TWILIGHT REVELATION

SHUWEN XU
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Rhode Island School of Design

By Shuwen Xu
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Approved by Masters Examination Committee:

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Scheri Fultineer, Department Head, Landscape Architecture

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Michael Blier, Primary Thesis Advisor

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Daniel Hewitt, Secondary Thesis Advisor

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Contents

Overview

The first inspiration came from the thrilling phenomenal nuance caused by the natural light, especially the diffused and cool light — that's why I am so fascinated with the dawn. Also, the "conditional" idea proposed by Robert Irwin in his book "Being and Circumstance — Notes Toward a Conditional Art" influenced my attitude towards landscape and public art: the design could be a tool to "reveal" the phenomenal changes and make people become more aware of them, instead of changing the existing condition arbitrarily.

Then I chose "threshold" — the space between private and public condition, interior and exterior, which might be front or back yard, the street next to residential entrance, or semi-private park as my targeted sites, because they have great potential of physical, phenomenal, mental and programmatic changes.

I started my investigation from the residential zone in Providence and developed the prototypical strategy to play with dawn light, and then adapt it to New York city to achieve a wider practice. The outcomes are both a theoretical strategy and a design.

The overall objectives are to bring a new thought and attitude towards landscape design and public art, which makes people re-aware of the phenomena in the circumstance, reveal the fascination of dawn light, and create a prototypical design for residential area. During the whole precess, the written article needs to be re-thought and revised along with the design.

Questions

1/ How can we have a more modest attitude towards nature in landscape design?

2/ How to emphasize the changing phenomena that people might be habituated to during twilight and night at site?

INSPIRATION FROM PHENOMENA CHANGING OVER TIME
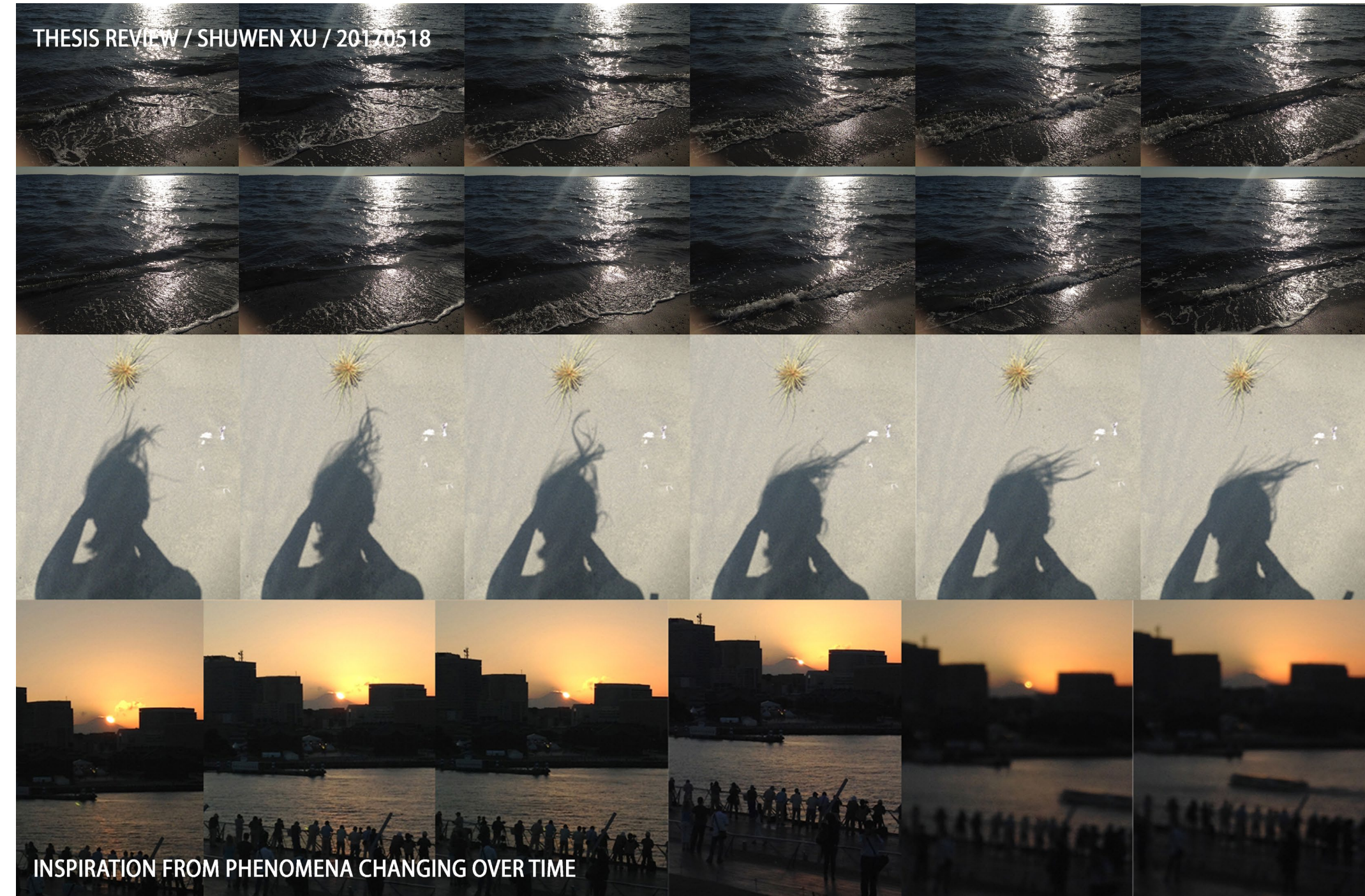
Prelude/ Theoretical Study

