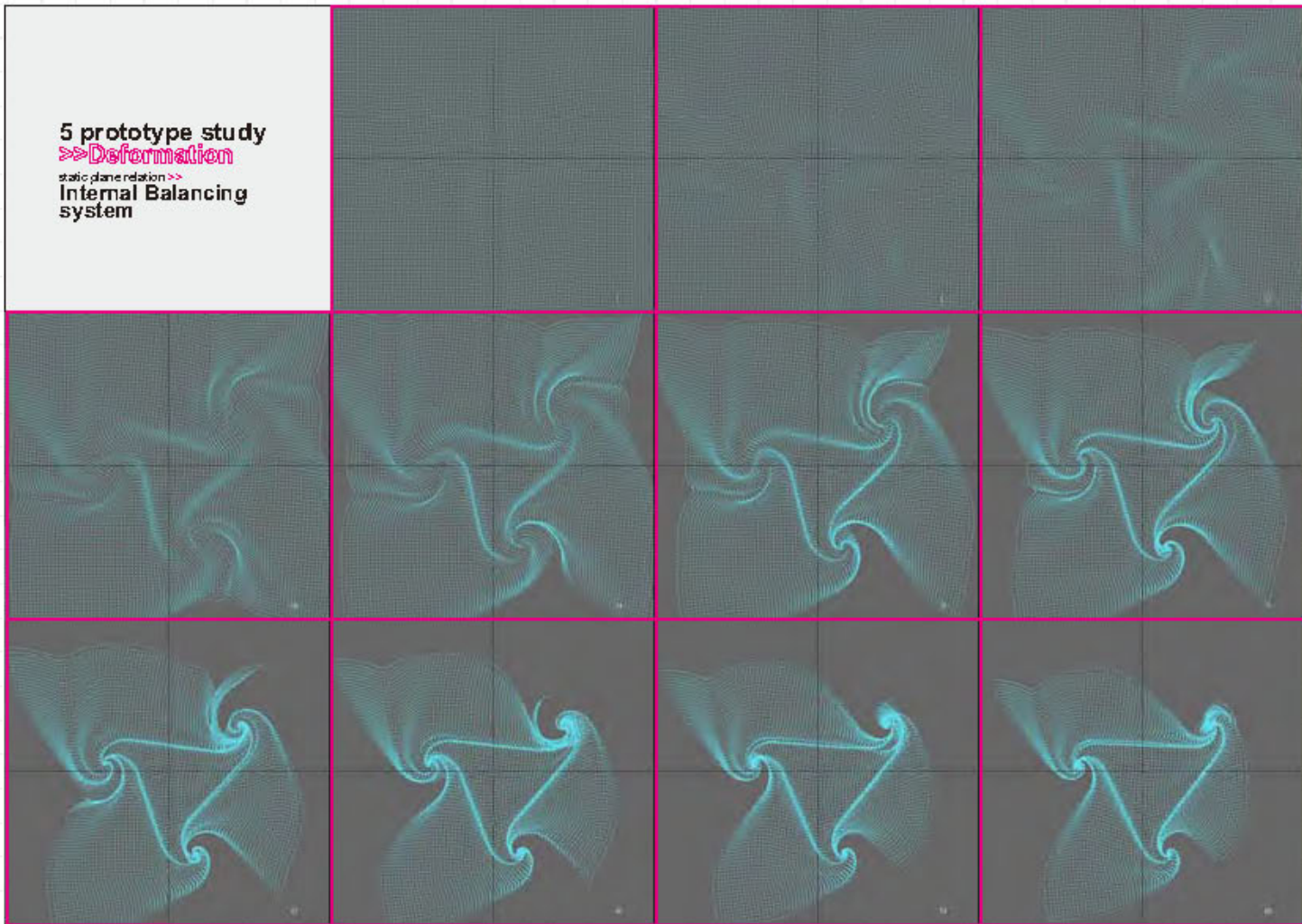
5 prototype study

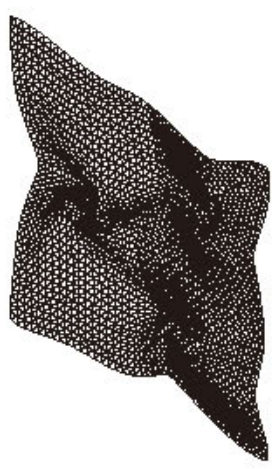
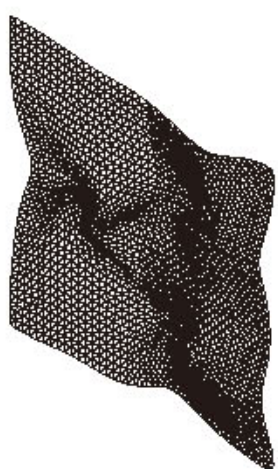
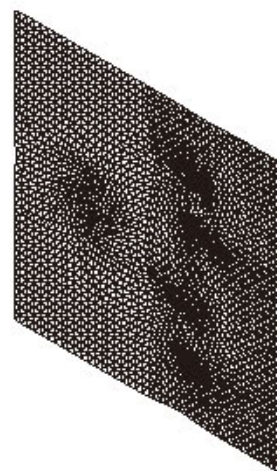
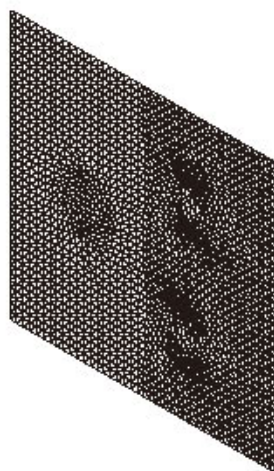
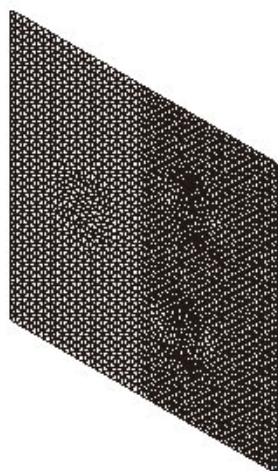
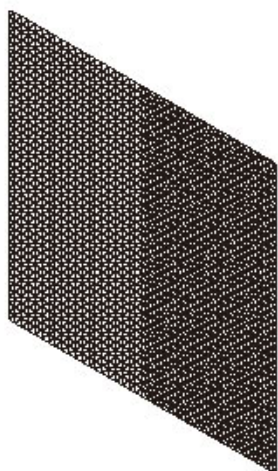


5 prototype study

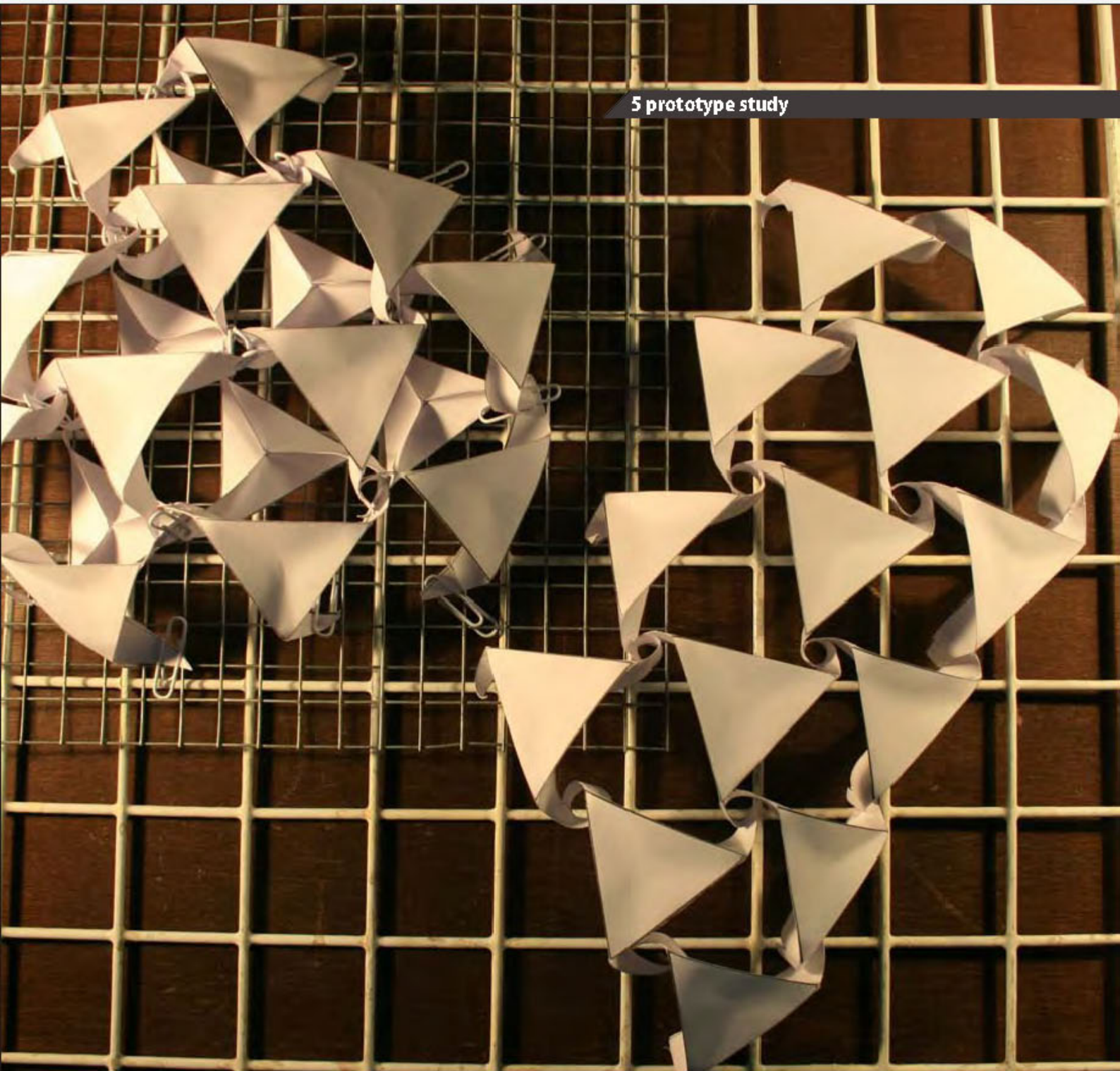


5 prototype study
» Deformation
static plane relation »
Internal Balancing
system





5 prototype study



phenomenal

	density	hydrogen bond energy	molecular activity
vapor	low	N/A	high >>dynamic
water	high	low	medium
ice	medium	high	low >>static

high molecular activity >>
dynamic structure >>
literal **SOFT**
low molecular activity >>
static structure >>
literal **HARD**

literal

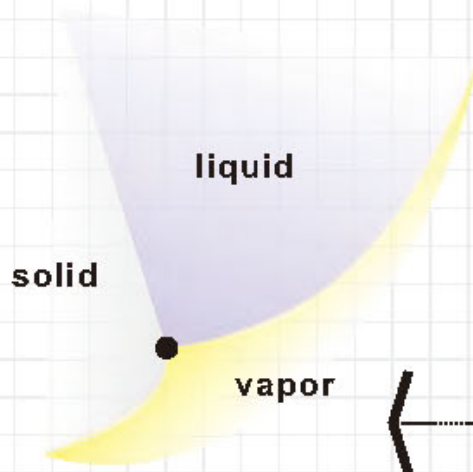
degree of freedom	possible independent variables	geometric relation of state change	state stability
f=0	system is invariant	point •	low >>dynamic
f=1	system is univariant	line —	medium
f=2	system is divariant	plane ▭	high >>static

low state stability >>
dynamic point relation >>
phenomenal **SOFT**
high state stability >>
static plane relation >>
phenomenal **HARD**

definition

redefine the soft and hard condition by literal and phenomena, then control the condition of point, line and plane to explore the relative relationship and composition between soft and hard.

SOFT >> _____ dynamic point relation
HARD >> _____ static plane relation

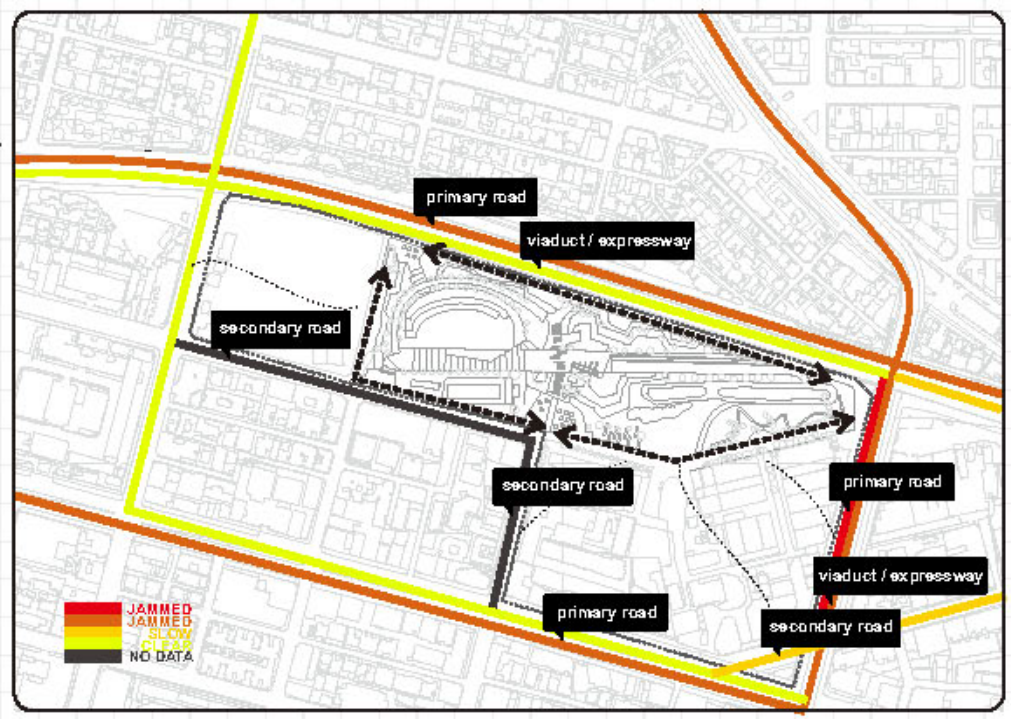


program >> site force (field) >> defination (form)

