DETACH or ATTACH
Simulating Peripheral Perception in Forest into Artificial Landscape
by Transforming Environmental Elements

ZHAO WU
Chalmers School of Architecture
Examiner: Morten Lund
Tutor: Kengo Skorick
Detach or Attach
Zhao Wu
09. 2016-02. 2017
Chalmers School of Architecture
Master Program of Architecture and Urban Design (MPARC)
MATTER SPACE STRUCTURE Studio
Examiner: Morten Lund, Artistic Professor, mortenl@chalmers.se
Tutor: Kengo Skorick, Artistic Senior Lecturer, kengo@chalmers.se
Contact: adtowz@gmail.com
Acknowledgements

Thanks to:

My tutor Kengo Skorick,
all your efforts, understandings, supports and pushes;
My examiner Morten Lund,
you give me what I want and need most during my study in Chalmers;
The whole MSS Studio classmates and other teachers,
you leave me this precious memory;

Especially Hao,
for your company.
# TABLE OF CONTENT

## INTRODUCTION
- Abstract........................................................................................................................1
- Personal Interest........................................................................................................2
- Discourse.....................................................................................................................6
- Process Schema..........................................................................................................8

## RESEARCH
- Method & Tool
  - Main Literature........................................................................................................10
  - Research Distillation.................................................................................................11
  - The Thinking Hand....................................................................................................14
  - Evidence...................................................................................................................16
  - Precedence................................................................................................................18
- Base Architectural System..........................................................................................20
- Prototype Evolution
  - Phase 1 Shifting & Colinearity.................................................................................24
  - Phase 2 Enclosure of One Zone................................................................................28
  - Phase 3 Connection of Two Zones............................................................................30
  - Phase 4 Organization of Multiple Zones....................................................................32
- Research Summary....................................................................................................36

## PROPOSAL
- Base Organizational System......................................................................................40
- Urban Context..........................................................................................................44
- Formation..................................................................................................................48
- Final Design...............................................................................................................50

## CONCLUSION..............................................................................................................57

## SUPPLEMENTS.............................................................................................................58
INTRODUCTION

Abstract

We stroll around into forest. Senses are active by different stimuli. Feet are free to move. Flows touch and embrace us. Through a peripheral perception, we experience the environment in its parts and its whole. We feel attached to the place and know it more. However, an urban setting emphasizes more on focused vision which makes us spectating on individual building and detached from real life.

Thus certain spatial qualities about peripheral perception in forest are delimited. Specific investigations on boundary of one zone, connection of two zones and organization of multiple zones are developed. The evolution ends up with a conceptual prototype working as a tool for further proposal.

Different situations on the whole food process are organized in an urban context with this tool. The forest-like artificial landscape moves city people closer to food.

The process is driven by a method of combining inner conception-literature study, diagrams, etc. and outer perception-drawings, model making, etc. It’s a way of work and also a way of communication.

We come from wild and infinitive space with freedom to build up shelter places with meaning and security. Building makes it happen. As an architect, how to use our intelligence to learn from nature and embody them in tangible material for humans? Let’s give it a second thought.
Personal Interest | Being In the Forest

Awareness of Oneness

When I step into the forest, its setting with different stimuli creates an infinitive perception, I feel very much enveloped by its body.

When I start to move, a slightly defined enclosure always follows me, I feel protected but in an unlimited way.

Be aware of myself and feel attached to the place. I guess it would be a common sense we share in the forest no matter which culture or society we are from.

I then wonder if it’s possible to transform this phenomena in nature into our artificial space?

“What is most personal is the most general”

--Carl Rogers
Personal Interest | Experience of Food
Knowing by Embodying

Food, a never ending topic in our daily life. However nowadays, We know little and little about it, especially how it’s growed.

My own experience in an eco-farm in the summer of 2016 makes me realize that through participating into the whole food process enriches my understanding on food and further changes my cognition on food consumption.

I wonder if I can bring this experience to people who live in an urban environment?

“An object or place achieves concrete reality when our experience of it is total through all the senses as well as with the active and reflective mind.”