*DYNAMIC CONDITIONALITY IN LANDSCAPE AND EXTENDING FIELD*

1/ Contemporary landscape design: time & phenomena
As to me, with the background of architectural design, contemporary landscape concerns more about "phenomena" and "changes" particularly, compared to the essential status of "space" for architecture and the "pictorial" quality of traditional landscape designs — with time elapsing, the waves are fluctuating, the tides are rising and falling, the plants are growing and changing the defined spaces, the wind, the temperature, the light, the shadow, and every subtle nuance of the nature are impacting people's perception.

Considering modern landscape from the perspective of architecture design, I felt strongly that, despite both of them concern space, the spatial relationship which is artificial and relatively permanent in architecture field is affected by other factors that are more predominant in the cases of landscape, and thus, to a large extent, the pure spatial qualities are impaired. For example, in the project of "Brooklyn Bridge Park", the plants were designed as a dynamic process — over decades, the saplings have been growing, and therefore, the defined spaces, the scale that people felt, and the programs have been changed correspondingly. Some branches were trimmed and certain trees were removed as well. In this process, with the additional dimension of time, space was design as a scenario, contrary to the normal architectural design strategy of "permanent spaces".

On the other hand, the essential role of "time" stands out with the comparison of traditional landscapes. In Western context, the first introduction of "landscape" into English explained it as a picture of the view of land, interpreted by artists. (Jackson, 3) Its meaning could be clarified further through two words — "land" and "scape". "Land" commonly indicated "a well-defined portion of the earth's surface", and "scape" meant "shape" or "a composition of similar objects" (Jackson, 6-7). The common point of those three explanation above is its static state. Neither an image, nor a surface, a shape, a composition, have never concerned the factor of time or experience. At that time, landscape was another method of image representation apart from painting. Like the traditional English natural gardens, what controls the design is a series of pictures, aiming to present idealized views of nature.

Except spaces would be influenced by time, there are more subtle phenomena and changes that are tightly associated with time in nature, while some interdisciplinary art works may reflect this idea more purely. Following are chosen works from different artists, and the comparison between their thoughts and theories behind.
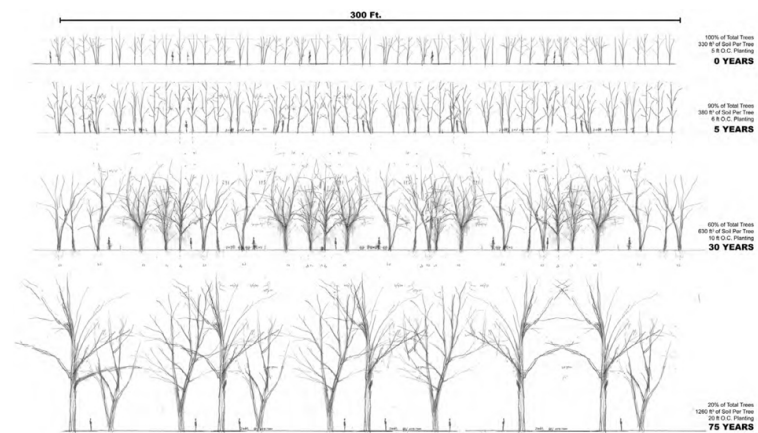
2/ Robert Irwin: changes & perception
"One must make an optic, now must see nature as no one has seen it before. "
—Paul Cezanne

"Change is the most basic condition (physic) of our universe. In its dynamic, change (alongside time and space) constitutes a given in all things, and is indeed what we are talking about when we speak of the phenomenal in perception. Most critically, change is the key physical and physiological factor in our being able to perceive at all. Our perceptual process is a kind of 'perpetual motion' assimilator. No change, no perceptual consciousness."
— "Being and Circumstance - Notes Toward a Conditional Art", Robert Irwin

There are several typical works of Robert Irwin to clarify his theory:
- Filigreed Lin (1980, Robert Irwin)
Filigreed Lin is a stainless steel line standing straightly at a gentle slope of the lawn. There is no fluctuation of the line's elevation, and no curvature following the slopes. There are some leaf-shape hollows on the surface of the metal to allow views going through the installation. It extends silently, acting as a permanently static reference the ephemeral natural phenomena by the properties of porosity and constant horizontal elevation. Looking from far away, it functions as a translucent screen in front of and parallel with the ocean horizon, revealing every slight change of slope grading. When the grass grow, both reflections and permeating images tell the story about the existence and changing condition of organic things themselves, wind, light, and shadow; when it is snow, the cumulating snow constitutes parts of the renewed slope, shown perceptibly through the changing snow line on the installation and covered part of hollows, and the images casted on and through the steel sheet alter as well. Irwin wished to simply "refocus the too-often habituated eye of the passerby to the qualities and pleasures in his or her immediate environment." (Irwin, 37) Different from most landscape design strategies, he did not change the existing topography and phenomena, but set a permanent ruler to measure the changing qualities of phenomena.