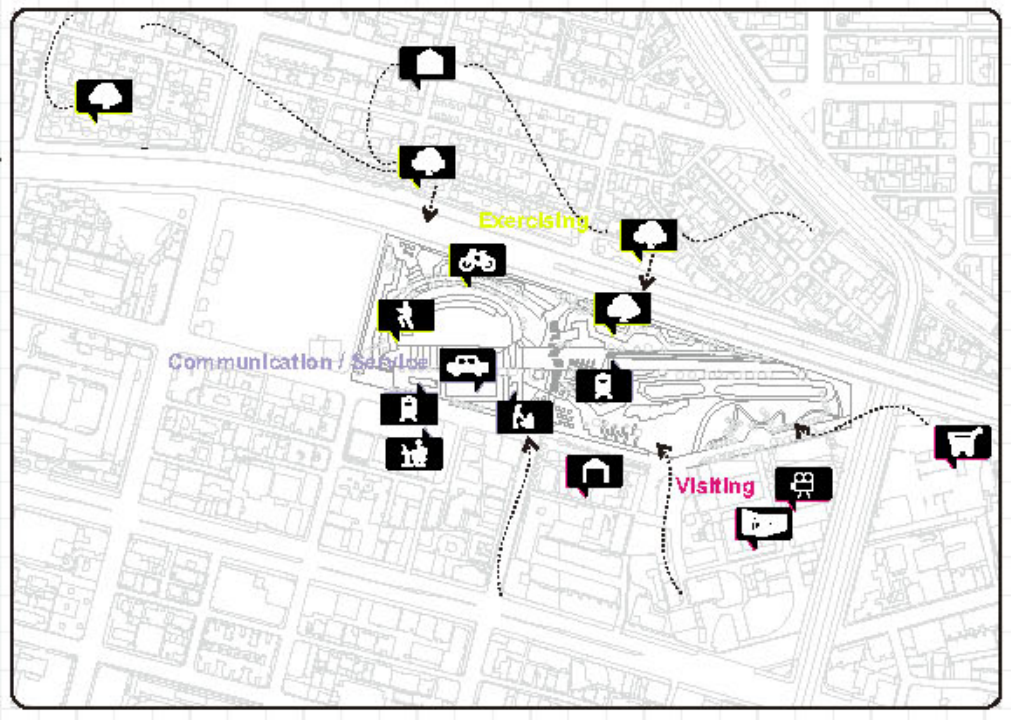


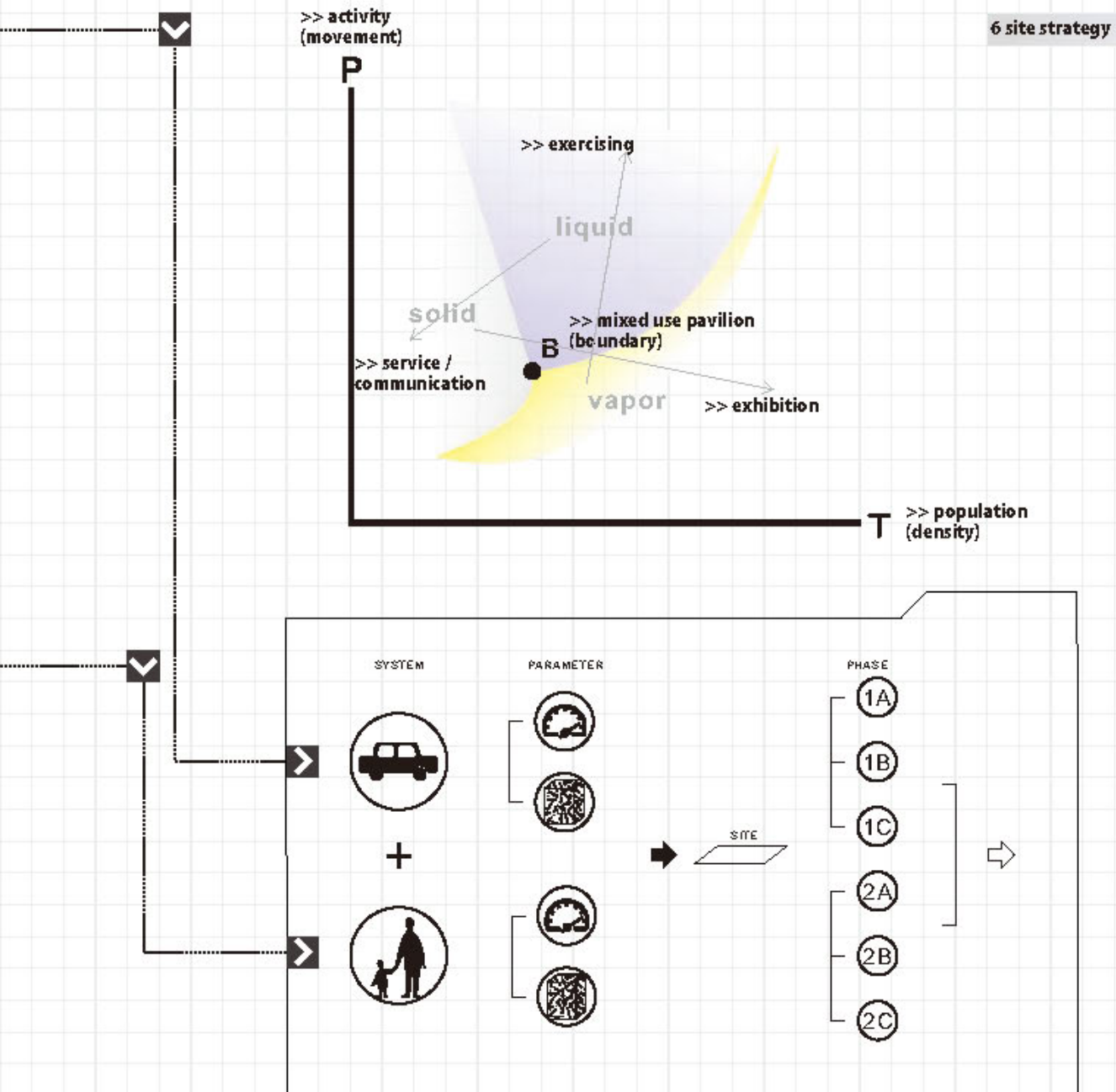


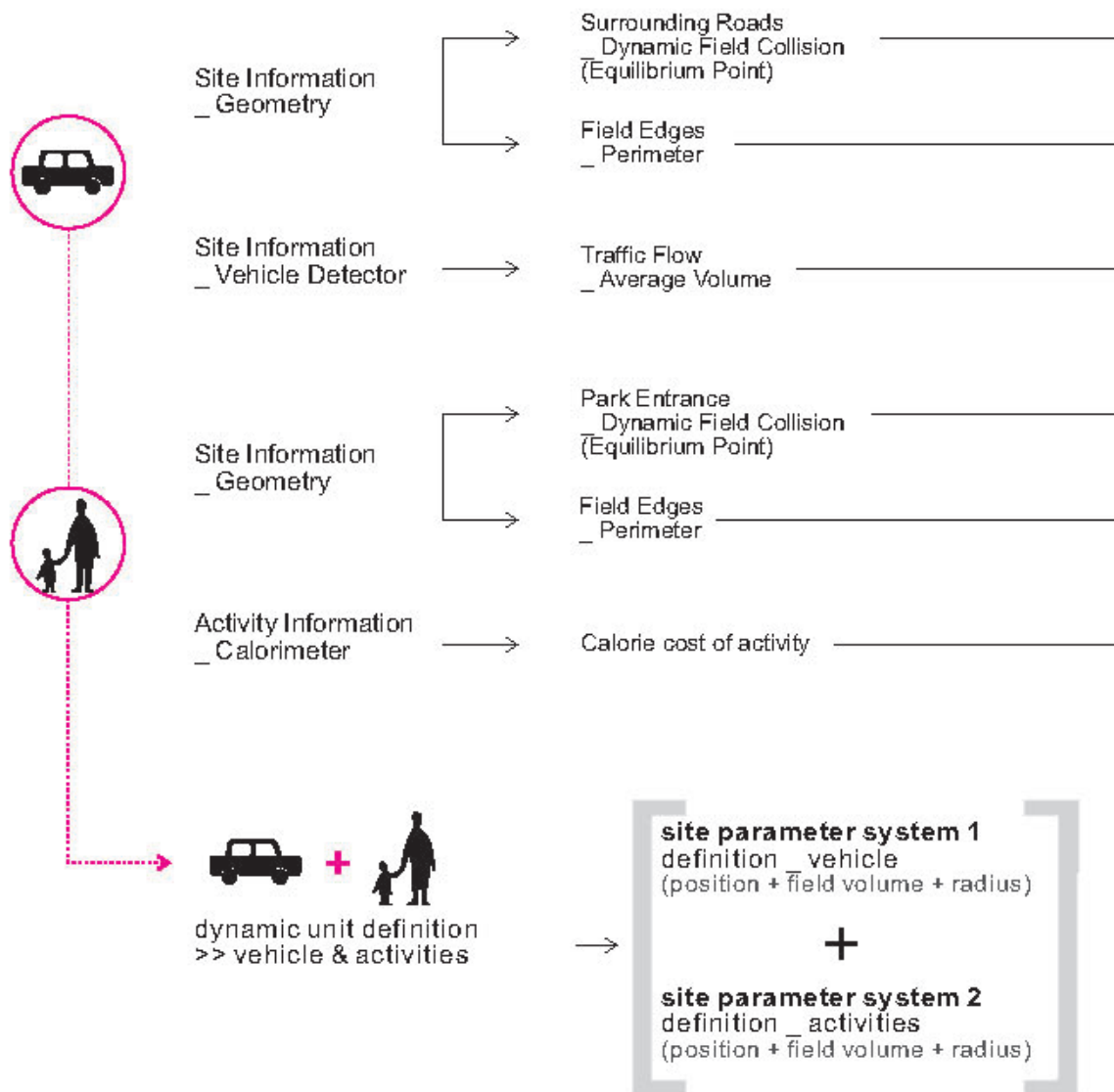
DYNAMIC VEHICLE DENSITY
& ROAD SPEED

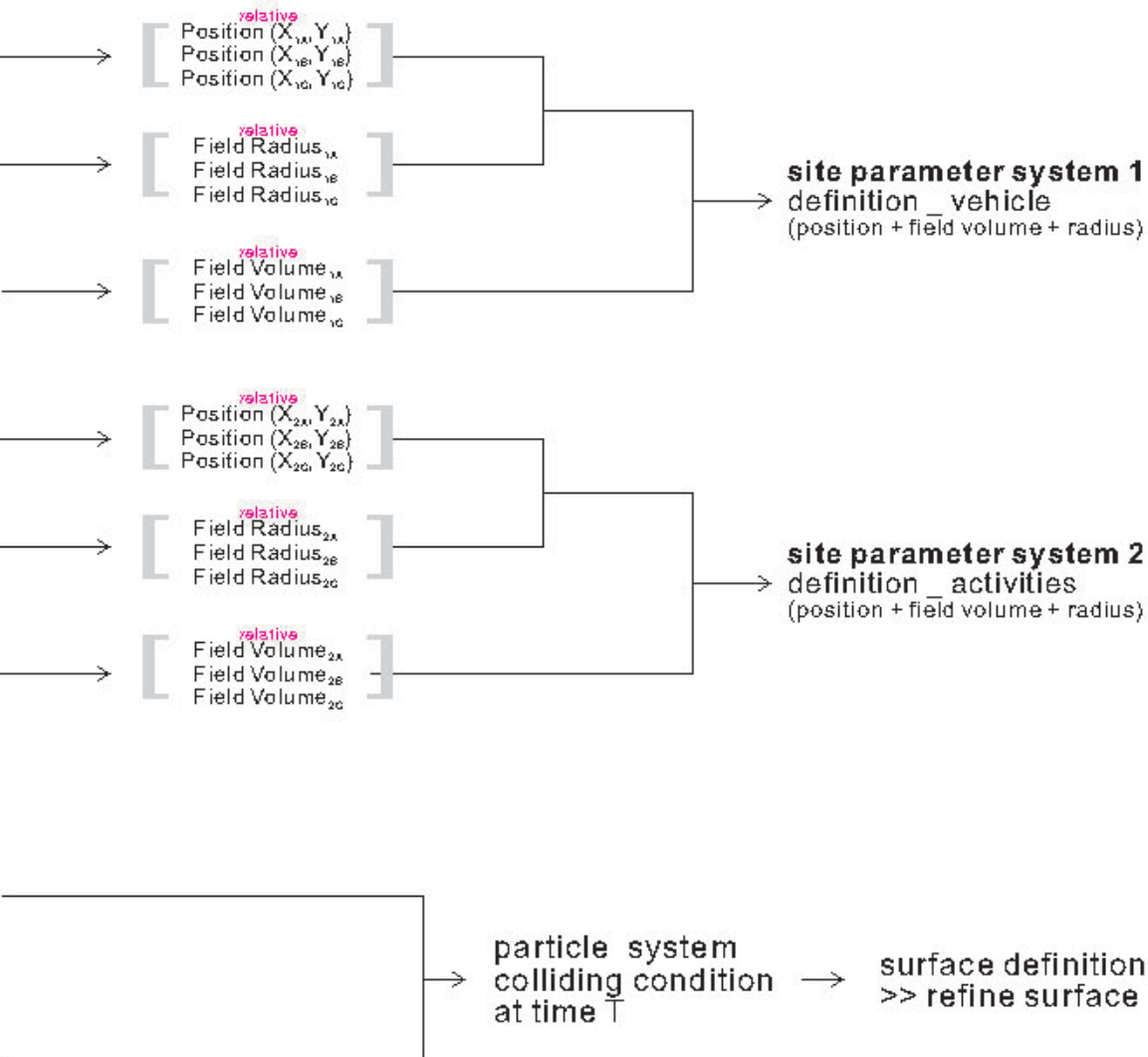


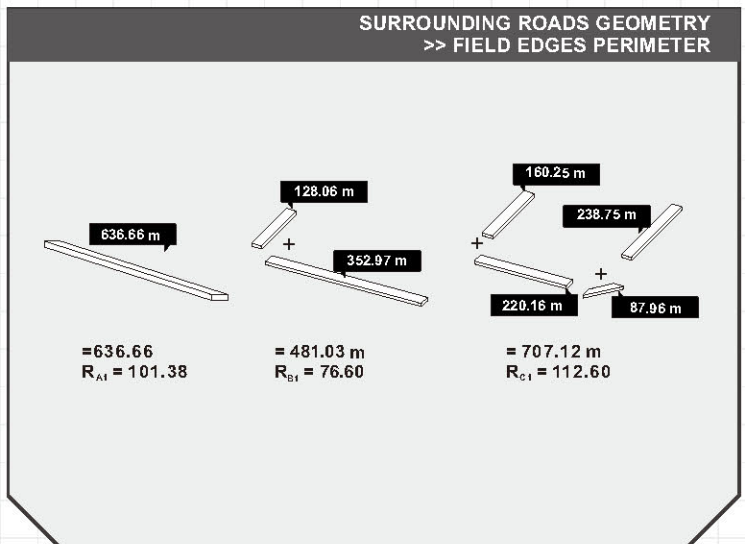
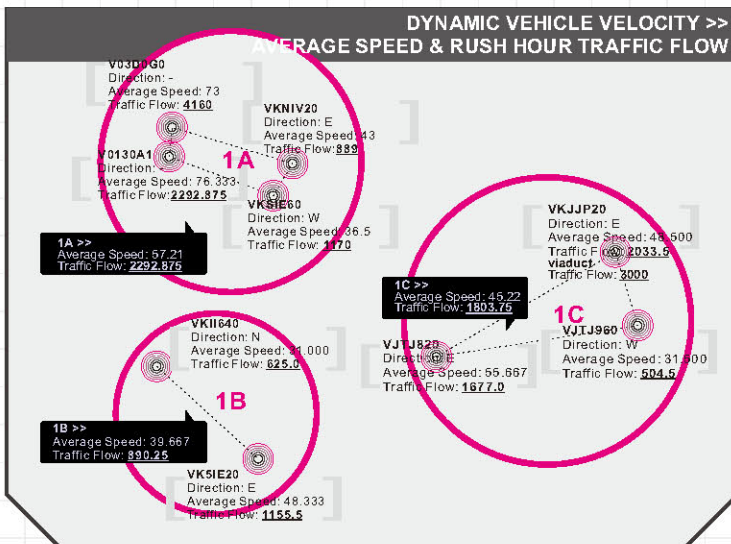
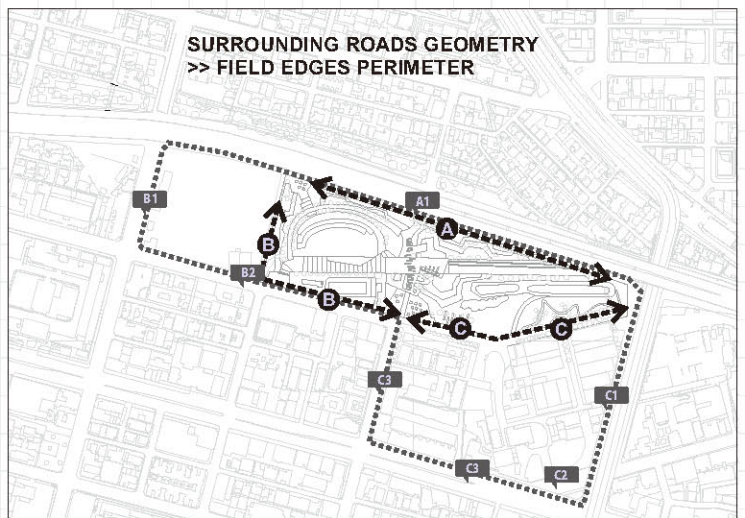
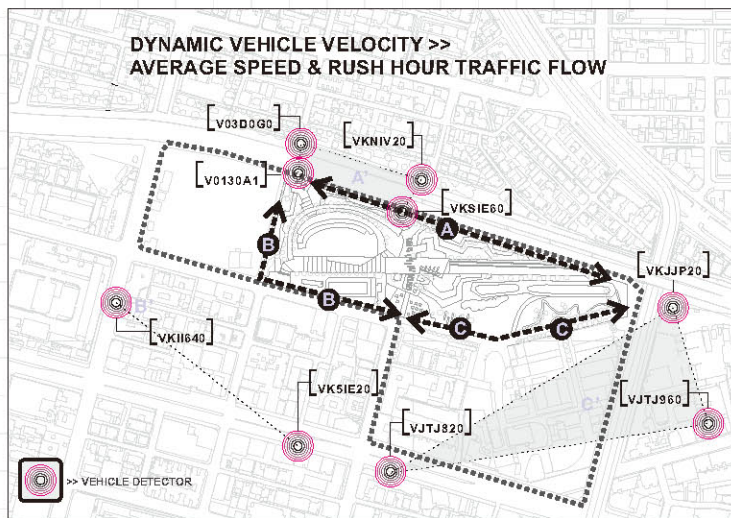
PEDESTRIAN ACTIVITIES
& DENSITY

