An Escape | Threshold Space Design in Bath

Xihao Chen
key word

- Threshold
- Sensory experience

test bed

- Thermal bath house
- Saratoga Spring
Threshold, conventionally referring to the line of the door jamb, serves to mark the transition between exterior and interior, or between two separate spaces. Contemporary thresholds are most often underplayed, being deployed as a thin surface, or intentionally minimized in terms of thickness. This thesis argues that the term threshold should be applied to a broader sense of architectural space. When a threshold is stretched and thickened conceptually from a surface to a volume, it can become a threshold space.

This thesis argues that threshold space is simultaneously a place, a puncture in an architectural boundary, and as the in betweenness.
Category: **THE THRESHOLD SPACE**

as program

<table>
<thead>
<tr>
<th>Enfilade</th>
<th>vestibule</th>
<th>court</th>
<th>pergola</th>
</tr>
</thead>
<tbody>
<tr>
<td>frame- door- door</td>
<td>door- room- door</td>
<td>door- wall- door</td>
<td>door- ceiling- door</td>
</tr>
</tbody>
</table>

- minor surfaces perceived as threshold
- major surfaces perceived as threshold

as entrance

<table>
<thead>
<tr>
<th>layered</th>
<th>scattered</th>
<th>centralized</th>
<th>elevated</th>
</tr>
</thead>
<tbody>
<tr>
<td>frame- frame</td>
<td>colonnade- wall</td>
<td>vault- vault</td>
<td>plinth- door</td>
</tr>
</tbody>
</table>

as materiality

- transparent
  - revealing time needed: 
  - mystical:
- reflected
  - revealing time needed: 
  - mystical:
- solid
  - revealing time needed: 
  - mystical:
- screen
  - revealing time needed: 
  - mystical:
This thesis contends that architectural threshold space has the potential to both actively and passively design spatial and atmospheric awareness through sensory manipulation.

**Contention**

This thesis contends that architectural threshold space has the potential to both actively and passively design spatial and atmospheric awareness through sensory manipulation.
In an individual scale, threshold is an envelope that prepares one from surrounding environment. For example cloth, towel wrap in a bath.
THRESHOLD CONCEPT
DEFINITION
- envelope scale
- cloth
- car
- kiosk
- building

- individual scale - skin

SENSORY EXPERIENCE
STRATEGY
- glossary
- material

sometimes a car...
THRESHOLD CONCEPT
DEFINITION
- envelope scale
- individual scale - skin
  - temperature
  - humidity
  - light

SESORY EXPERIENCE
STRATEGY
- glossary

Besides physical/tangible threshold, the wind breeze that varied in temperature -
the water, and its different state, mist, fog, ice.
the light, are all considered as threshold as well.
Types of Threshold

When boundary is punctured, interrupted by various method. It formed new kinds of design opportunities to regenerate the circulation experience of one.

This thesis unfold the definition of threshold space and categorize them into five kinds in increased scale. Threshold as concept, a surface plane(B.), as an object(C.), as a wrap(A.), as a field(E.).
conceptual transition

the installation of video and screen hook-ups invites the visitors to a perception of extended past, it subtly blurs the sensation of being inside or outside the spatial configuration. It reveals the complex nature of a "threshold" as a device, a phenomenon.
Definition: THE THRESHOLD SPACE

AS THIN SURFACE

Element Noren

Exterior noren are traditionally used by shops and restaurants as a means of protection from sun, wind, and dust, and for display of shop name or logo.

Interior noren are often used to separate dining areas from kitchen or other preparation areas, also serving to prevent smoke or smells from escaping.
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[2] Bowll wall | double facade

threshold space as an opportunity for visually penetration on building perimeter.
it’s often associate with branding or visual complexity.
synaesthesia would be more focused in this case.
A number of innovative materials were used such as a stretchable polymer ceiling material, python textured sheet vinyl flooring and LED floor lighting designed to draw the customer through the store. This project has been extensively published and won numerous design awards.
With cacoon shape that reminds people of the quality of softness, this design engaged more with Kinesthesia.

With tactile quality combined with program, lure user communicate with the spatial program in a more intimate way.

Threshold space in none-bath program

Threshold as an object have the quality of attracting attention. With its sculptural quality it build a playful atmosphere.

[1]Cacoon
A threshold space can often be used as a filter of circulation that directs the flow.

A combined threshold object can be often associated into a field of threshold space.
Threshold space as wrap, hugging around programed volume, creating the sense of wandering and play. The moriyama house modeled after traditional Japanese garden. Itself situated in the center of dense traditional Japanese housing district. It break down major program into scatter and recombined them in order to create increased opportunity of social interaction.
SENSE OF WANDER AND PLAYFULNESS

threshold space in none-bath program

d. 40 41
the sharp contrast of materiality highlights the different atmosphere in between Moriyama and its surrounding neighbor. The sharp contrast of the width and view along the circulation enhanced the sense of wandering as well.