- Two Running Violet V Forms (1983, Robert Irwin)
Two Running Violet V Forms used another kind of "ruler". It was inspired directly by the unique nature feature in University of California (which was the site). Irwin was seeking for a potential site until fascinated with the eucalyptus groves — the woods have incomparable "natural qualities" beyond simply visual perspectives, but also olfactory, audition, touch and the whole atmosphere, with students moving freely in it. The inserted installation acts as a gentle confrontation responsive to the extreme nature. The violet veil is high up to 15' to 30' off the ground, which is not a visible hight compared to human's five feet eye view. When people walk through the groves, the installation hanging above their heads may not be perceived directly, preventing human experiences and interactions with nature. However, when people keep distance from it, the subtle form emerges in sight — with the change of weather (here the condition is no longer pure time), the veil presents translucent, transient, bright, shaded, colored (violet to response to blossom's color at the feet of columns), dissolving, and emerging properties along the time. Instead of establishing a literal insertion competing with nature, Irwin "contributes a feeling" to teach people see again the phenomena, through calling us "to attend to the pure potential in out circumstances as a whole piece", and "here the references of our knowing are not art history or the prior oeuvre of the artist, but rather the actual qualities of the situation and our 'being' in it". (Irwin, 77)

- Forty-eight Shadow Planes (1983, Robert Irwin)
Similar to the manipulation of untouchable height, Forty-eight Shadow Planes hanged forty-eight translucent planes in the huge atrium of the building, which echoes to the "void" and phenomena in it gently through a visual method. The most conspicuous character of the building interior is the huge glass roof with rectangular frames, which allows natural light coming through the whole "void" dominating the organization orders. Void itself is astonishing, while the subtle potentials cannot be captured effectively. Irwin hangs forty-eight translucent glass, responding both in material and phenomenal aspects. At first glance, they are not so noticeable, however, with time elapsing, slightly waggling forms and changing reflections replenish the subtlety of the space, thus to show the integrity of it. "The project was intended to influence how people look at the whole space." Neither the grid of planes nor the objects themselves should be highlighted. Because of the translucence of the planes, people's eyes "does not hold on the grid but move back and forth, continuously referencing the architecture and, in effect, attending the whole phenomena." (Irwin, 107)

Actually, the conditionality of Irwin's works was implied through his working methods. He always spent a lot of time at site — walking, feeling, and thinking. Every time when he did something, he would stay there, and observed what has been altered, then took the next step according to previous changes. Jennifer Winkworth said to him: "Normally, an artist creates something alone in the studio and then presents it, but you go through a process where on completion it has got to be there." That's why his works keep the quality of dynamic conditionality.

Besides, some of Irwin's light works located interior and independent with natural phenomena uses another way to achieve the dynamic conditionality. What he concerns is how the whole indoor environment alters with the change of artificial light; "how the hues in the room shift as the gels are rotated, switches are flipped and light is emitted, refracted and reflected." "Energy changes are going on, which doesn't happen in painting", said by Irwin.

3/ Conditionality
Here, "condition" could be defined as a general context with something being in it, which extends from spatial or physical context to temporal, mental, and perceptual circumstances. Thus, "conditional art" could be understand as creations based on the conditional changes, including responses to them, establishment of (physical or abstract) relationships with them, pure revelation of those changes, fabrication of further potential changes, and so on.

4/ Richard Serra

- Shift, 1970-1972:

This piece of work looks like several simply constructed low walls, while they were organized through a special way — "we discovered that two people walking the distance of the field opposite one another, attempting to keep each other in view despite the curvature of the land, would mutually determine a topological definition of the space. The boundaries of the work became the maximum distance two people could occupy and still keep each other in view." (Serra), and the six low walls acted as lines to document two people's tracks on the rolling terrain. That is, the whole design was establish on the foundation of human activities and human bodies totally. Another interesting thing is the walking order is determined by sight — when one people walks, the space relationship and sight line are changing simultaneously, which can be called "conditional dynamics", and another people 's movement is changed according to the first change, and every change according to the last one — this constitutes a perpetually changing but balancing relationship. Also the topological relationship connecting two persons itself implicates a concept created by change — spaces are twisted, stretched, or compacted by distance between two people. (PEOPEL—SPACE&SIGHT—PEOPLE) Here, Serra used concrete — a relatively permanent and tangible material to document the instant and intangible relationships.
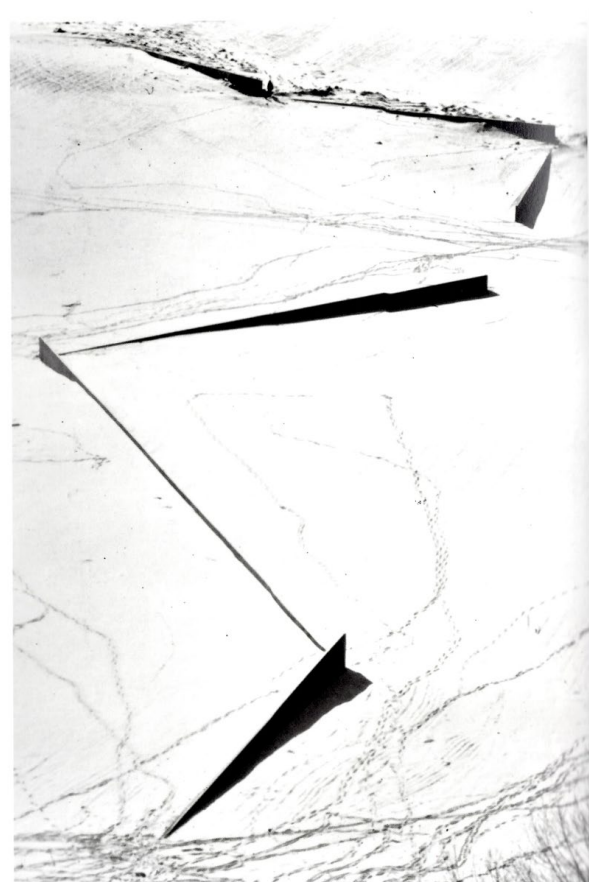
- Tilted Arc, 1981:

The Tilted Arc was placed in the Federal Plaza, bisecting the space and blocking the views and paths of those who commuted through the plaza. Despite it looks like an isolated object in the plaza, both "tilted" and "arc" are subtly changing characteristics, thus the viewers are able to be aware of himself and of his movement through the interaction with the work. Meanwhile, the material underlines the changing character further — the steel was designed self-oxidizing and could develop a natural rust-like amber appearance over time. Here, the dynamic conditionality happened through the space between people and object. (PEOPEL—SPACE—OBJECT)

Additionally, Serra's most famous works, those large-scale metal-sheet-sculptures like "Circuit", let people walk through it and experience the spatial changes with varying curves and angles the "Prop" series has the static form though it contains the potential of changes and uncertainties caused by gravity, which seems to a another strategy to present the dynamic conditionality; some pieces of process art like "Splashing Scatter Piece" and videos like "Hand Catching Lead" imply the temporal qualities embodied in the works; also his frequently-used material, lead, with the properties of denseness, soft, great flexibility, and low melting point seem to associate with the ideas about conditionality changes. (clarify…)

5/ "Literal" & "phenomenal" dynamic conditionality

However, there exist differences between Irwin's and Serra's strategies to express the idea of "conditionality". "Literal" and "phenomenal" are a pair of counterparts that are mentioned in art category frequently. "Literal" concerns more about tangible things like objects and material, while "phenomenal" is related to intangible but feeling things. Their works differ from the way they are experienced and designers' intentions. In Serra's works, installations interact with people directly, and people act as participants, which belong to "literal conditionality". The works represent their qualities by directly experiential process, so they are always in human-scale or larger, and accessible to people.

On the contrary, in Irwin's works, installations would be kept away from users, or have much less direct interactions, like visual ones. Instead, they response to their surroundings and reveal the phenomena in a more perceivable way than the phenomena themselves, where people act as observers and the experiences appear subtler. These characteristics make his works incline to "phenomenal conditionality".

6/ Chris Burden

- Samson, 1985:

The work's name derived from a Biblical story, at the end of which Samson holds the columns of the temple, leaning forward, and the whole building collapses ultimately, with his enemies and himself buried under the ruins. The story conveys the implication that "someone influences the decisive elements in a space, which leads to the destruction of both space and people". Returning to the work itself, it's kind of like a horrible machine behind the disguise of gallery's innocence — the installation consists of a one-hundred-ton jack that is connected to a gear box and a turnstile. Visitors have to enter the exhibition room through the turnstile, which would result in the force against the bearing walls of the museum. Theoretically, the museum would be destroyed by enough inputs of people eventually, and everyone is responsible for the increasing destructive potential without awareness. The conditional changes are created through people influencing object, and then space (and the potential of destruction) is affected as well. (PEOPEL—OBJECT—SPACE&POTENTIAL)

- Doomed, 1975:

The last case is an performance work. The artist laid down under a sheet of glass leaning against the wall. The static state has sustained for forty-five hours and ten minutes, until a museum employee put a pitcher of water next to him, and immediately, Chirs got up, fetched a hammer from another room, smashed the clock (which stopped operation), left an envelope, and left, finishing the whole piece. Inside the envelope was the explanation of the work — the state that he laid in that space was considered as a persistent condition. Once the condition was interfered, the artist would have responses, and the stopped clock would record the lasting time of the performance. In this case, "conditionality" becomes a more comprehensive context — not a pure space, weather, or perception anymore. The dynamic relationship could be concluded as the behavior that people laying down stuff impacts the original state, and thus motivates other behaviors and conditions, involving mentality and humanity. (BEHAVIOR—CONDITION—CONDITION)
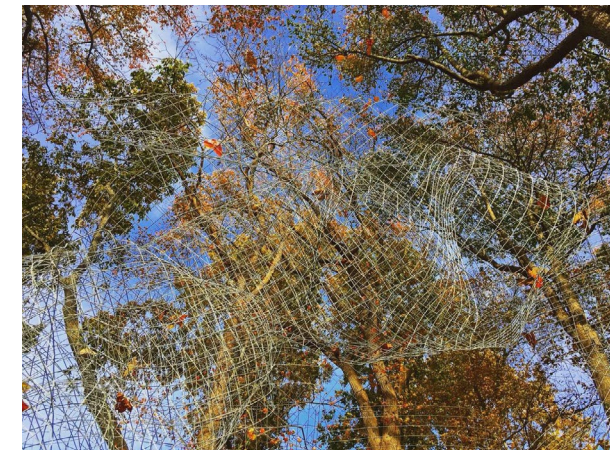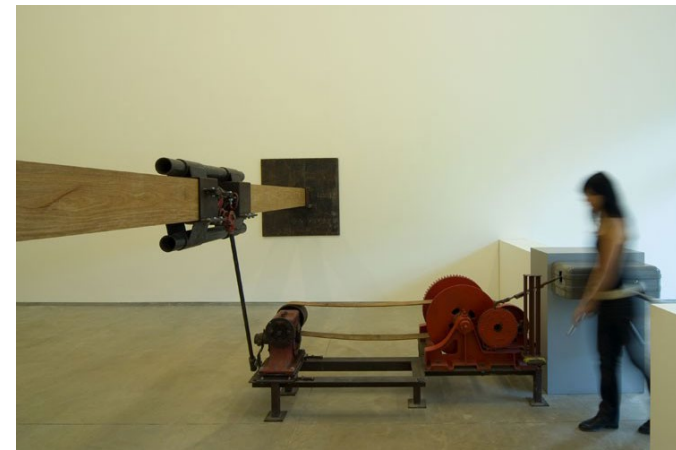
7/ Conclusion & my attitude