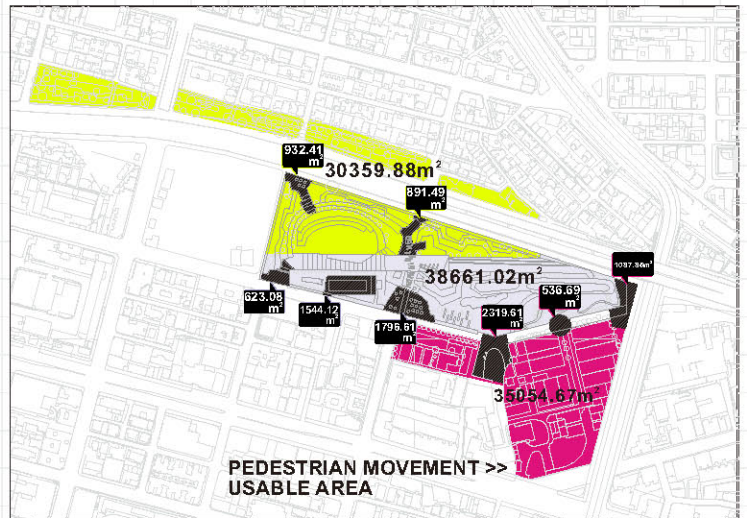
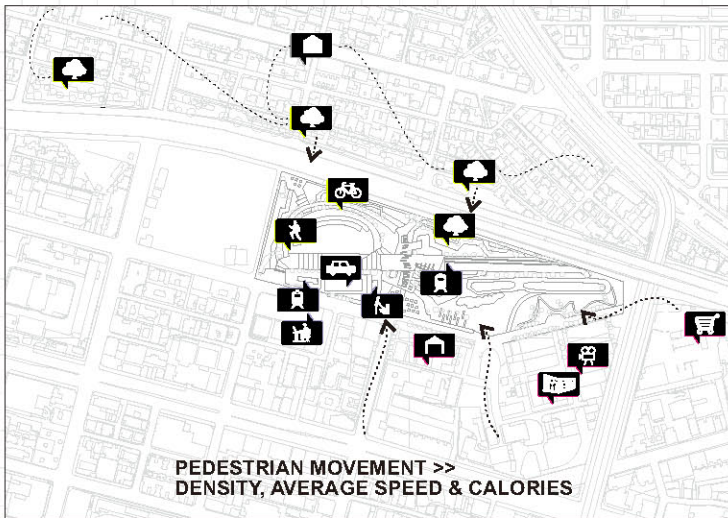












PEDESTRIAN MOVEMENT >> DENSITY, AVERAGE SPEED & CALORIES / USEABLE AREA

Exercising

AVERAGE SPEED	bicycle riding ----- 15 km/hr jogging ----- 8 km/hr average ----- 11.5 km/hr
CALORIES(1Hr)	bicycle riding ----- 184 kcal jogging ----- 655 kcal average ----- 419.5 kcal
POPULATION DENSITY	low
USABLE AREA	30359.88 m ² ----- R _{A2} = 98.33

Communication / Service

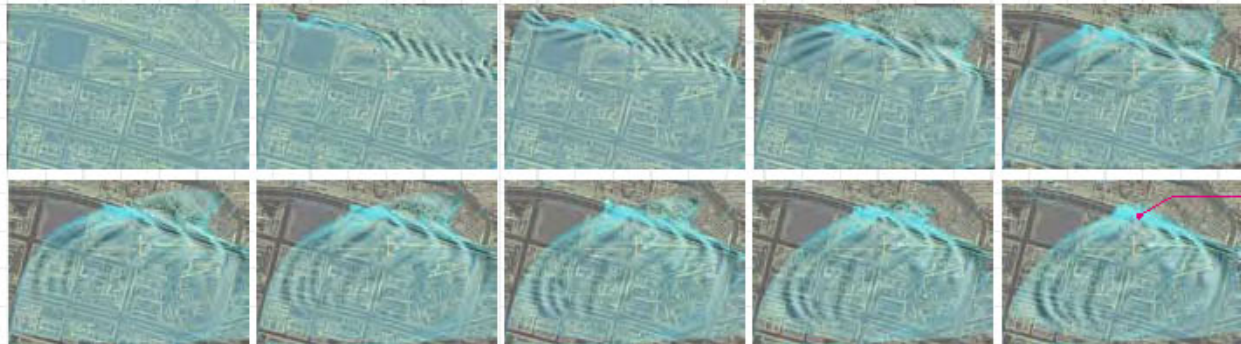
sidewalk walking -- 4.5 km/hr
sidewalk walking --- 255 kcal
subharmonic
38661.02 m ² ---- R _{B2} = 110.96

Visiting

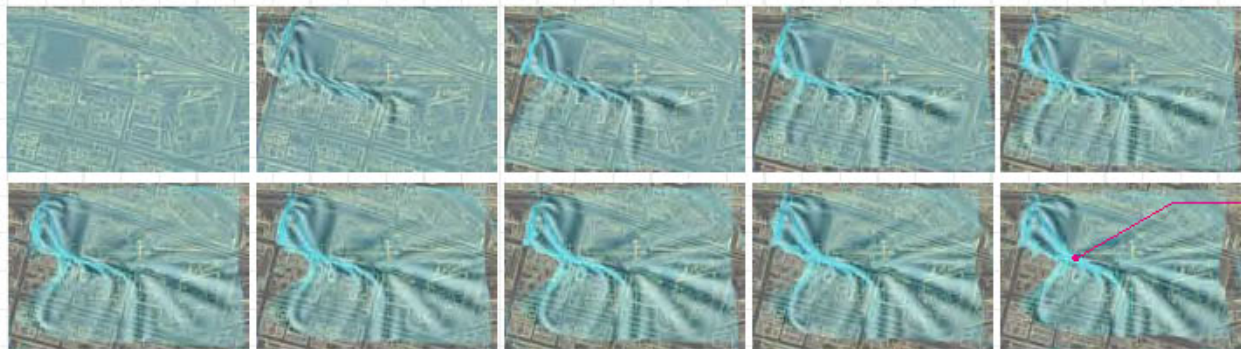
walking ----- 3 km/hr
walking ----- 110 kcal
high
35054.67 m ² ---- R _{C2} = 105.66



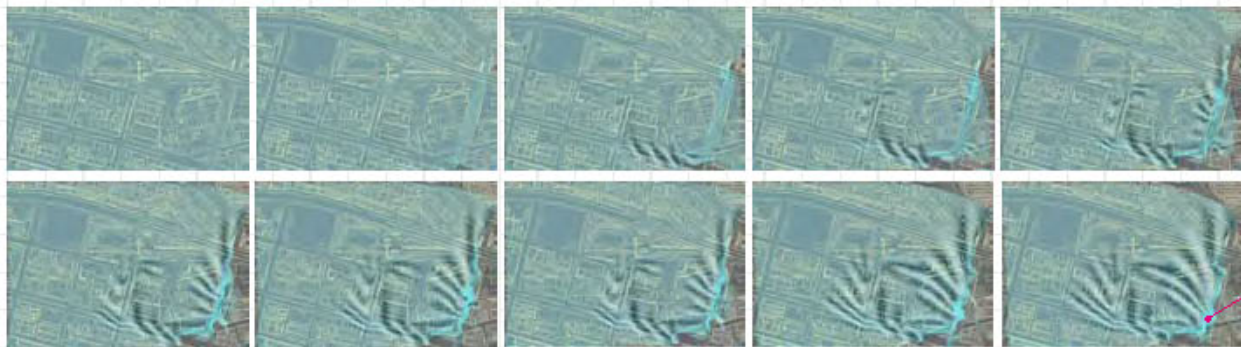
6 site strategy
Vehicle



Edges A
Surrounding Roads
Dynamic Field Collision
(Equilibrium Point)
Relative Position (X_{A1}, Y_{A1})



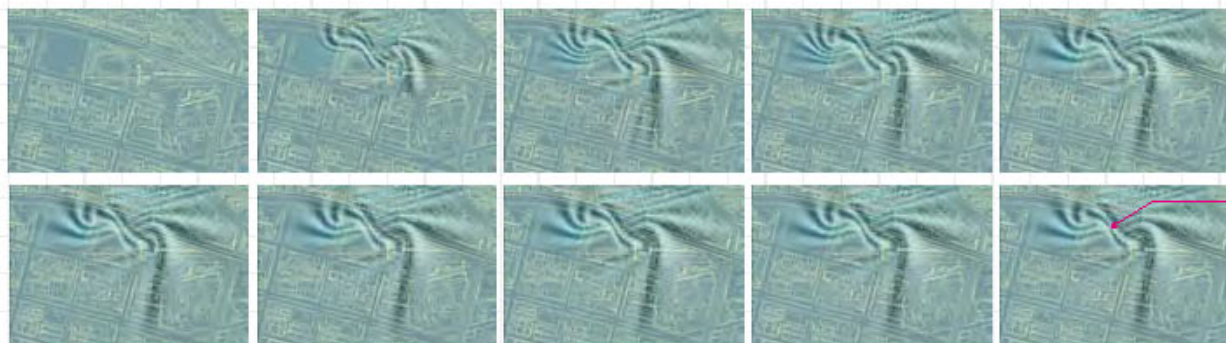
Edges B
Surrounding Roads
Dynamic Field Collision
(Equilibrium Point)
Relative Position (X_{B1}, Y_{B1})



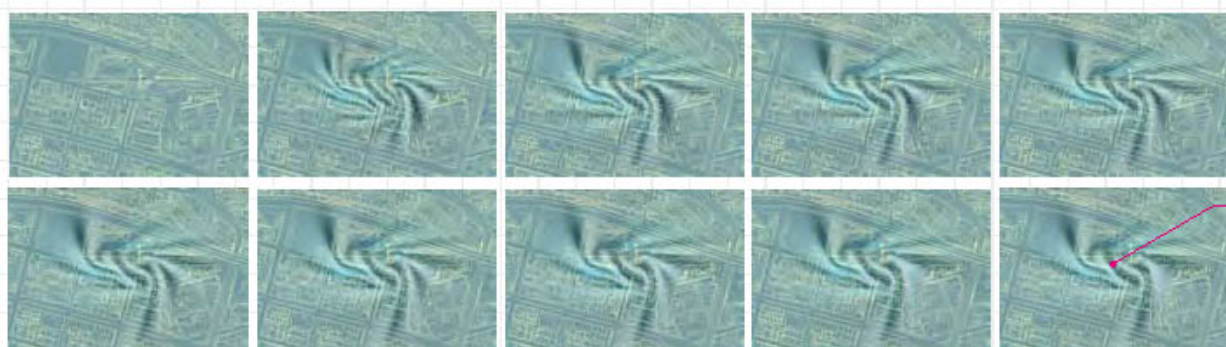
Edges C
Surrounding Roads
Dynamic Field Collision
(Equilibrium Point)
Relative Position (X_{C1}, Y_{C1})



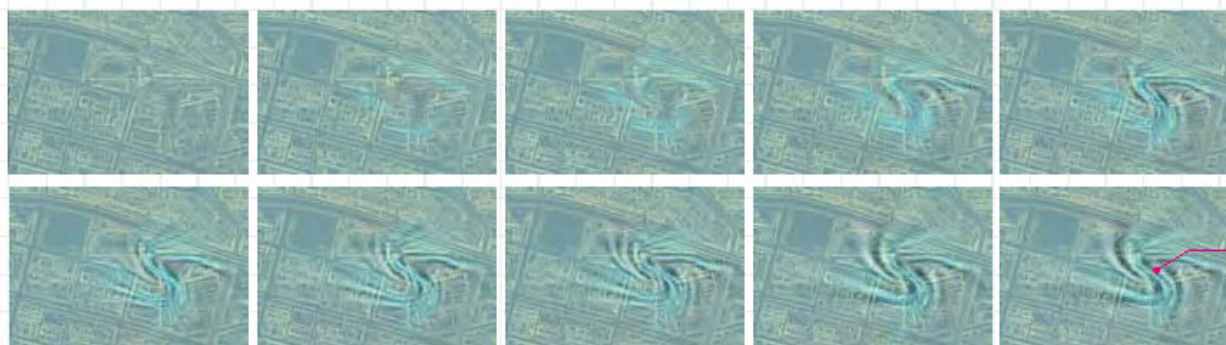
6 site strategy Vehicle



A Zone Entries
Park Entrance
Dynamic Field of Collision
(Equilibrium Point)
Relative Position (X_{2k}, Y_{2k})

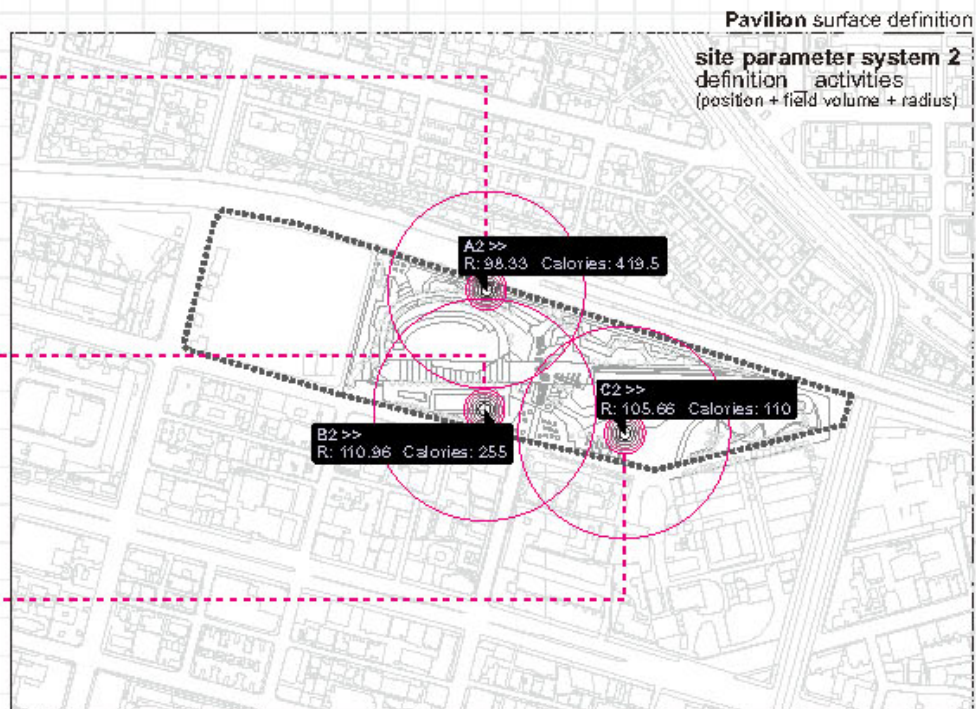
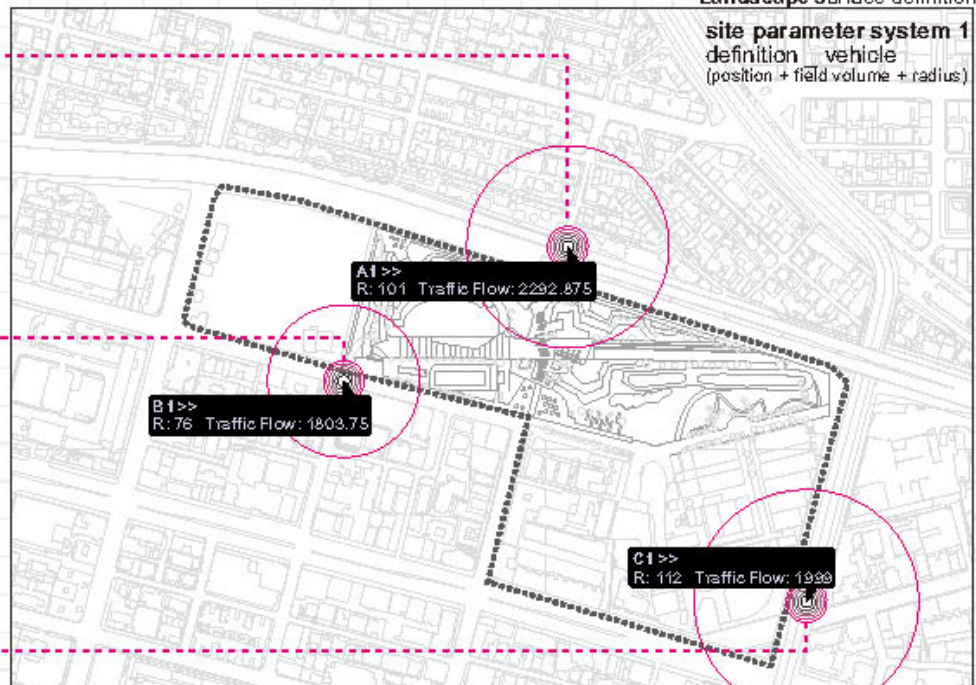
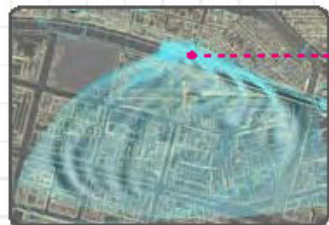