[2] COMPARISON OF MATERIALALITY

[1] DYNAMIC WIDTH OF CIRCULATION

[2] COMPARISON OF MATERIALALITY
Materials, lighting, and atmospheric conditions (temperature, humidity, etc) play decisive roles in forming a threshold space.

This thesis investigate the major effects of **VISION, KINESTHESIA, HAPTICITY, TOUCH, PLASTICITY, SYNAESTHESIA** that can be associated into a threshold design in relate to the function of a threshold space.
The effects of spatial compression and expansion on human awareness.

The concept of past and present that evoke people’s memory.

The optical phenomena that associate with various light qualities (shadow and colour) with designing elements.

The effects of spatial compression and expansion on human awareness.

[1] James Turrell 
Spectrum

[2] Steven Holl 
Light Study
The concept of past and present that evoke people's memory.

The optical phenomena that associate with various light qualities with designing elements.

The effects of spatial compression and expansion on human awareness.
The examination of our environment through movement. Kinesthetic movement is not limited to walking, but can also be head-movement or movement of the eyes.
Haptic touch requires movement of limbs, muscles, and skin. Thus hapticity is more tend to be considered in an individual scale process of design where materiality is being specially addressed.
Haptic touch requires movement of limbs, muscles, and skin. Thus hapticity is more tend to be considered in an individual scale process of design where materiality is being specially addressed.
"(...) *skinship* in the bath thus... is in relation to the person, so the objects such as soap, toys and towels used in the water become a part of the experience of bathing, included in the whole intimate experience. There is a *removal* of any sense of boundary from divergence in temperatures of different surfaces ... the water is the *thick space* that holds them and removes any sense of boundary. The water, its *temperature* and the *mixed surfaces* all take any emphasis off the surface or skin of each bather’s bdy and, instead, allow a touching at depth. there is no longer any position of tocher or touchee. through these different surfaces, co-bathers connect and are surrounded in a state of mutuality (...)"

James J. Gibson, 1966
Definition: THE THRESHOLD SPACE
LIGHT AS DIRECTIONAL ANNOTATION

This thesis uses a thermal bathhouse as a testing ground for the notion of threshold space.

bath as sequencial collection of threshold

In this thesis, the threshold space serves to direct and stimulate people via specific sensory experiences that belong to the traditions of the bathhouse. Temperature, humidity and light are deployed to affect the speed, mood and volume of flow of the bathers. Conventional programmatic space is underplayed – instead, the project emphasizes threshold space as the primary spatial design factor.

reconstuccion dibujada de las termas de Caracalla. La grandiosa sala del frigidarium mide 50 x 20 metros y su altura es de casi 30 metros
infilled threshold space

Though bathhouses differ by location and cultures, throughout history, there is one common theme threading through the evolution of these buildings - the sequence of spaces associated with the different types of sensorial conditions that the bathers experience as they go through the process of cleansing.
This chapter, studies the following questions:
how much percentage that skin has been exposed in a bathing condition? During different process of bathing, which sensor has the greatest opportunity to be pleased? What spatial organization of threshold can be used in designing the circulation of bath? In other words, how and where threshold space that designed with sensational experience component can affect bather?
progressing sequence

access point
changing room
sweat stone\turkish shower\sauna
bath
therapy
rest space
exit

threshold space in sequence

25°C
28°C
30°C
32°C
34°C
36°C
38°C
42°C

temperature

68 69
threshold as object
threshold as object

- skin surface temperature distribution of the 20 minute time point after bathing

[Source] Osaka Gas

Conditions: mist sauna bathing = room temperature 40 °C, 10 minutes
lub bathing = hot water temperature 40 °C, 10 minutes

hot

cold
Saratoga Springs is known as “the Queen of the Spas,” was constructed in 1934 as part of President Franklin Roosevelt’s New Deal. It is located 50 minutes drive away from Albany.
The building complex has a rich heritage as a health resort and gambling center for much of the 19th and 20th centuries. Nowadays, the saratoga spa state park is an entertainment complex built with health resort, hotel, swimming pool, golf club, horse racing and theater.
Recently, almost $13 million improvements are planned for Saratoga Spa State Park as part of Gov. Andrew Cuomo’s $90 million investment in the state’s parks. This thesis choose to make additions and renovation to the existing Rooservelt Bath & Spa house I. The identical building right across is the abandoned Rooservelt Bath & Spa house II.
the majority of the customers are locals and from the east coast. The main way of transportation is driving...
THRESHOLD in Bath: effect on individual locales
The installation of video and screen hook-ups invites the visitors to a perception of extended past, it subtly blurs the sensation of being inside or outside the spatial configuration. It reveals the complex nature of a "threshold" as a device, a phenomenon.