Inspired by the conditional dynamics concept, I designed a installation made by wire mesh in RISD Farm. The reason I chose mesh as the material is its translucent property and flexible structure. The site in the woods was selected for the material too. Overlapped mesh could create various density and transparency, which reminded me of different layers of trucks and leaves. My intention was to create a sub-canopy below the real canopy, which was too high for people to perceive directly. Because of the porosity and flexibility of wire mesh, it could response to the natural phenomena sensitively. Visually, the construction was like a veil covered above the nature, and wind could shake it slightly, causing the subtle changes of light reflections and shadows. Experientially, the falling leaves would be captured by the construction, and when people walk though it, they could touch the "artificial nature" directly. The construction was finished by ten people in three days, and "fortunately", there was raining in the last day. The installation displayed more potential in different conditions — the rain beating the metal made a different sound from soil and leaves; water merged into larger drops on the mesh and dripped down to people's head; more leaves were blown off to the construction, and heavy rains made them drop down through the hollow of the mesh; the natural sunken area in front of the installation collected water as a little pond — as both the site and the material contained much potential of dynamics, the results achieved the changing subtlety and sensitivity.

At last, I want to emphasize the significance of this landscape strategy. Compared to some bold designs trying to transform the existing circumstance, the thought of "revealing the phenomena" and "dynamic conditionality" has a more modest attitude towards nature, aiming to let people re-discover the subtle and usually neglected beauty around us.

References:

1/ *"Sculpture In The Expanded Field", Rosalind Krauss*

2/ *"Eidetic Operations And New Landscapes", James Corner*

3/ *"The Word Itself", "Discovering The Vernacular Landscape", John Brinckerhoff Jackson*

4/ *Transparency: Literal and Phenomenal, Robert Slutzky, first published in 1963*

5/ *Richard Serra Sculpture, Rosalind E. Krauss*

6/ *Richard Serra: Sculpture, Architecture and the Body, Gideon Fink Shapiro, https://svbscription.com blog/ richard-serra-sculpturearchitecture-and-the-body*

7/ *Richard Serra: The Matter Of Time, Carmen Giménez*

8/ *One Place After Another: Notes on Site Specificity, Miwon Kwon*

9/ *A Public Conversation Between Robert Irwin And Jennifer Winkworth, July 2013, on the occasion of his installation at the Secession Exhibition Hall of Contemporary Art, Vienna, Austria*

10/ *Being and Circumstance - Notes Toward a Conditional Art, Robert Irwin*

Phase 1
Threshold Condition

Abstract

In the first phase, I'm going to start from the on-site investigation (a certain residential area in Providence), analysis of the space organization, and the potential quality of the threshold space during dawn, in order to have a more clear goal about the light condition and effect which are tightly related to threshold qualities (physical, phenomenal, mental or programmatic changes in the threshold).

At the end of this phase, I will use diverse kinds of documentation, analytical diagrams, and physical models to present the threshold condition and how do they work at the site. Also, I need to have a clear goal about the light condition and effect which are related to the threshold condition at the end of phase 1.