-- Yifu Tuan

1. Pick red currents - 07.2016 - Svenshögen, Göteborg
2. Pick plums - 08.2016 - Svenshögen, Göteborg
3. Cook for wwoofers - 07.2016 - Svenshögen, Göteborg
5. Watering New Zealand spenat - 07.2016 - Svenshögen, Göteborg
6. Course on eco farming - 08.2016 - Svenshögen, Göteborg
7. Farmers Market - 09.2016 - Haga, Göteborg
8. Urban farming safari - 2015 - Slakthuset, Göteborg
Discourse

Simulating Nature in Architecture from a Humanistic Perspective

The question following all the process is that how can we use our cultural discernment to abstract patterns from nature and embody them in tangible materials for the benefit of society?

The challenge is to manifest the duality of intension (inner conception) and phenomena (outer perception) based on humanity with a development into context of site and program in particularity.

-- Steven Holl
<table>
<thead>
<tr>
<th>Phase</th>
<th>Content</th>
<th>Method</th>
</tr>
</thead>
</table>
| 1. Premise | Own observation in forest  
Own experience about food in everyday life, eco-farm | Photography  
Sketches |
| 2. Prototype | Literature and evidence study  
Build my own Base Architectural System  
Prototype evolution in 4 Phases  
Build prototype vocabularies for further design | Literature Study  
Diagrams  
Sketches  
Model Making |
| 3. Context | Program - Define human activities relating to the whole food process  
Site - Make specific analysis and general strategy | Diagrams  
Illustrations  
Sketches |
| 4. Formation | Use defined programs and specific site conditions as driving force to concretise the prototype | Drawings  
Illustrations |
| 5. Narrative | End up with a foodscape in a green open space in the city center of Göteborg, moving people closer to food in a forest-like landscape | Drawings  
Model Making  
Sketches |
To insert spatial qualities that I am interested in the forest into social life that I care about between food and people, I need to find an architectural system to make it work.

I zoom out to study literature in phenomenology, psychology and philosophy relating to the topic of human experience in architecture. The points drawing my attention generate investigations with models and sketches. The results in turn generate new concepts moving forward the process. All the conclusions are reorganized into a chart periodically to keep the focus.
Main Literature

Key words
Humanistic Geography, Nature, Landscape, Experience, Phenomena, Sensation, Perception, Conception, Awareness, Psychology
Research Distillation

Flow of Thoughts
To organize the process more logically and keep the focus on one point at one time, I use an online tool called coggle to document all the thoughts during the research. Whether related points from literature study, concepts from my own mind or tested results by investigations are showed in the following flow chart.
Phenomenology

Solution for Detachment

Detachment in restaurants is a problem from supermarkets or (B.01.01) in the process end of its Encounter between nature has contribution to the phenomenology of nordic Transmutation (B.04)

Absence in agriculture makes knowledge about deficiency of Process Humans are from space with infinitiy&freedom to from outside-in has missing) (B.02)

Culture makes goodness different sounds in the wind light conditions and wind the landscape with different (B.05.02)

Movement (B.04.05)

Spatial Order places with meanings&security in variety and presentation of spatial food process is between people and space missing during (B.04.06)

An integration of Tree Structure (B.04.07)

Circulation (B.04.08)

Qualit recycling nature of life overs is about the conditions of light,air,water higher dependency on climate The beginning of food life has (B.04.09)

Consciousness unconsciousness of and memory is missing Connection between people and surroundings, connection between food and people (B.04.10)

other animals in the aspect of nature&culture Nature&Human&Culture(C1.00.02)

Forest Phenomenon for and outside in an envelop of a cluster of volumes inside make higher intimacy (B.04.11)

The forest has multiple standpoints&vanishing with an experience in both dimensions of conception of soil with smell, trees in variety, sunlight from (B.04.12)

A walk through the forest is a constancy of Movement(C1.01.04) Experience(C1.00.05)

Matter(C1.02.01)

Senses of nearness, intimacy and affection are through Sense(C1.01.06)

state of emotion (C1.01.06)&(C1.02.02) for Encounter of Flows(C2.01)

An Entire Structure with 3

It is in suppression of focused vision with intentionality of perception) based on humanity with a development into intension(inner conception) and phenomena(outer

perception) based on humanity with a development into intension(inner conception) and phenomena(outer

The definition of space specificity is based on a certain zone&its waving Inhomogeneity

Distance is connotation of accessibility degrees and also makes the orientation of space for next movement by (C2.02.03) makes a preference for movement of people

has multiplicity and in a domain makes ambiguity&specificity

An overlap of column shifting states in mutiplicity and in a domain makes ambiguity&specificity

Movement(C2.07)

Fluility&Stability(C2.05)

Ambiguity&Specificity(C2.04.03)
The Thinking Hand-1

Conception behind Perception
Peripheral Perception in Forest
Experience of the Whole and Its Parts

How does it feel? - Key words
Adj-Essence (The Qualities of the Setting)
Interior / Haptic / Emotional / Multiple / Pluralistic / Democratic / Contextual / Inclusionary / Horizontal / Caring / Unconscious / Infinite / ...