EXISTING CONDITION

Rooservelt Bath&Spa
Renovation
9 Roosevelt Dr, Saratoga Springs, NY 12866
Thermal bath with facial massage and bath service
THRESHOLD CONCEPT
DEFINITION
- envelope scale
- individual scale - skin

SENSORY EXPERIENCE
STRATEGY
- glossary

THE TEST BED
GENERAL INFO
- the program
- the site
  - general info
  - design strategy
  - schematic plan

Rooservelt Bath & Spa
Renovation
9 Roosevelt Dr, Saratoga Springs, NY 12866
Thermal bath with facial massage and bath service
two existing massage bar : 8775 sq.ft/bar

existing major circulation bar
sq.ft comparison of threshold
comparison of circulation and program threshold
THRESHOLD DENSITY OF COLUMN GRID
THRESHOLD AS OCCUPIABLE OBJECT
THRESHOLD AS OCCUPIABLE OBJECT
Rooservelt Bath&Spa Renovation
9 Roosevelt Dr, Saratoga Springs, NY 12866
Thermal bath with facial massage and bath service
Rooservelt Bath & Spa
9 Roosevelt Dr, Saratoga Springs, NY 12866
Thermal bath with facial massage and bath service.

ADDITION INTERIOR
EXISTING CONDITION

THRESHOLD as CONCEPT

implication on site
Haptic touch requires movement of limbs, muscles and skin. Thus hapticity is more tend to be considered in an individual scale process of design where materiality is being specially addressed.

The examination of our environment through movement. Kinesthetic movement is not limited to walking, but can also be head-movement or movement of the eyes.

The optical phenomena that associate with various light qualities with designing elements.
Object
own sense characteristic

Human
way of approaching
Fig. 5: Spatial delimitations

Fig. 6: Body of the threshold space

main room

transitional element

portico

plaza della Rotonda

material palette

thermal comfort in threshold space
9. 10: Body of the threshold space with limitations of the threshold space

Fig. 12: Japanese home, “extendible border”

material palette

thermal comfort in threshold space
**Key Words**

5 senses that involved in *conventional design process*:
- sight
- hearing
- taste
- touch
- smell

*reformulate into*

**Why**

_in terms of the creation of place_

- unrecognized space
  sensory stimuli
  
  perception of place
  hapticity
  kinesthesia
  synaesthesia

_recognition of place_

thus the more senses that are engaged with a space, the easier it will be to establish the perception of place.

**synthetic design process:**
- **hapticity**
  the act of touching in three dimensional, include but not limited to temperature, pain, pressure and movement.
- **kinesthesia**
  the examination of our environment through movement
- **synaesthesia**
  involuntary phenomenon that collects sensory information from one sense and transfers to another
  (red as hot, blue as cold)
Haptic touch requires movement of limbs, muscles and skin. Thus haptivity is more tend to be considered in an individual scale process of design where materiality is being specially addressed.
For boardwalk in Asian garden design

“[...] stretching visual space by exaggerating kinesthetic involvement [...] to watch his step as he picks his way along irregularly stepstones [...] At each rock he must pause and look down to see where to step next. Even the neck muscles are deliberately brought into play.”

The design takes in account the influences of the direct environment, even to the scale of the surface, on human perception of space as a result of kinesthetic properties of man.

Kinesthetic movement is not limited to walking, but can also be head-movement or movement of the eyes.

Intercative design might be considered in this thesis as well.
When one object/space caught one’s eye, vision triggers stimulation in other senses. Eventually haptic touch verifies the stimulation. The contradiction between the verification and the stimulation is what this thesis pursues for.

this strategy can be used as facade design/overall concept.
Water injection moulded tiles
solenoid valves
pressure regulators
custom software
3D tracking cameras
steel beams
water management system,
grated floor

Possible Working Principle:

- Environment: the 100 square meter floor area that the visitor walk in

- Input: the sensor(3d tracking cameras) sense the body position/condition (move in the unit area or not)

- Processing: the computer converted signals into matrix that fit the dripping ceilings - and control it’s “on/off”, that is 1/0 in the computer language

- Output: pressure regulators adjust the amount of water that come out through the pipes to the drippers.
Robotic projectors, media servers, Pani 12kW projectors, scissor lifts, computerized surveillance system, custom software

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different shape

vision
materiality

experiences
sense memories

rough, heavy

layered rocks

tight, narrow

traditional Switzerland housing

village scale
- synaesthesia

different materiality

vision
shape

experiences
sense memories

horizontal slots
shoji(screen)

warm, soft

traditional building exterior

enclosed

memory/knowledge cultural and geographic context as background prepared one unrecognized space as more familiar.


17. “Printable Article: $3M in Fixes on Tap for Spa Park - Dailygazette.com,”

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