Site & Regular Circulation

Introduction

Every time when I walked to home at night or waked before dawn, I really enjoy the rare quietness and darkness of city and subtle changes of phenomena like natural light, wind, sound, slopes, and shaking branches. So I try to investigate where people could have activities that is related to those nuance. The keys are physical/ spatial/ mental/ programmatic/ light threshold; programs and spatial qualities along spatial sequeces; and potential phenomena that are related to those thresholds.
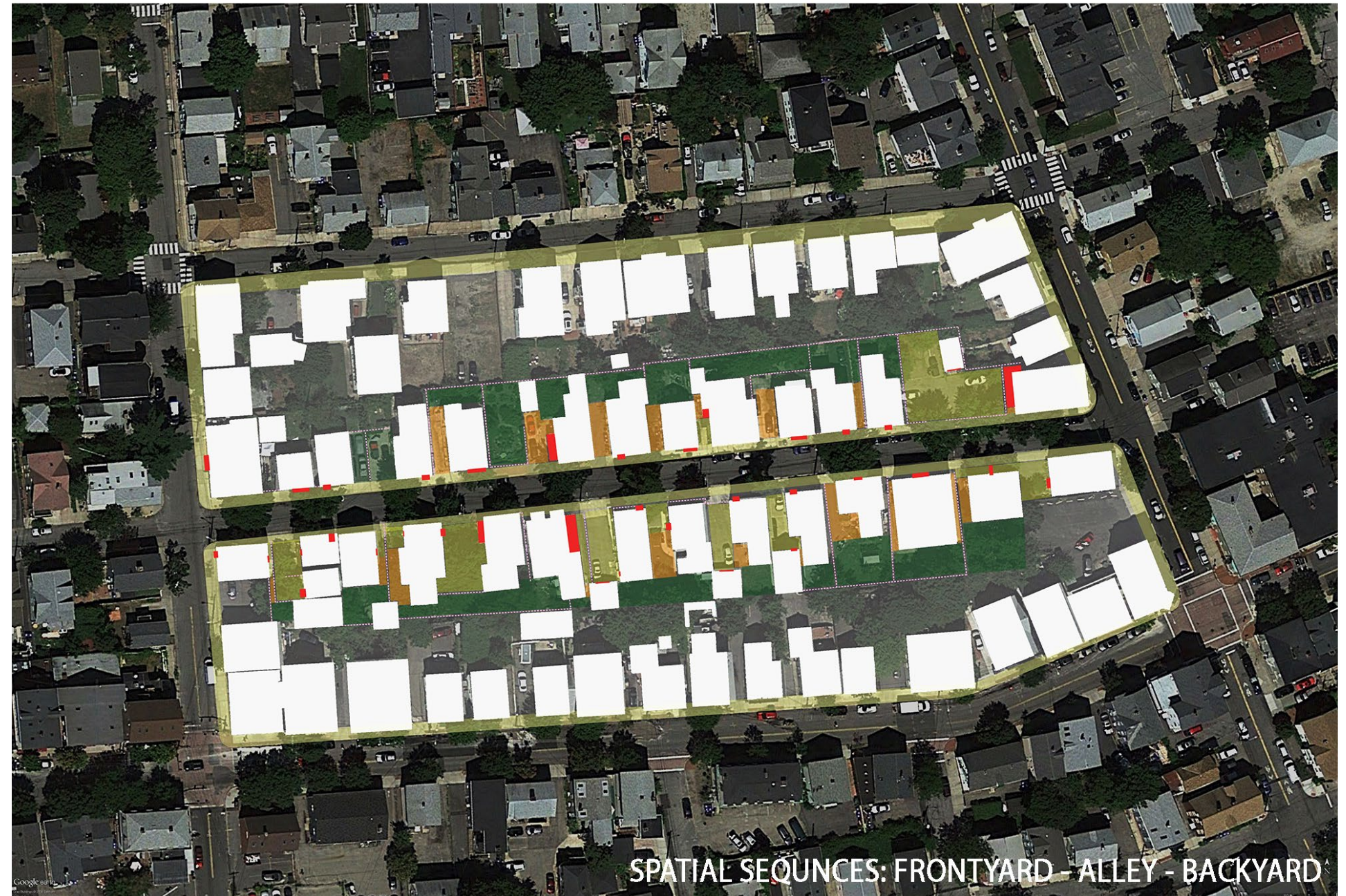
Methods