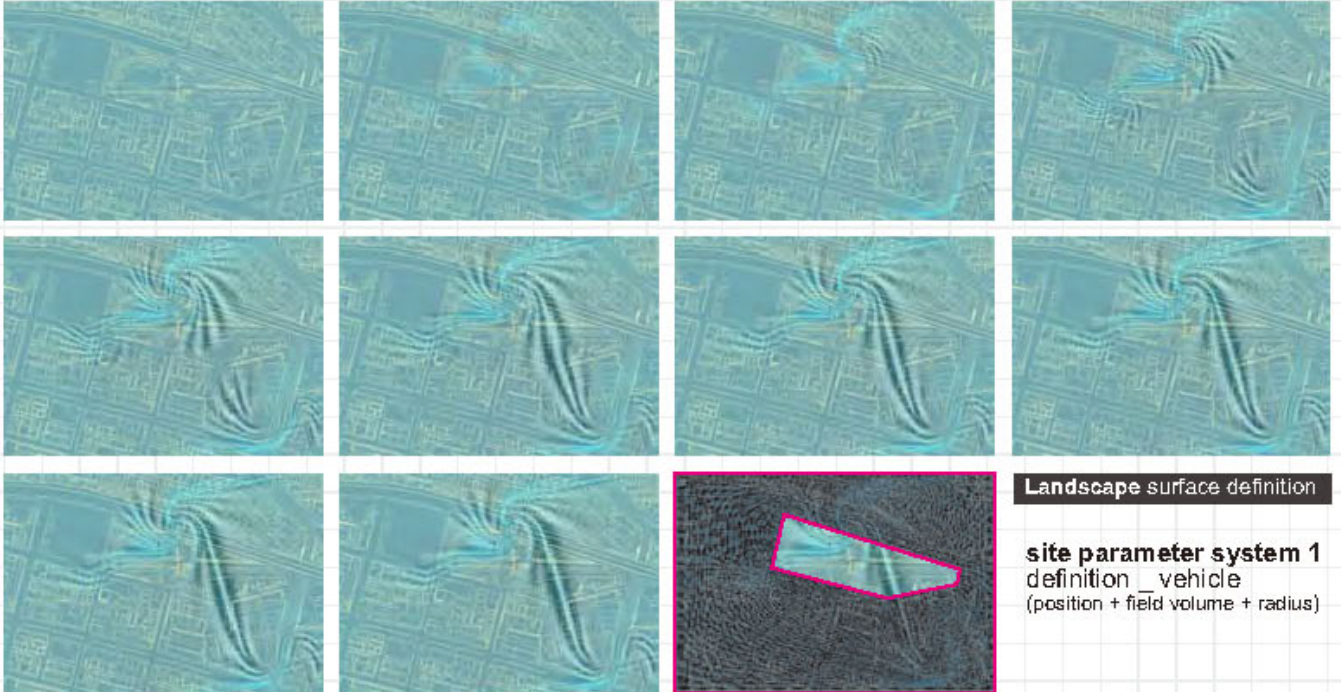
B Zone Entries
Park Entrance
Dynamic Field of Collision
(Equilibrium Point)
Relative Position (X_{2k}, Y_{2k})



C Zone Entries
Park Entrance
Dynamic Field of Collision
(Equilibrium Point)
Relative Position (X_{2k}, Y_{2k})

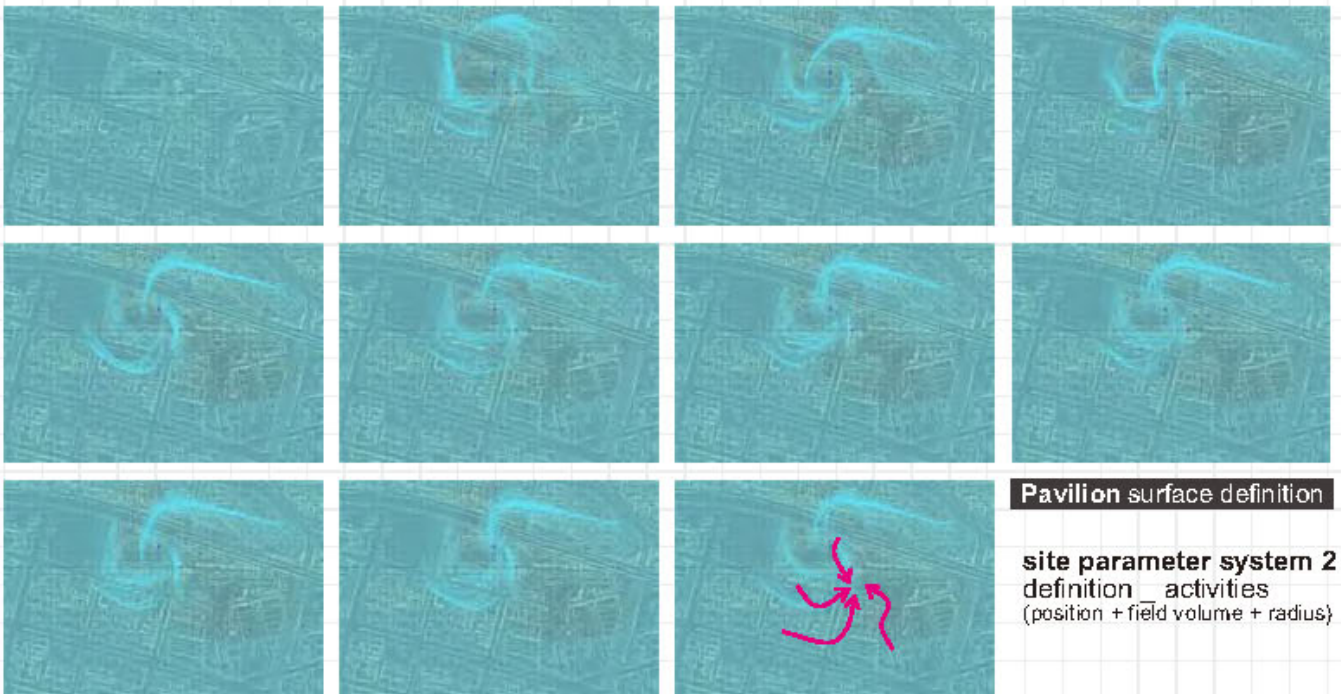






Landscape surface definition

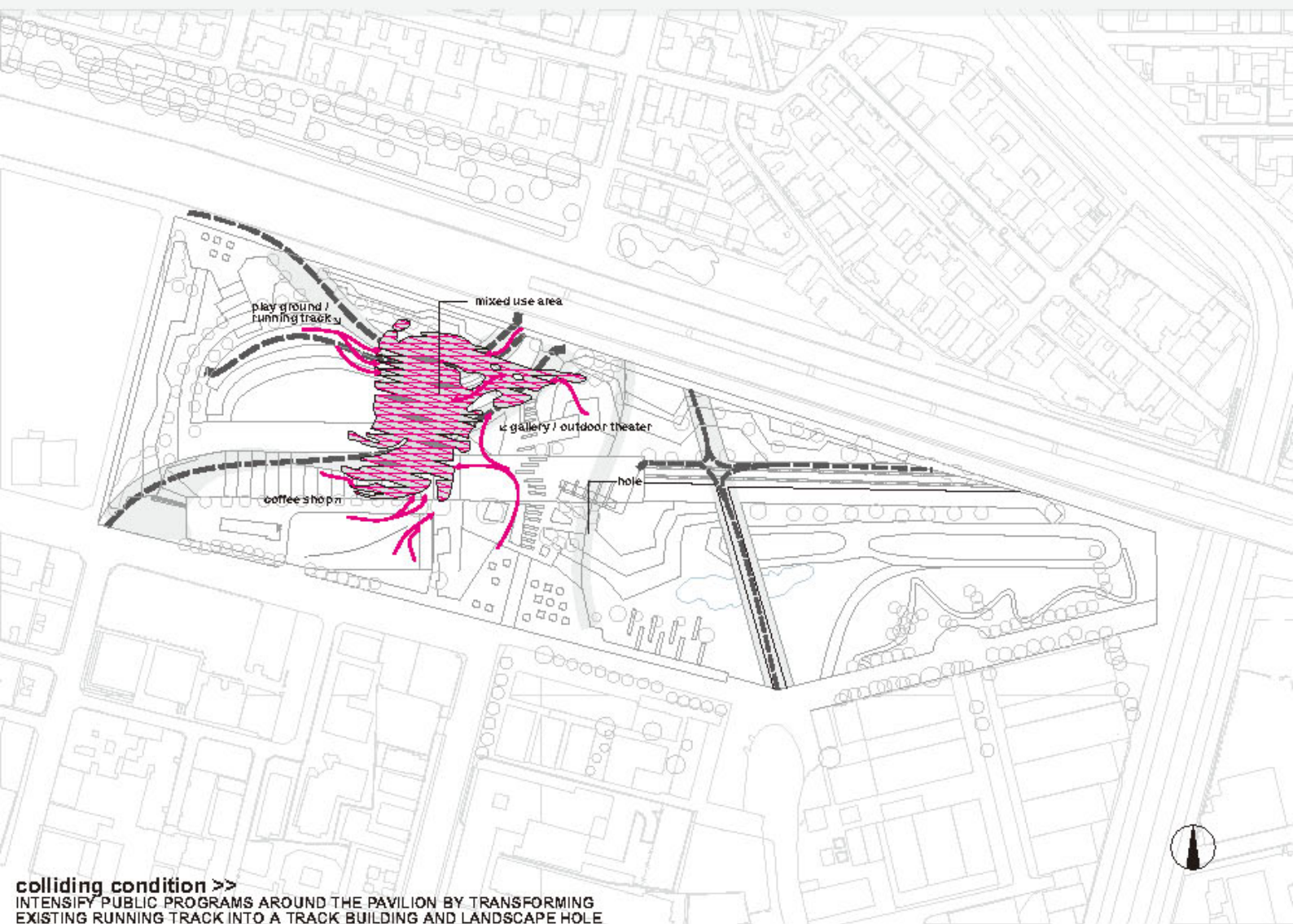
site parameter system 1
 definition _vehicle
 (position + field volume + radius)



Pavilion surface definition

site parameter system 2
 definition _activities
 (position + field volume + radius)

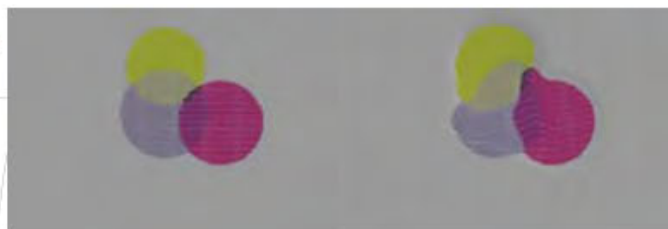
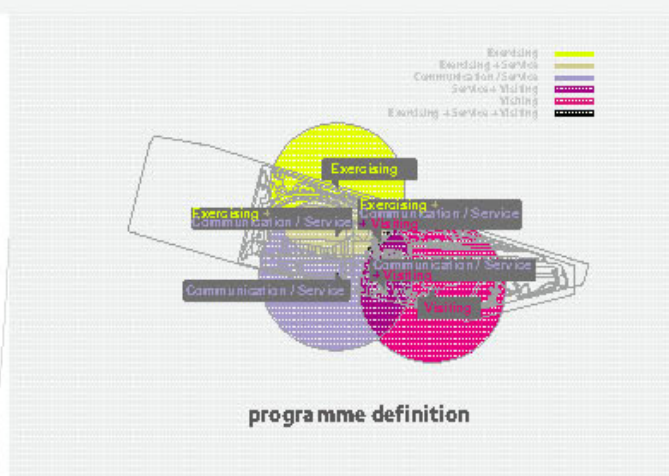
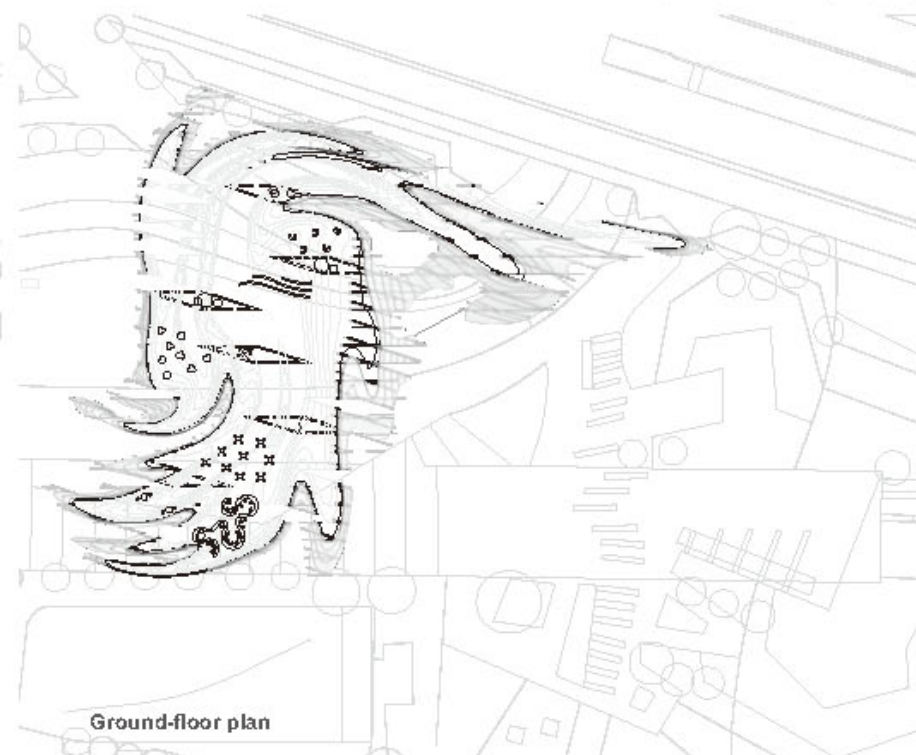
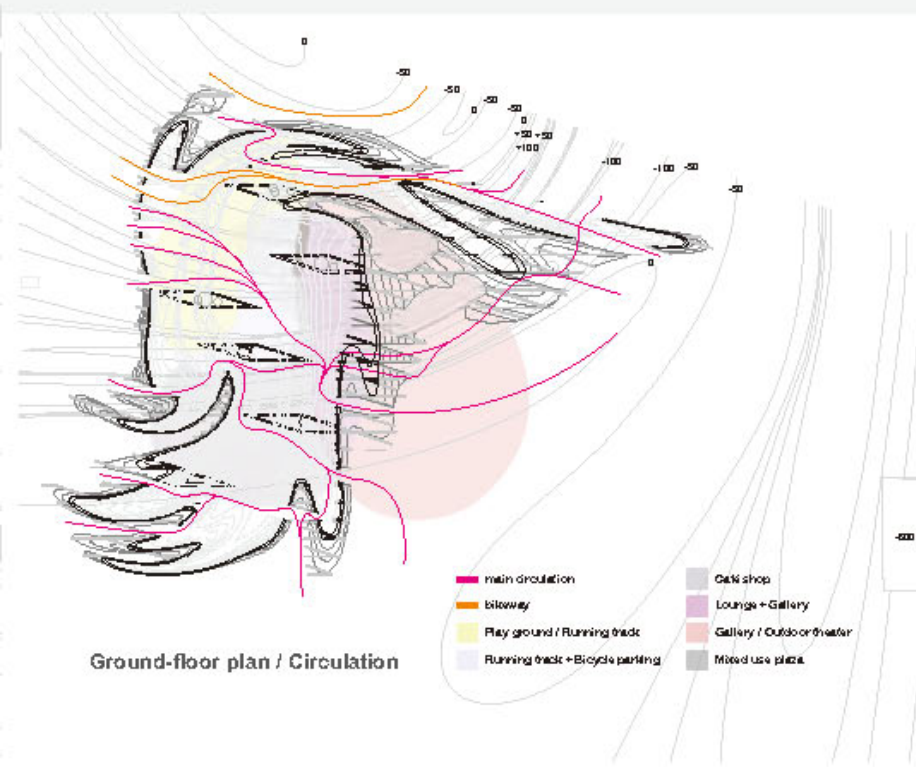