Verb-Essence (The Relational Experience)
Envelop / Enfold / Engage / Enmesh / Centered / Touch / Aware / Attach / Participate

Why is it like that?

A Setting with Different Stimuli
A context of forest has different stimuli in its setting of soil with smell, rocks in different shape, trees in variety, sunlight from above, shadow by feet etc.

Movement in A Flowing Structure
A walk through the forest is with an unconsciousness of movement in a variety of angles and speed. It is a constancy of interaction of all sense modalities.

What is it? - Definition of Periphery
1. the perimeter of a circle or other closed curve; also: the perimeter of a polygon.
2. the external boundary or surface of a body.
3. a: the outward bounds of something as distinguished from its internal regions or center;
   b: an area lying beyond the strict limits of a thing.
Focused Vision in City

Spectator to Objective Fragments

How does it feel? - Key words
Adj-Essence (The Qualities of the Setting)
Intentional / Conscious / Narrow / Dogmatic / Intolerant
/ Rigid / Fixed / Inflexible / Exclusionary / Unmoved/...

Verb-Essence (The Relational Experience)
Confront / Spectate / Observe / Detach / Deprive/...

Why is it like that?

Fixation on Single Object
People confront the object and spectate on it.
It is about representation of perspectives.

Intentional Movement
People are directed from one point to another in an
intentionality of consciousness according to architect’s
thoughts.

Literature Reference mainly from <<THE EYES OF THE SKIN>>
Inspirational Evidence

Activity-based Landscape with Clusters of Elements

After delimiting the focus on peripheral perception, the relevant studied cases share 2 points in common about the setting and movement--

1. The form of the building or the single room inside the building is not the key. Rather the collection of similar building elements or cluster of rooms or distribution of houses in a homogeneous way contribute more to a whole spatial experience;
2. The building elements - column, wall and room etc. and non-building elements - furniture, plant and people work together as an activity-based landscape for people staying and moving.

Programmatic Evidence

Duel-Hierarchy in Spatial & Social Organization

In opposite, rooms for staying are assembled by corridors for moving. People are directed intentionally from one room to another. There are no continuity and sense of oneness in spatial perception and social experience.

An Entire Structure with only Columns

KAIT WORKSHOP, KANAGAWA INSTITUTE OF TECHNOLOGY, JAPAN, 2004-2008, By Junya Ishigami

A Collection of Rooms in One Building

21st Century Museum of Contemporary Art, Kanazawa, Japan, By SANAA

A Gathering of Houses in One Place

Home for the Eldly, Ajuta, Japan, 2012-, By Junya Ishigami
"We did not plan the building by simply assembling individual rooms and controlling its overall composition. Instead, we tried to design the entire structure as if we were creating a landscape, inserting different “trees” and “rocks”.

--by Ishimagi

Main Reference - Kait Workshop
An Entire Structure with only Columns

The Mechanism

Parameters of Internal Elements

Column Density

Performance of Space

Ambiguity of Boundary

Variability of Zone Scale & Openness & Orientation

Parameters of External Agents

Flexibility of Furniture & Plant Layout

Multiplicity of Human Movement & Perception

External Agent--People

External Agent--Plant

Building Element--Column

External Agent--Furniture

Figure 10
Internal Elements & Outer Agents

Consequences

Ambiguity of Boundary

Variability of Layout

Multidirection of Movement
The Thinking Hand-2

Questions Emerge

1. About Boundary Perception

How to slightly define a zone with ambiguous boundary to give staying-people certain sense of freedom?

2. About Spatial Orientation

How to connect zones continuously by simply giving moving-people a sense of orientation?
My mind intend to search for something more materialized in space by following the pillar clusters when building analysis model in rhino, then I’m wondering if it is also a way how people experience the whole and its parts?
Method from Reference

Column Shifting

The main technic I learned is shifting column - the simplest element in constructing space and also metaphor of tree in forest.

Shifting the column from its original position lower down the value of collinearity. The boundary they define together will not be in the same line and lose its vanish point for perception which is a basic phenomena in forest.