1. On-site research & mapping
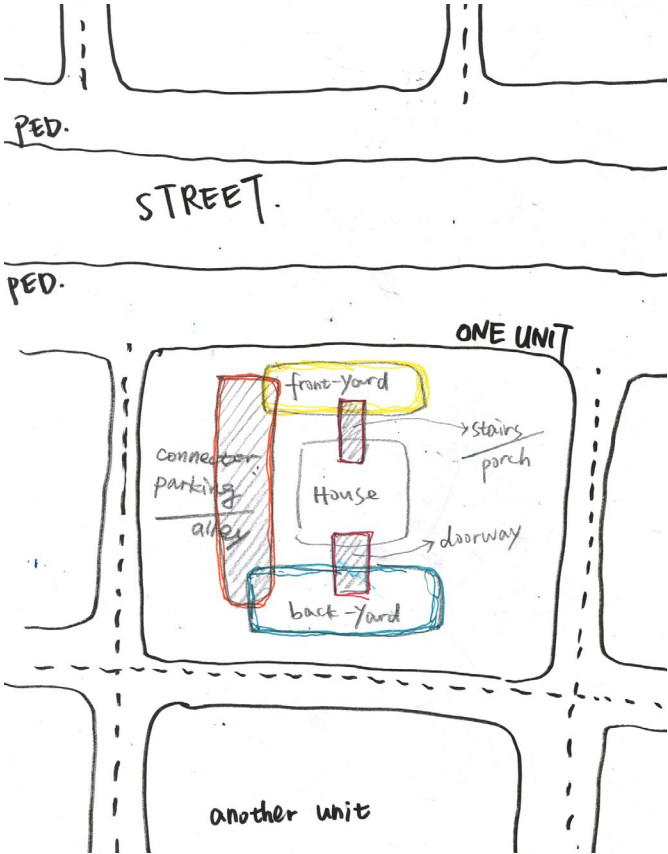2. Diagraming and drawing
3. Modeling
4. Analysing
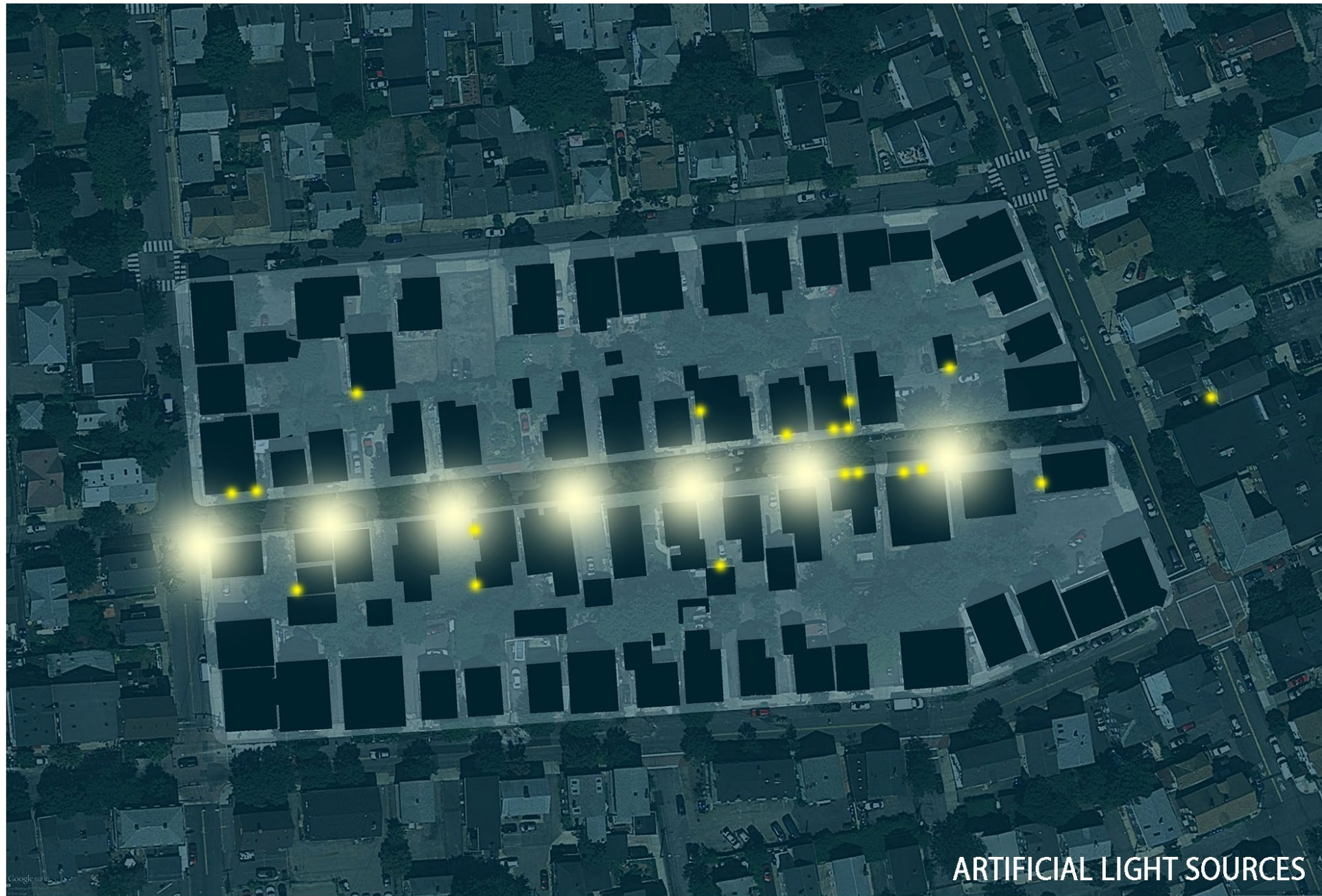
ARTIFICIAL LIGHT SOURCES