site plan / circulation connection

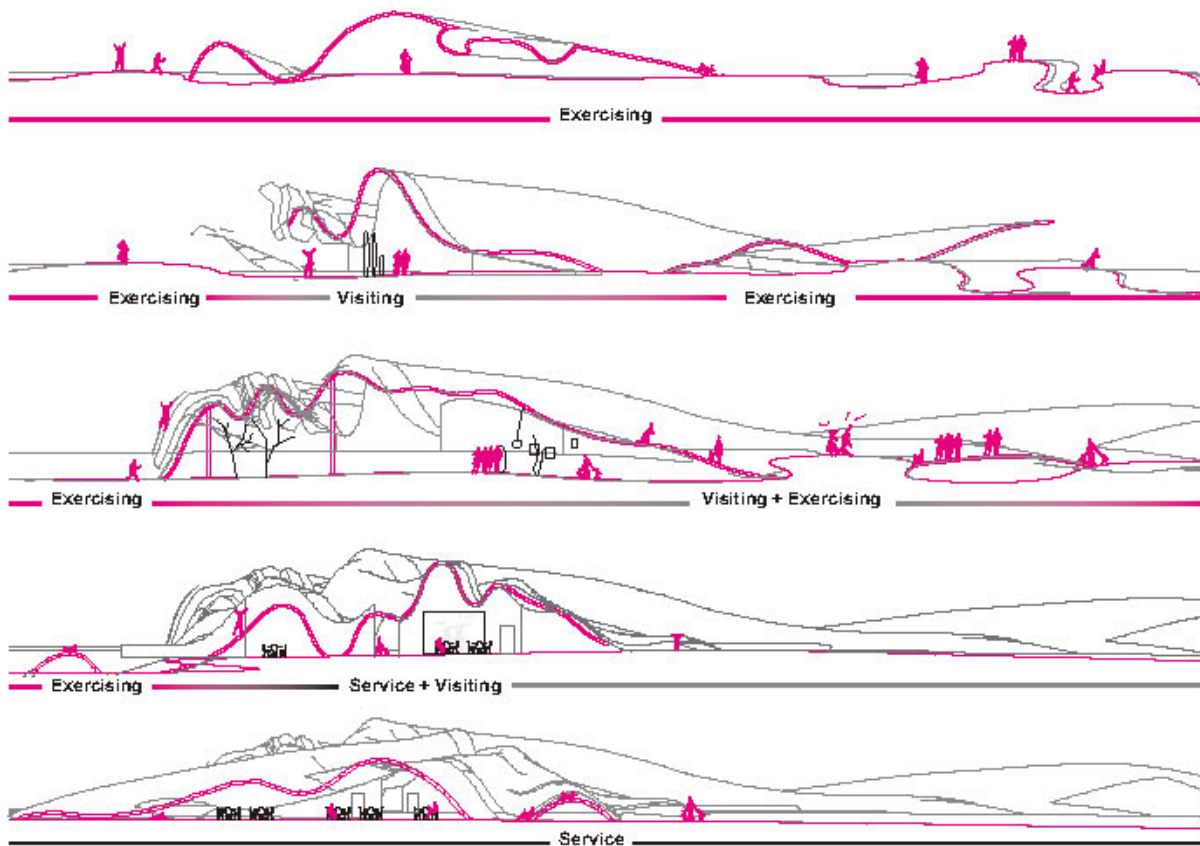
-  new circulation
-  pavilion entrance
-  pavilion area
-  colliding landscape



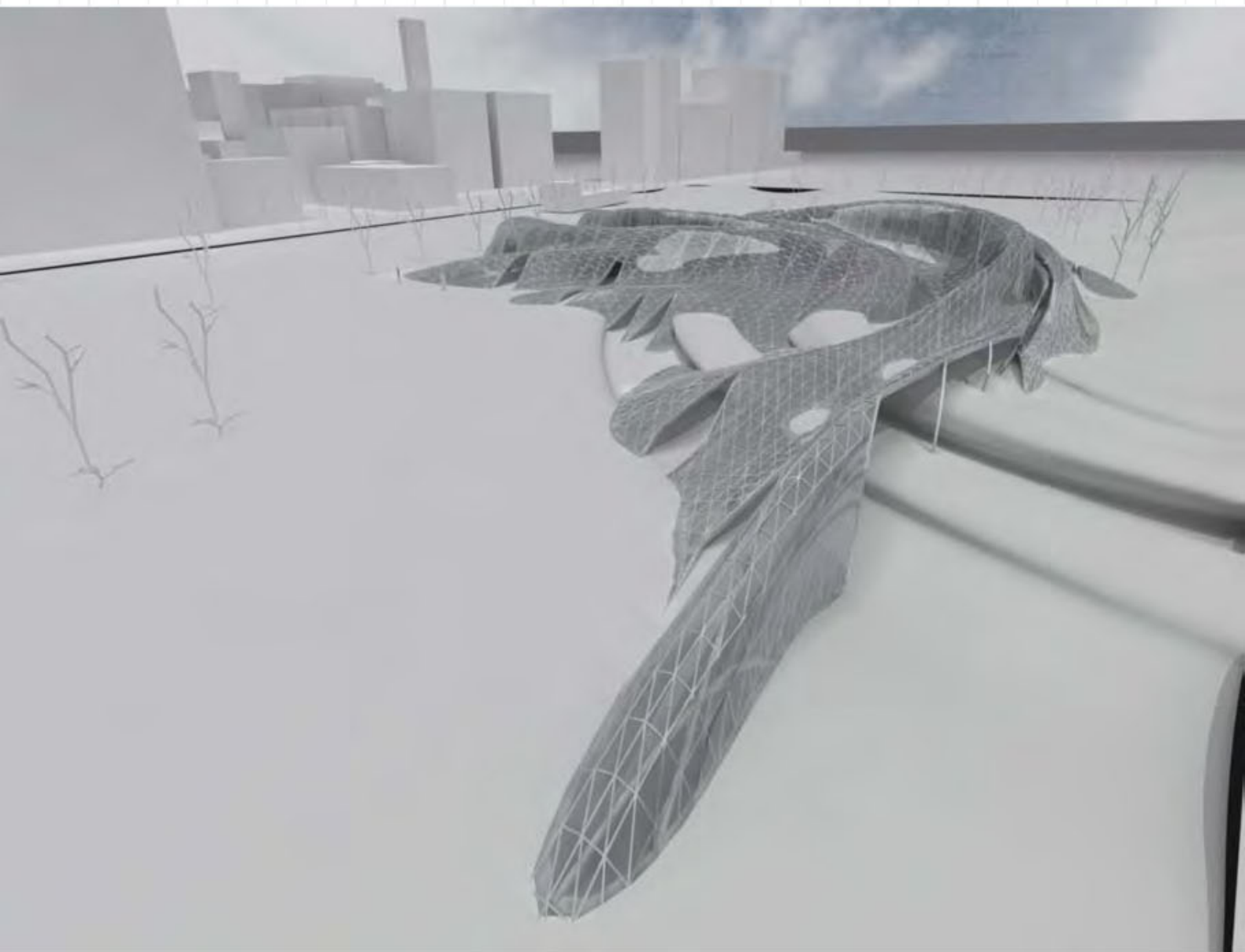


phasing of programme definition











Bibliothèque >>



Eslite After School Resource Library (2008 Fall)

Core Studio (M. Arch1 2nd)

Tutor | C David Tseng

Location >> Dunhua South Road,
Taipei

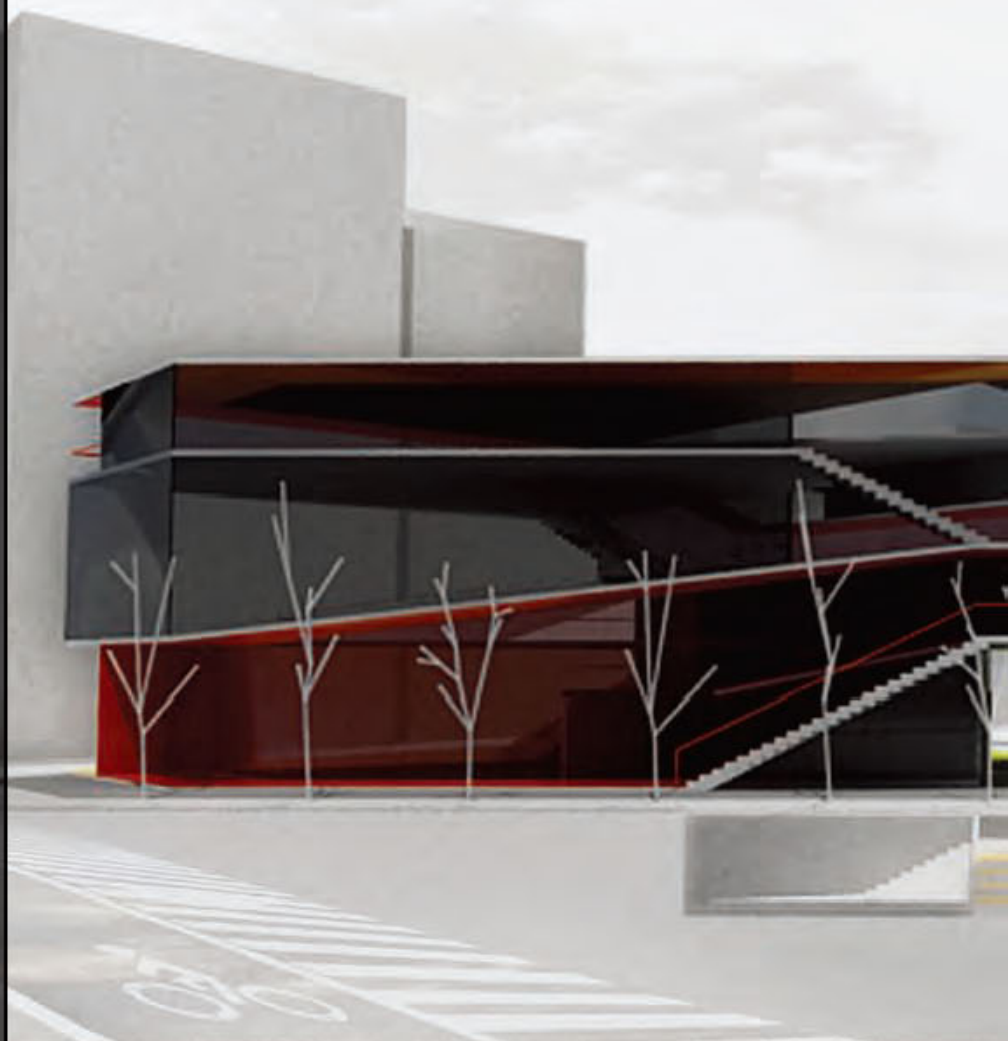
Studio Introduction >>

In French, the term "biblio" was defined as "booked" or "biblical", whereas "theca" was interpreted as membrane, shell, bag, or box. Nowadays library is an indicator of access to unlimited sources and information with a wide variety. It not only provides resources but professionals and librarians to help find information and explain information needs. In recent years people's understanding of library has changed to an extent that transcends "the wall of architecture". Readers get resources via electronic tools; librarians guide readers and analyze huge knowledge by using various mathematic calculators. Therefore, what exactly is a library? What can people read? This is the subject we delve into.

Description >>

The station hides under the ground; the street meanders above.
The word above converses with the one beneath as carriages pass by, creating the subway wind.

Cultural phenomenon and cityscape around Dun-Nan Eslite Bookstore into the library through circulation, so as to create a more innovative, more active space within the architecture from outside. This also encompasses activities such as (text-) book donation and post-class lessons for underprivileged students. These activities together with the creative market and outdoor cinema from the square for discourse, reading and knowledge-exchange.

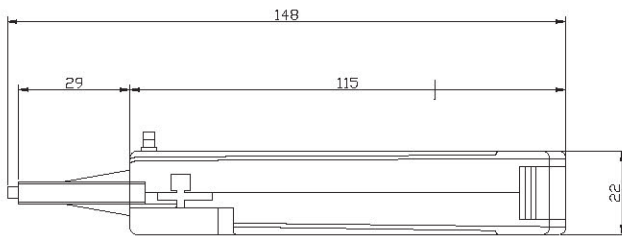




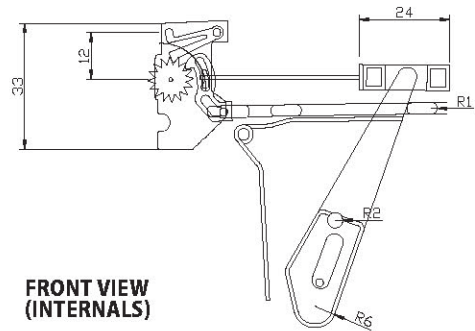
PHASE 1 >>
1.The hybrid object
writing Machine - wind Catcher

deconstruction & hybrid object

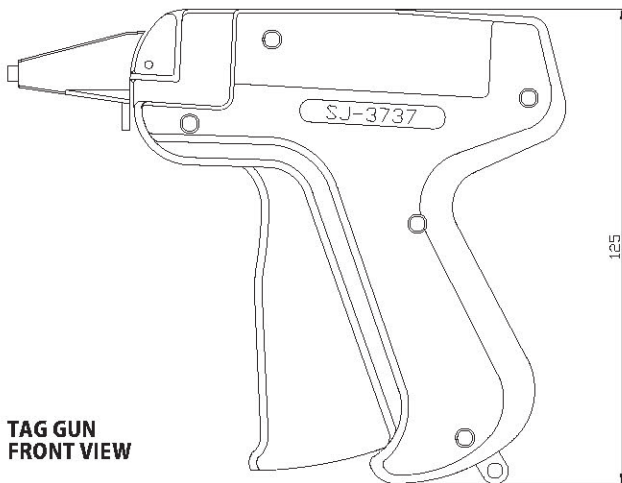
Try to take apart and reconstruction the two objects, a tag gun and a lighter. Combine them to make a hybrid object with with new function. The "writing machine" is used to record the intensity of wind.