The investigations are started by defining a grid system of 500X500 refering to a human body scale. The original columns are set in this grid system. Then they start to shift to redefine the zone boundary.
Process-Driven

Look for New Criteria as Design Boundary

How to subtly falter the boundary by shifting columns but identify the waving in the same time to keep the zone scale?

Scenarios:

- **Scenario 1: Four Zone Scales**
  - Zone Scale: 16A
  - Column Quantity: 81
  - Shifting time: 2
  - Collinearity: 44

- **Scenario 2: Shifting in One Zone Scale**
  - Zone Scale: 16A
  - Column Quantity: 9
  - Shifting time: 2
  - Shifting time: 3
  - Collinearity: 4

- **Scenario 3: Shifting in 4 Zone Scales**
  - Zone Scale: 16A
  - Column Quantity: 9
  - Shifting time: 0
  - Shifting time: 4
  - Collinearity: 10
  - Collinearity: 9

Diagram:

- Original Column
- Shifted Column
- Human Body (500x500)
- Collapse Zone
- Collinear line
- Potential Boundary

How to subtly falter the boundary by shifting columns but identify the waving in the same time to keep the zone scale?

Look for New Criteria as Design Boundary

Prototype Evolution - Research
Scenario 1: Four Zone Scales

1.1 Zone Scale = A
Column Quantity = 81
Collinearity = 44

1.2 Zone Scale = 4A
Column Quantity = 25
Collinearity = 20

1.3 Zone Scale = 16A
Column Quantity = 9
Collinearity = 8

1.4 & 2.1 Zone Scale = 32A
Column Quantity = 4
Collinearity = 0

Scenario 2: Shifting in one Zone Scale

2.2 Zone Scale = 16A
Column Quantity = 9
Shift Time = 3
Collinearity = 3

2.3 Zone Scale = 16A
Column Quantity = 9
Shift Time = 4
Collinearity = 2

2.4 Zone Scale = 16A
Column Quantity = 9
Shift Time = 6
Collinearity = 1

2.4 Zone Scale = 16A
Column Quantity = 9
Shift Time = 7
Collinearity = 0

5.3 Shift Time = 8
Collinearity = 7

5.4 Shift Time = 12
Collinearity = 5
2 boundaries of zone scale 1 & 2 collapse

5.5 Tracing the Movement

Research - Prototype Evolution
Enclosure of One Zone

Ambiguity & Clarity
I define a domain to set the columns to keep the existence of the zone. By shifting the columns in this domain, it brings new ways to perceive the boundary. By overlapping different states of shifting, it brings multiple ways to perceive the boundary and create a pattern on the ground in its periphery and center with the controlling lines.

A Domain for setting columns
I assume that if the scale of the zone is between half and one and a half of the original zone, the perception of the specific space is till there. The columns should be set in this domain to keep the spatial clarity. \((S_1 = \frac{1}{2}S_0, S_2 = \frac{3}{2}S_0)\)

Overlap for blurring boundary
If there is more than one possibility to perceive the distance between the person in the center and the enclosure around, the boundary achieve certain ambiguity. By overlapping of original and shifted states help to blur the boundary.

Diagram:
- Gone Column
- Shifted Column
- Original Column
- Shifted Column
- Human
- Control Line
- The Domain
- Column Quality--CQ
- Collinearity--C
Scenario 6-7 Shifting to Define One Zone

6.0. The Original State
CQ=4
C=0
SHIFT=0

6.0. The Original State
CQ=4
C=0
SHIFT=0

6.0. The Original State
CQ=4
C=0
SHIFT=0

6.1. State 1
CQ=4
C=0
SHIFT IN=4

6.2. State 2
CQ=4
C=0
SHIFT OUT=4

6.3. Overlap of states
CQ=12
C=4

6.4. State 1
CQ=4
C=0
SHIFT IN=4

6.5. State 2
CQ=4
C=0
SHIFT OUT=4

6.6. Overlap of states
CQ=12
C=4

6.7. State 1
CQ=4
C=0
SHIFT IN=4

6.8. State 2
CQ=4
C=0
SHIFT OUT=4

6.9. Overlap of states
CQ=12
C=2

6.10 & 7.0.
Overlap of 9 states
CQ=21
C=10

7.1. 1 state is gone
CQ=17
C=8

7.2. 2 states are gone
CQ=13
C=4

7.3. 3 states are gone
CQ=9
C=2
Connection of 2 Zones

**Fluxility & Stability**
What I also find interesting is that when you start to move, a relative distance between you and the columns in each region will define the fluidity of individual zone. The amount of columns in each region will define the orientation of individual zone. 2 zones are potentially connected because of higher levels of openness.

**Direction & Region**
Front-back&Right-Left axies divide human sense of direction into 4 regions.

**Relative Distance**
Distance is connotation of accessibility degrees and also concern.
Scenario 8: Shifted Columns in Each Domain

- **8.0. The Original State**
  - CQ=4, C=0
  - SHIFT=0

- **8.1. State 1**
  - CQ=4, C=0
  - SHIFT TO D₁, D₂, D₃, D₄ = 1

- **8.2. State 2**
  - CQ=4, C=0
  - SHIFT TO D₁, D₂, D₃, D₄ = 1

- **8.3. Overlap of 3 states**
  - CQ=12, C=4
  - CQ₁ & CQ₂ & CQ₃ & CQ₄ = 2

- **8.4. State 4**
  - CQ=4, C=0
  - SHIFT TO D₁, D₂, D₃, D₄ = 1

- **8.5. State 5**
  - CQ=4, C=0
  - SHIFT TO D₁, D₂, D₃, D₄ = 1

- **8.6. Overlap of 3 states**
  - CQ=12, C=4
  - CQ₁ & CQ₂ & CQ₃ & CQ₄ = 2

- **8.7. State 7**
  - CQ=4, C=0
  - SHIFT TO D₁, D₂ = 1
  - D₃ = 0, D₄ = 2

- **8.8. State 8**
  - CQ=4, C=0
  - SHIFT TO D₁ = 1, D₂ = 0
  - D₃ = 2, D₄ = 1

- **8.9. Overlap of 3 states**
  - CQ=12, C=4
  - CQ₁ = 1, CQ₂ = 3, CQ₃ = 1, CQ₄ = 3

- **8.10. State 7**
  - CQ=4, C=0
  - SHIFT TO D₁, D₂ = 1
  - D₃ = 0, D₄ = 2

- **8.11. State 8**
  - CQ=4, C=0
  - SHIFT TO D₁ = 1, D₂ = 0
  - D₃ = 2, D₄ = 1

- **8.12. Overlap of 3 states**
  - CQ=12, C=4
  - CQ₁ = 2, CQ₂ = 1, CQ₃ = 4, CQ₄ = 1
The Thinking Hand-3

A Journey through Event Zones

So with this 2 concepts in mind about zone boundary and connection, I designed a journey to see what would happen when they are combined in a bigger spatial organization and involved with movement.
Organization of Multiple Zones

Experience the Whole and its Parts

Reference Point
A succession of movements with intermediate localities and final goal as reference makes people know the place in totality.

Formation from Perception
Bottom-Up way of column setting to define a specific place based on perception within movement.

1. Grid System
2. 4 Scale Zones
3. Original State
4. State 1
5. State 2
6. State 3-Overlap
7. Start to Move
8. Peripheral Pass
9. Go Forward
10. Peripheral Pass
11. Go Forward
12. Peripheral Pass
13. Go Forward
14. Reach the End
Look horizontally, it’s homogenous; look vertically down, there are patterns created from shifting, how to make space out of it and create habits for people?
Spatial Qualities

Central and its Peripheral Zone

Zone Connection

Peripheral Experience within Movement
“The world of physics is essentially the real world construed by mathematical abstractions, and the world of sense is the real world construed by the abstractions which sense organs immediately furnish.”

---- by Susanne Langer
How to concretize the spatial abstraction from nature into our social life?

The growth of trees in forest has its own ecological order of sunlight, water etc. The natural forces work together to shape the image. Here, the outer force to formulate the prototype is man’s behavior. Activities about food process will make place out of it.
Base Organizational System

Clusters around Growing Garden

The schema is to try to organize all the environmental stimuli from building elements, growing vegetables, furniture to people in a flowing structure. It’s like when you are in the forest and see the trees, the rocks, the soil and you are free to move as you like.
Growing Garden Envelope Activity Clusters
Experience & Movement Mode

The best way to know something is to **embody yourself into it, to sense, to see and to reflect**. It is an experience with levels and depth. It should also include multiple ways of movement.