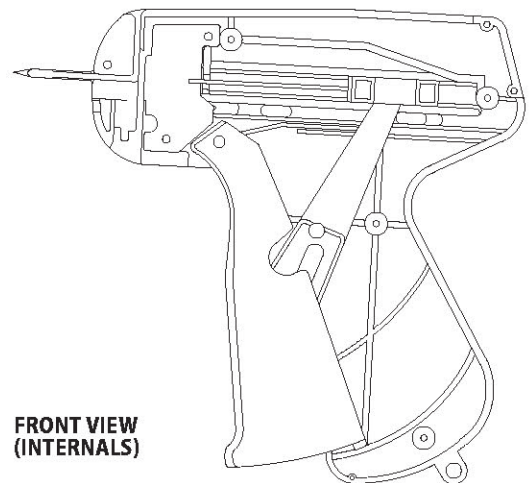
TOP VIEW



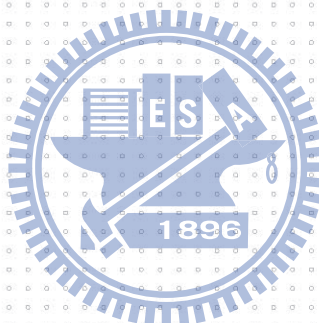
**FRONT VIEW
(INTERNALS)**

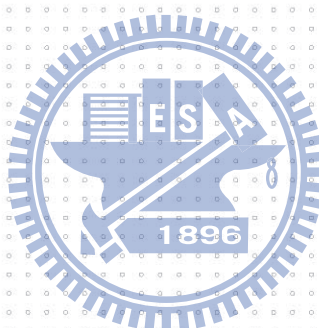
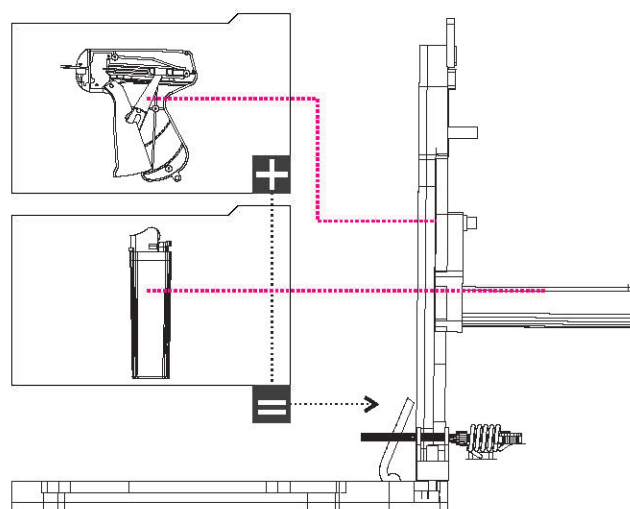
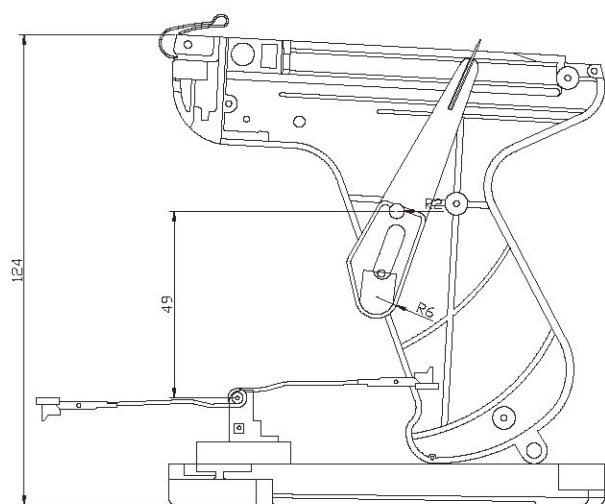
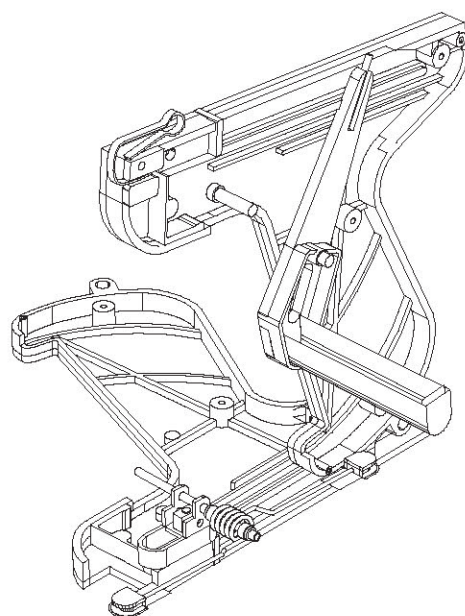
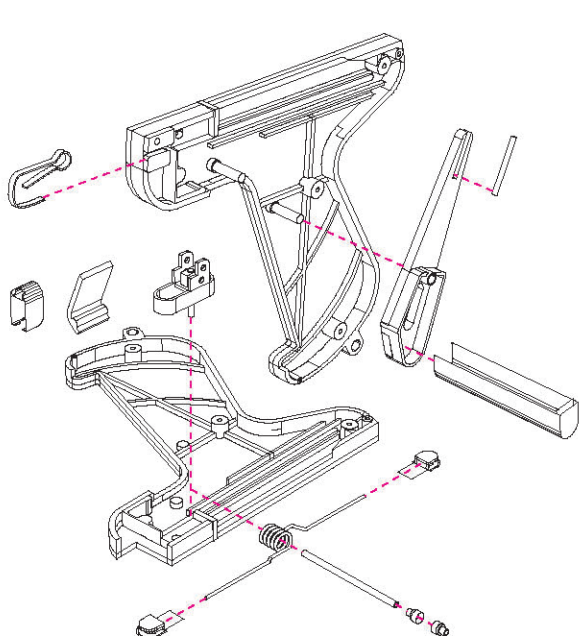


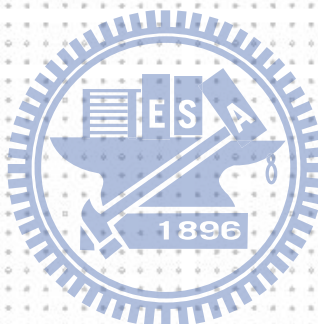
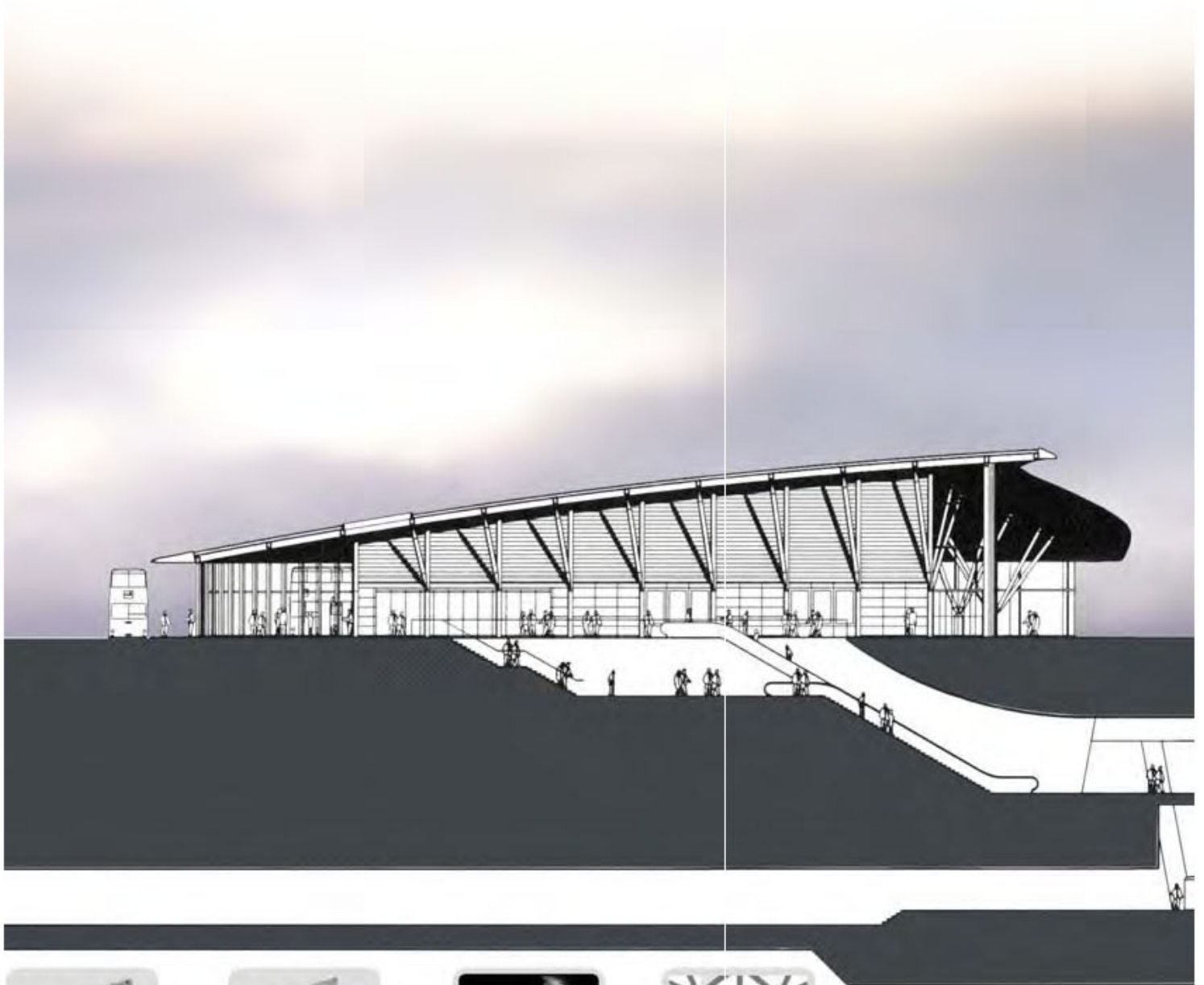
**TAG GUN
FRONT VIEW**



**FRONT VIEW
(INTERNALS)**







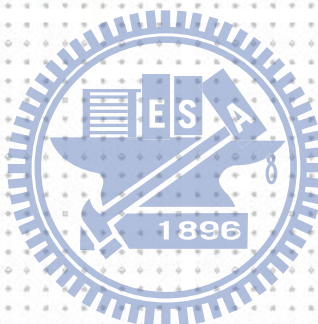
Writing Machine + Scenario = Metro Catcher

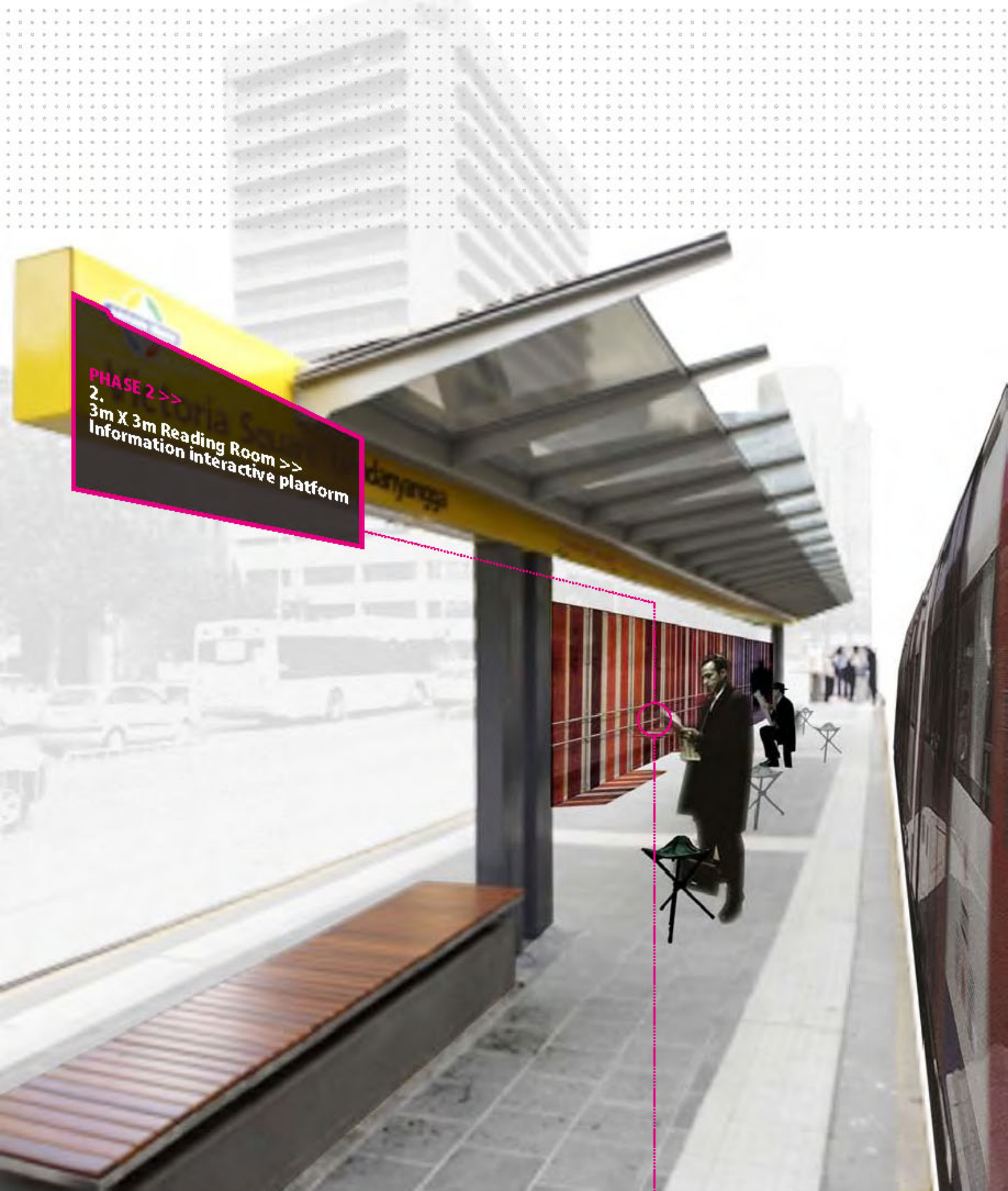
The station hides under the ground; the street meanders above. The world above converse with the one beneath as carriages pass by, creating the subway wind.



2. Input Scenario:

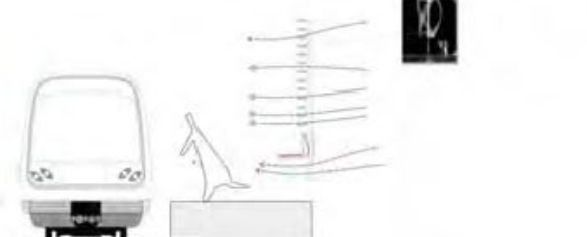
The writing machine "Metro Catcher" is designed to be used by the users (like office workers, commuters) for the rush hour period of a day. It reminds passengers that the train is coming.





PHASE 2 >>
2.
3m X 3m Reading Room >>
Information interactive platform

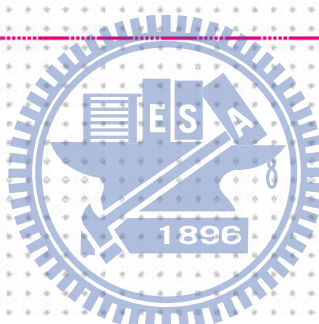


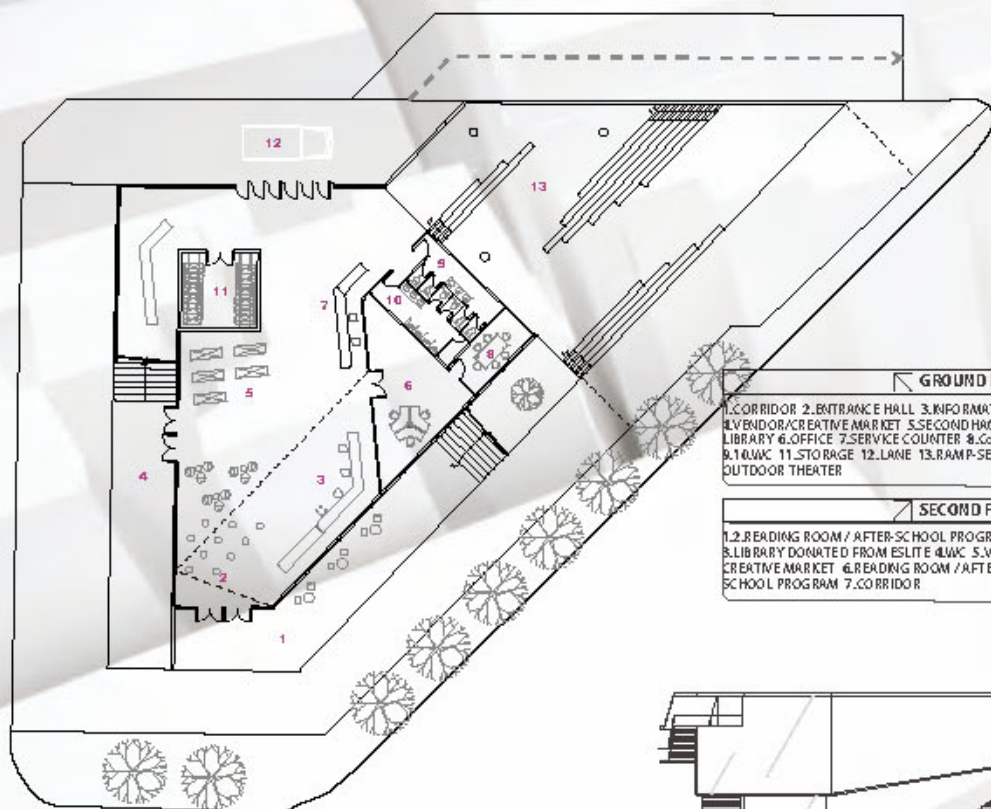
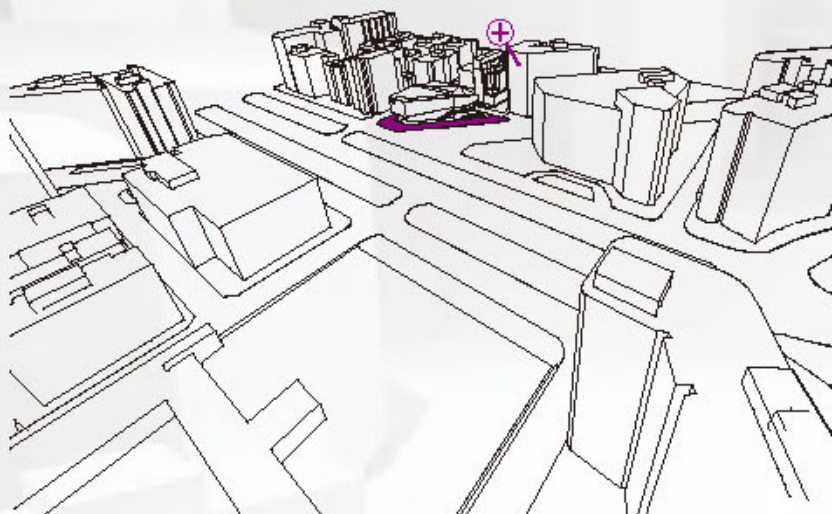
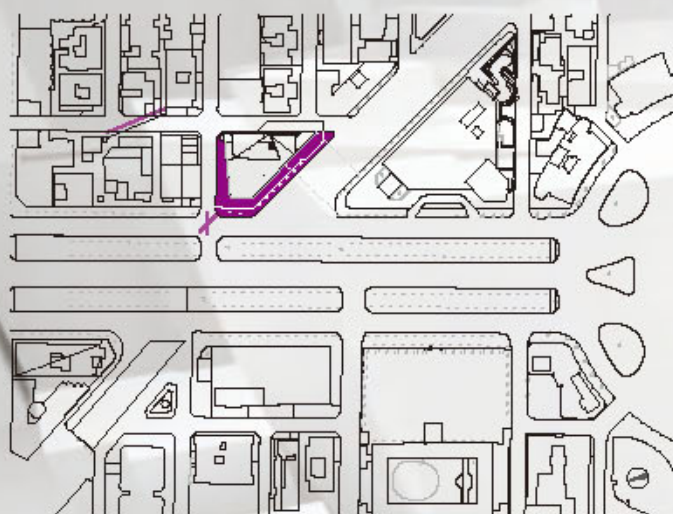


3m X 3m Reading Room >>> Information interactive platform

The information is timely and easy to read when people are waiting for trains to come, so it is a newspaper or magazine reading room on the platform. People can turn their back on the train side to read but they still know the train is coming. The wind pressure from the train are changing books or newspapers into the timetable. People can read the information to choose to take the train or still to read and waiting for another one

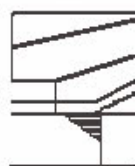
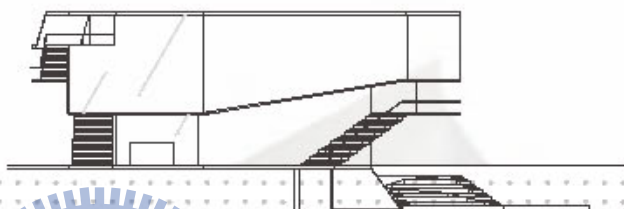
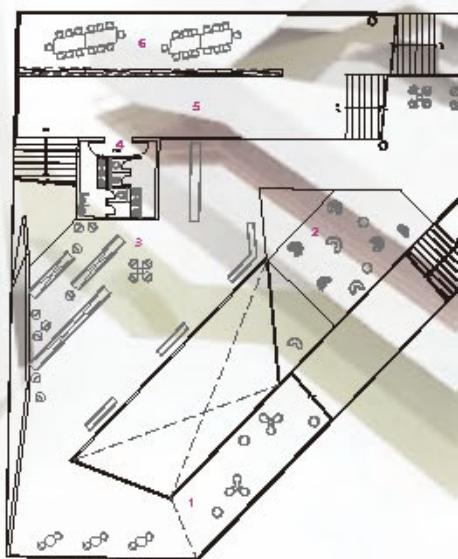
On the other hand, Passengers in trains are another reading group. When the train is entering the station. The information that people wanting to know most is the station name, so the commercial board is also a mechanism that changing commercial into the station name by the wind pressure from the train. The order of the board flipped and the relationship of writing, a sense of dynamic is revealed.

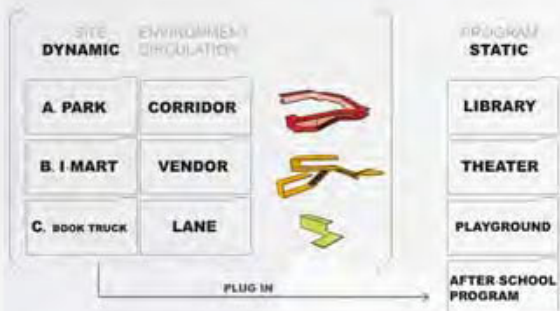




GROUND FLOOR
 1. CORRIDOR 2. ENTRANCE HALL 3. INFORMATION
 4. VENDOR/CREATIVE MARKET 5. SECOND HAND BOOK
 LIBRARY 6. OFFICE 7. SERVICE COUNTER 8. Café
 9. 10. W.C. 11. STORAGE 12. LANE 13. RAMP-SEATING
 OUTDOOR THEATER

SECOND FLOOR
 1. 2. READING ROOM / AFTER-SCHOOL PROGRAM
 3. LIBRARY DONATED FROM ESLITE 4. W.C. 5. VENDOR/
 CREATIVE MARKET 6. READING ROOM / AFTER-
 SCHOOL PROGRAM 7. CORRIDOR



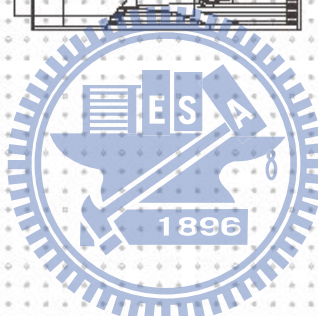
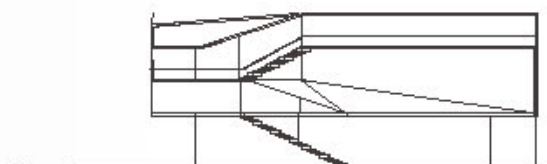
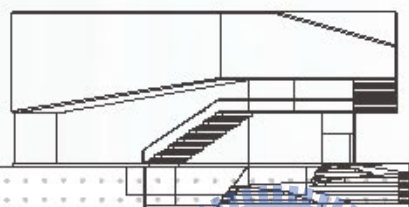
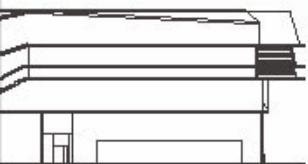
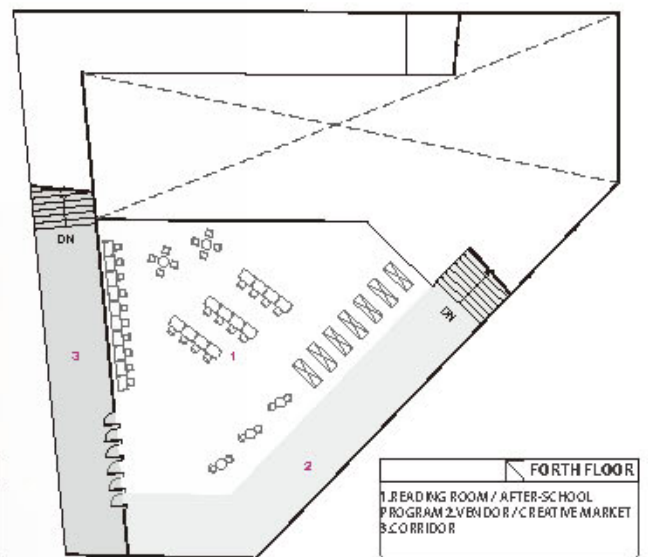
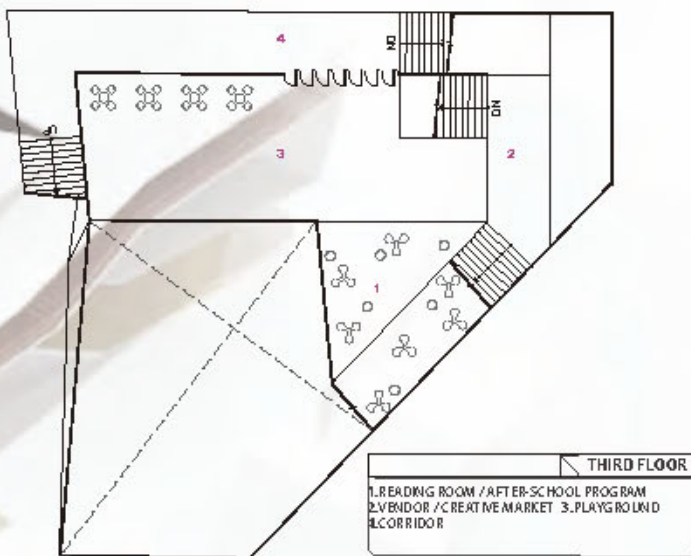
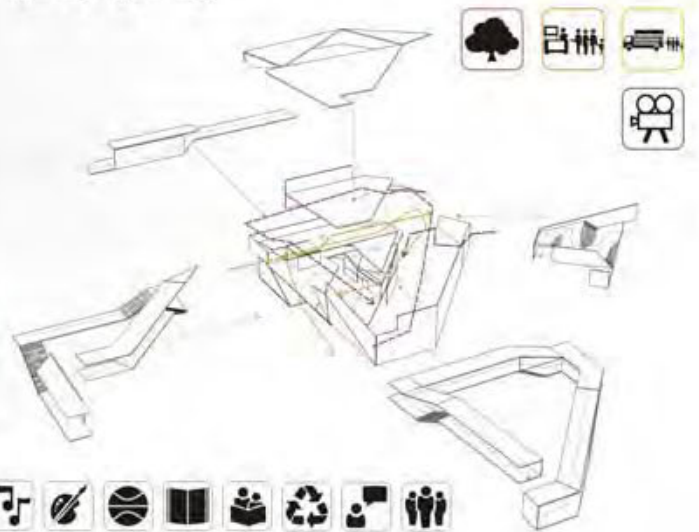


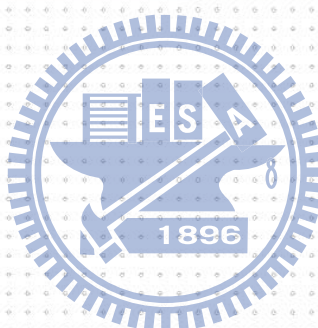
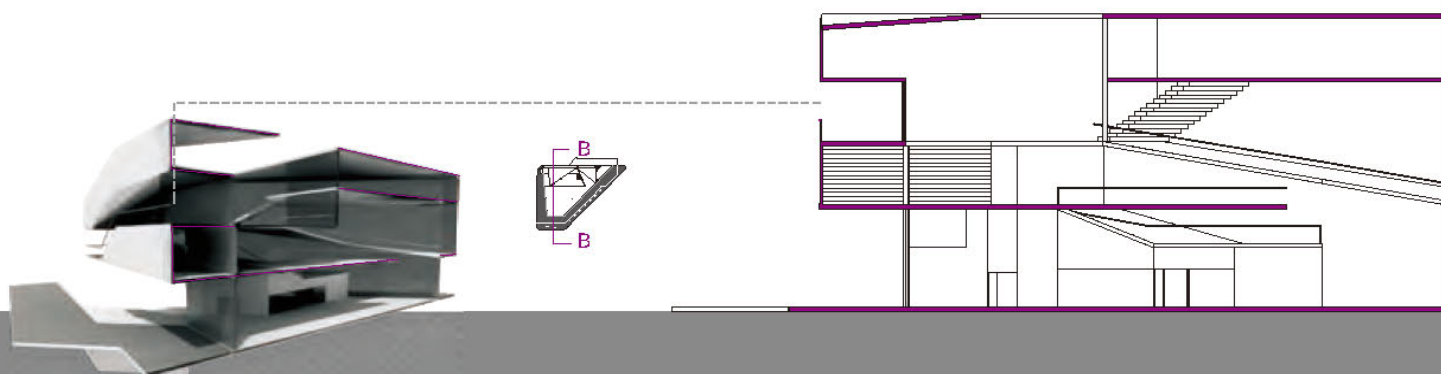
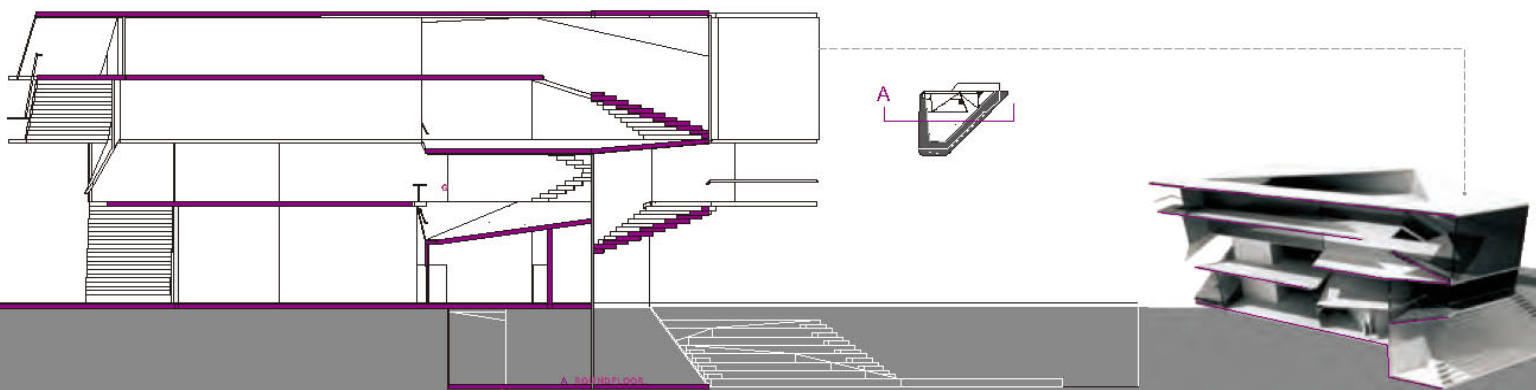
concept & strategy