### Experience Mode

**NEAR**

- **Taste**
- **Touch**
- **Smell**
- **Hear**
- **See**
- **Think**

**Sensation**

**Perception**

**Conception**

**FAR**

---

**Little Order**

Market bubbles are set in a sequence between the bigger clusters and centralized growing garden for its flowing personality. Zones based on their functional proximity are connected. A shifting experience with a succession of discrete senses connects the moving subject’s memory and anticipation.

Like in the forest - shift of senses from vision down to hearing, touch and smell and from light to shadow in a state of emotion.
Movement Mode

LONGER TIME

- Habiting
  an settled manner of behavior

- Lasting
  leave an impression into the body

- Embedding
  to place or set (something) firmly in something else slowly

- Passing
  to move or go into or through a particular place

- Fleeting
  to cause (time) to pass usually quickly or imperceptibly

SHORTER TIME

Flowing
Market in Between

Proposal - Base Organizational System
Urban Context

Kungsparken as Site

Göteborg is a city with a dual personality of culture and wildness. More and more urban farms and gardens emerge in the city as a way to improve people’s relationship to food in everyday life.

Kungsparken is a green open space in the city center with a lot of people passing by but barely no activities for people to stay longer within the place.

It shouldn’t be only a visual green but a place with more social vitality.
FOODSCAPE!

Reshape Green Open Space with Activities on Food

The activities move people closer to food and also keeps a low footprint in this natural landscape.

- BIKE home from work
- DRIVE home from work
- TAKE TRAM from Nordstan
- WALK from a Restaurant in Avenue
- RUNNING from home
- WALK the dog in the morning
- BATHING sunshine in the summer
Formation
Generating Layer by Layer
The outer force from context generates the concepts from prototype and formulates the project layer by layer.
The columns start to transform as well. They are no longer circular but have an orientation, size, and shape individually and relatively.
The controlling lines created by shifting turn out to be different small habits around the main territory for humans to stay and move.
"Bubbles" pass through the garden and divide it into different growing habits.

4 Landmark in Intersection

Some poles located in intersections of control lines are shaped irregularly and become columns and outdoor furniture in this landscape.

5 Territory on the ground

In the control lines that are created by shifting, the most overlapped zone becomes the main territory for the main behavior on food and the less overlapped zone become other habits in its periphery.

Proposal - Formation - 49
1st Floor Plan (H=1.200)
If you look at them horizontally and perceptually, it's quite homogeneous in its totality. But slightly on the ground or in horizon, there are different habits for people to stay or move. If you look down at them vertically, you know how they are created conceptually.
Design Analysis
Everything Grows from the Pole
Some of them become the floors for the main behavior, some of them turn out to be a deck, or an assistant function zone, or a staircase, or a growing habit around the house, or a rock-like exterior furniture...
Every element has its own way of being but still relative to each other by following the rules.
CONCLUSION

Nature inspires architects in many different ways and there are a lot of potential spatial qualities in the forest that I can abstract from. In this master thesis, I mainly focused on the investigations of one perceptual phenomena and its order underneath.

The results were formulated into an artificial landscape to show its capacity and potention to take on a program and to insert into an urban context.

The thesis started from a personal and inward journey of abstracting the good in nature to applying it in society. The driving force is not only the architectural knowledge and skills, but also the empathy in man’s world about awareness, about experience, about being.

To make common sense really common, to make simplicity out of complexity, that’s what I am going to bring with me as an architect.
SUPPLEMENTS

List of References


Index of Images
All images taken or drawn by author if no reference is given here.

Fig.01 https://www.amazon.com/Space-Place-Perspective-Yi-Fu-Tuan/dp/0816638772

Fig.02 http://www.goodreads.com/book/show/398621. The_Eyes_of_the_Skin

Fig.03 https://www.amazon.com/Questions-Perception-Phenomenology-Steven-Holl/dp/0974621471

Fig.04 https://www.amazon.com/Junya-Ishigami-Another-Scale-Architecture/dp/4861522846

Fig.05 Photo by Rauno Traskelin, scanned from <<THE EYES OF THE SKIN>>

Fig.06 Photo by Juhani Pallasmaa, scanned from <<THE EYES OF THE SKIN>>

Fig.07 http://archeyes.com/kanagawa-institute-of-technology-junya-ishigami-associates/

Fig.08 https://www.pinterest.se/mandyyhan/sanaa/

Fig.09 http://www.domusweb.it/en/architecture/2013/06/10/engineering_and_tradition.html

Fig.10 http://archeyes.com/kanagawa-institute-of-technology-junya-ishigami-associates/