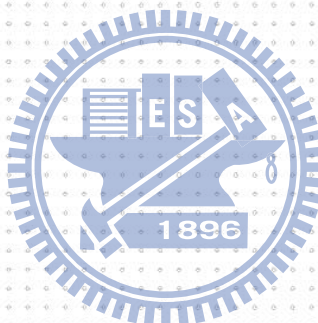
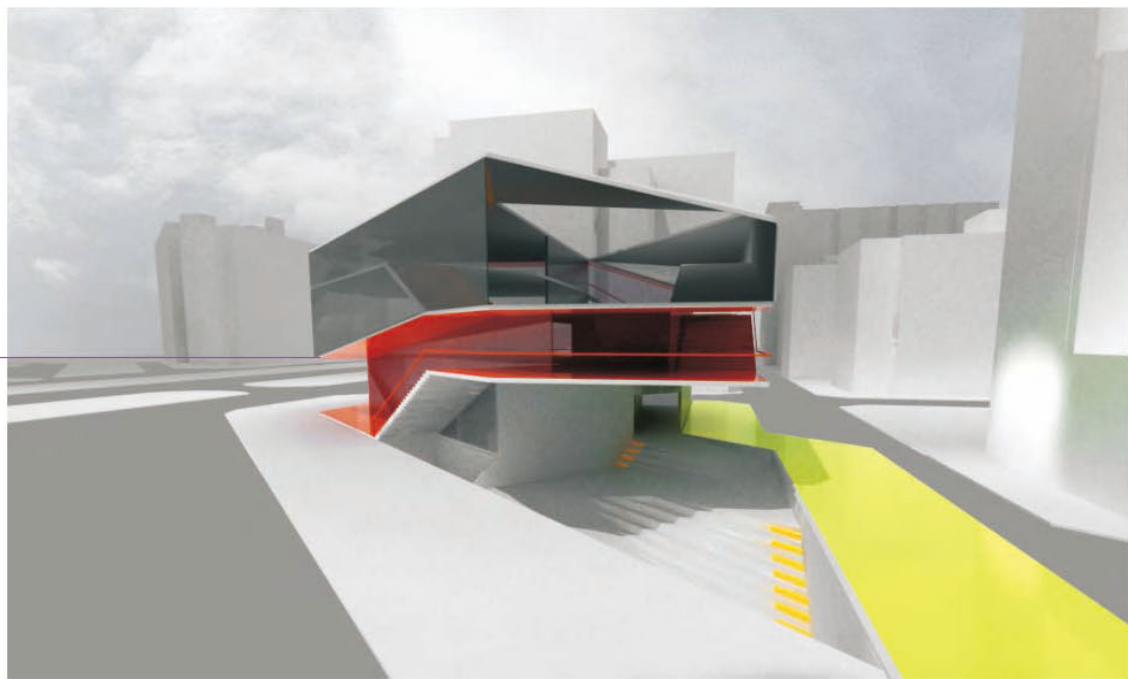
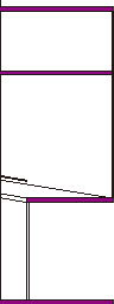


events around the site will be brought into the library, so quite and serious library may have more fun and the external things can be perceived.

space programming







Appendix other works

Competition

SELF SUFFICIENT CITY>>
Envisioning the habitat
of the future

Workshop

TheVerticalVillage© >>
International Design Workshop

Project

NEXT-GENE >>
Bus Hotel

Other Projects

NCTU GIA >>
2007-2010



Competition

SELF SUFFICIENT CITY>>
Envisioning the habitat
of the future

SELF SUFFICIENT CITY

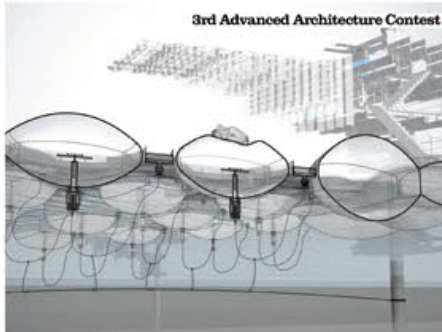
Envisioning the
habitat of the future

Super mangrovescape, pro-resort urbanism, form C.J Liu & Y.S Chen (2009)

This project is a pro resort urbanism aims to prevent the new tourist city getting damaged from an inappropriate development which reduce the value of natural landscape, giving a aesthetical plan for the places, while developing from rural to new resort city.

We proposes a new type of tourist resort, which can play as a machine to support self-sufficient system in larger scale, it also integrates the infrastructure of the city before planning, and coherences the social relationship between the local and tourists.

In Alagoas, Brazil, Mangrove is the most symbolic environmental form the local landscape. The mangrove could be the base of water purification system, the resources of local food, energy, also nursing mangrove forest could be high value agricultural practice for local people. The act of mangrove recovery is a best way to promote eco tourism for resorts and reduces the land swallowed from the second house developments. These both win mangrove-base urban plan pursuits the better urban condition for future development,



00% agriculture 25% urban



before development mangrove

20% mangrove (before urban) 25% urban mangrove 25% agriculture mangrove 10% pasture 20% salt farm



after mangrove mangrove



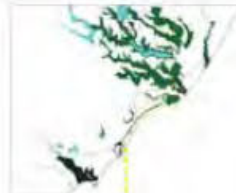
mangrove area
1900



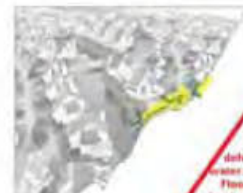
suger cane farm
1970



tourism scheme
2009

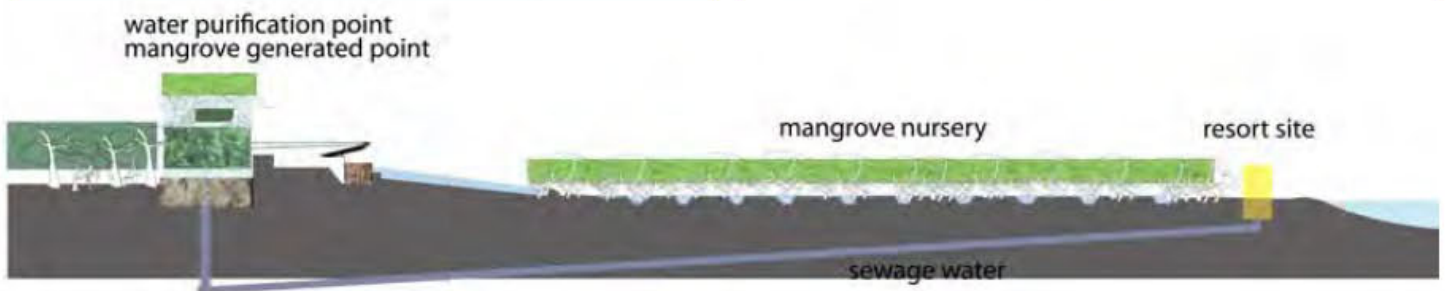
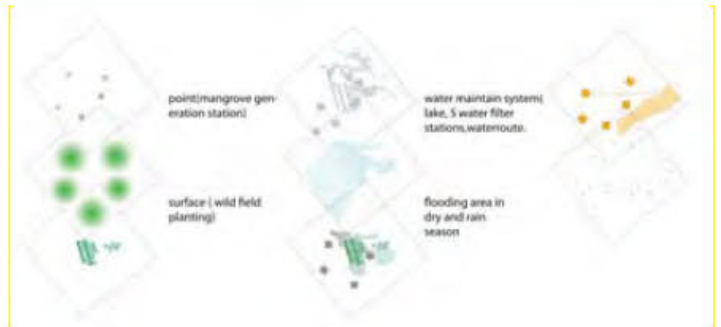


mass tourism
2030?



The way go to mass tourism





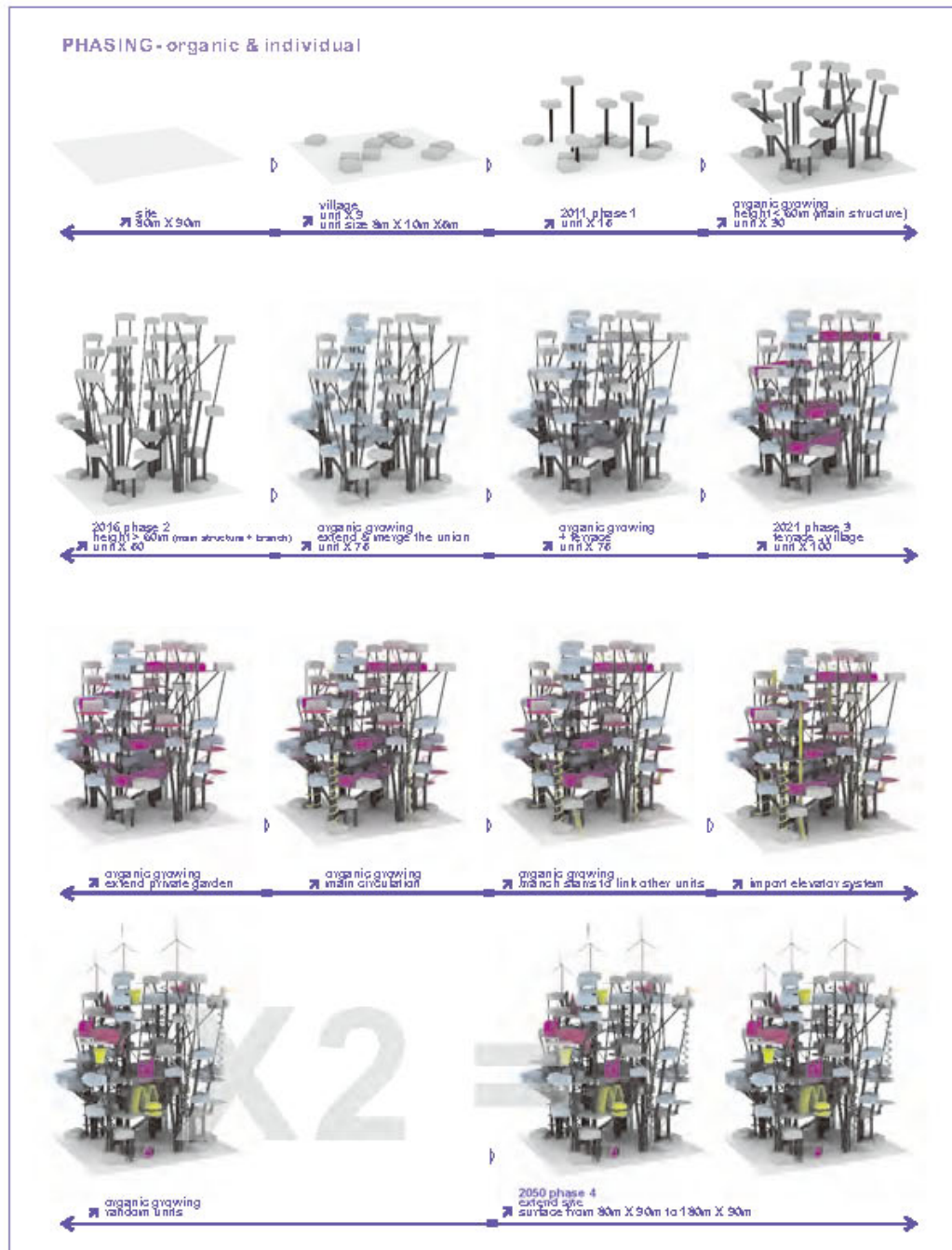
process of water purification

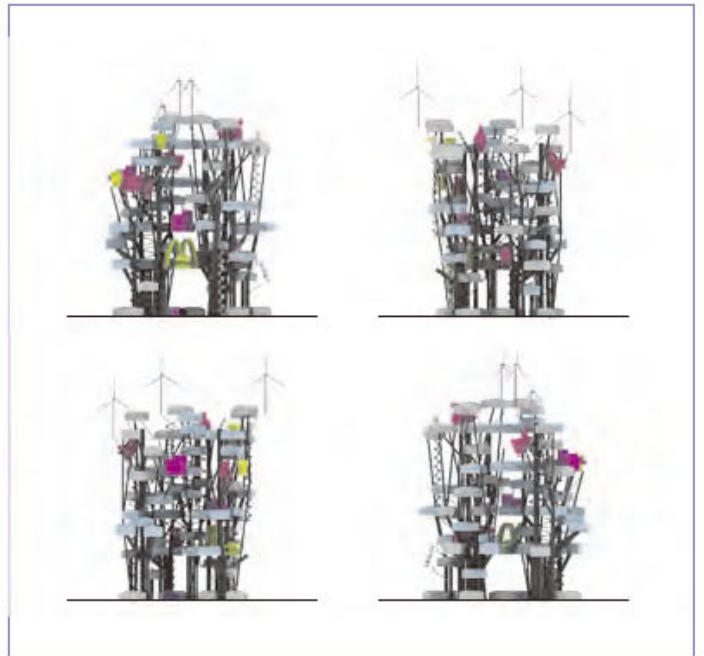
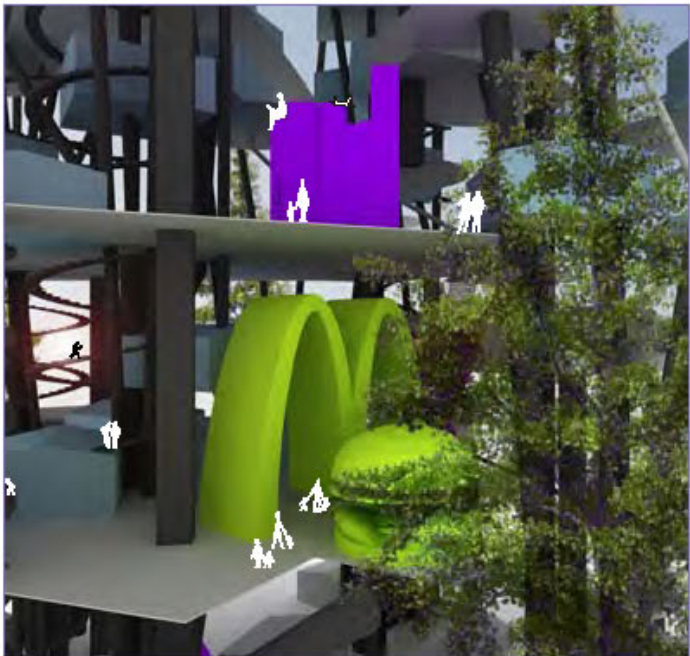
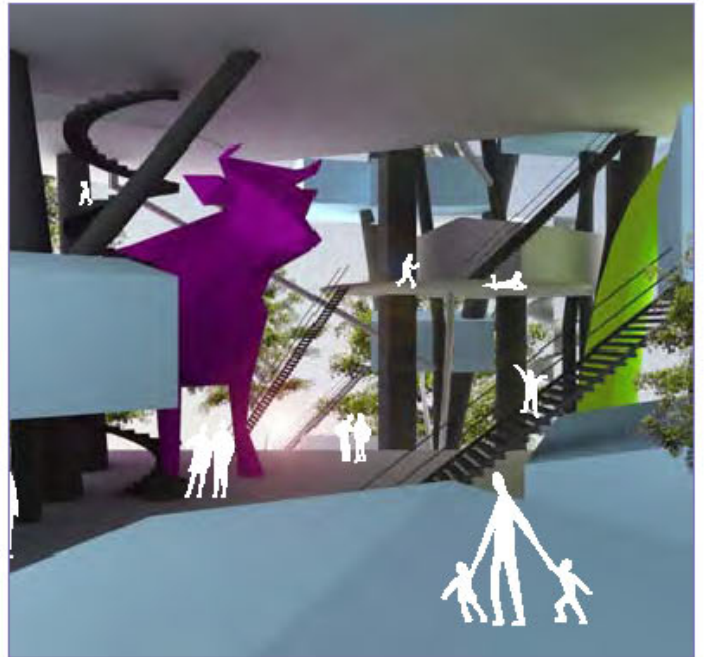


Workshop

TheVerticalVillage© >>
International Design Workshop

MVRDV WORKSHOP >> parametric group >> Phasing- Organic & Individual form Y.S Chen (2009)

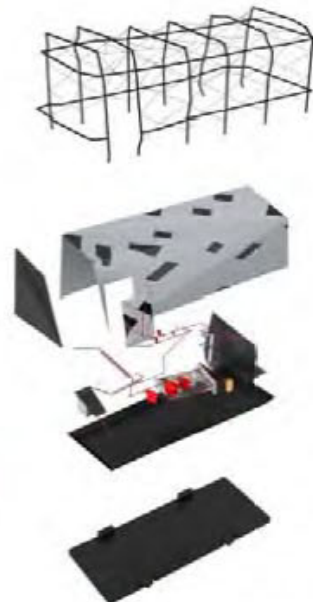
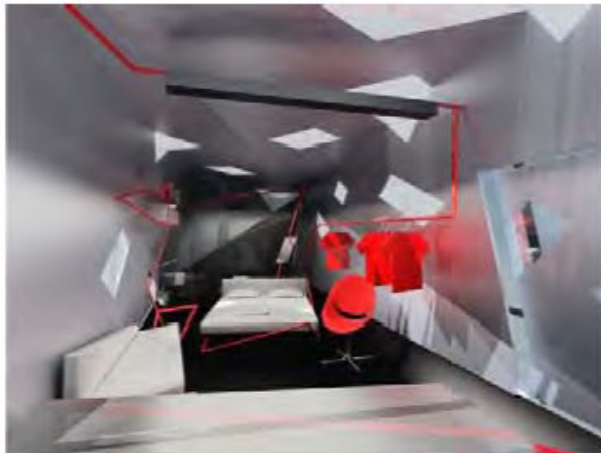




Project

NEXT-GENE >>
Bus Hotel

NEXT-GENE >> Bus Hotel form Y.S Chen & Eric Tiao (2008)



Other Projects

NCTU GIA >>
2007-2010