LIGHT & SHADOW THRESHOLD

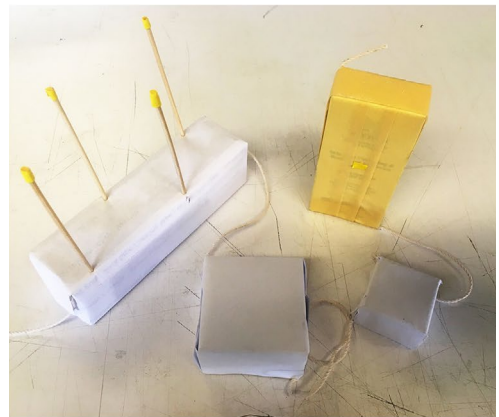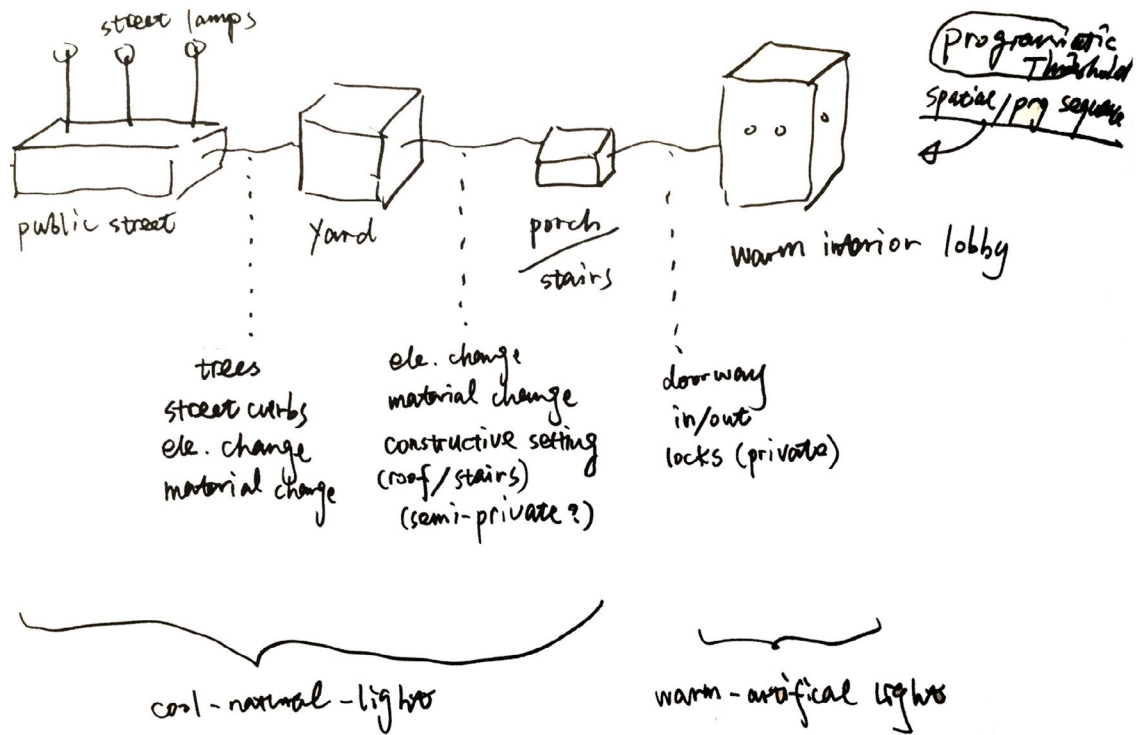PROGRAMMTICAL THRESHOLD: PARKING LOT - ENTRANCES - FENCES

SPATIAL SEQUNCES: FRONTYARD - ALLEY - BACKYARD

Phase 1 Threshold & Spatial Sequences

	STREET	F-YARD/ ALLEY	B-YARD	LOBBY	ROOM
PUBLIC/ PRIVATE (whether visible/ accessible by others)	PB (visible; accessible)	SEMI-PB (visible; restricted-accessible)	SEMI (restricted-visible&accessible)	SEMI-PR (invisible; inaccessible)	PR (totally invisible; inaccessible)
scoring of P/P	5	4	3	2	1

THRESHOLDS	SEPARATED CONDITIONS	P/P DIFFERENCE BETWEEN
f-door/ porch/ stairs	street(5) OR f-yard(4) & lobby(2)	3 OR 2
windows facing st.	street(5) & room(1)	4
windows facing alley	alley(4) & room(1)	3
windows facing b-yard	b-yard(3) & room(1)	2
b-door	backyard(3) & interior(2)	1
connector/ alleys	f-yard(4) & b-yard (3)	1
fences	yard (3 OR 4) & yard (3 OR 4)	1 OR 0

INSPIRATIONS FROM "WINDOW"

Thatched on Public Parking Lot   Window & Shrub   138 Sheldon St.   117-118 Sheldon St.   Window & Stairs   Window & Stairs & Doorway   79 Sheldon St.   Window & Porch & Shrub   Window   Window & Stairs & Doorway   Stairs & Doorway   80-81 Sheldon St.   Fences   Fence & Stairs
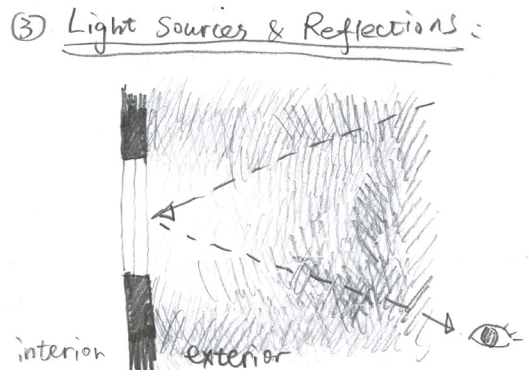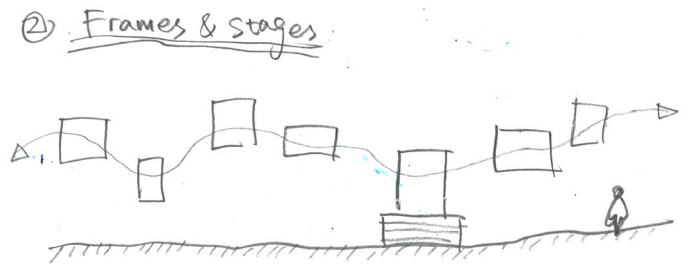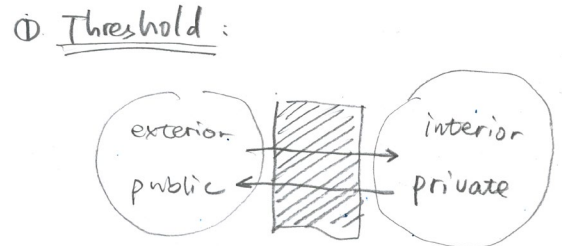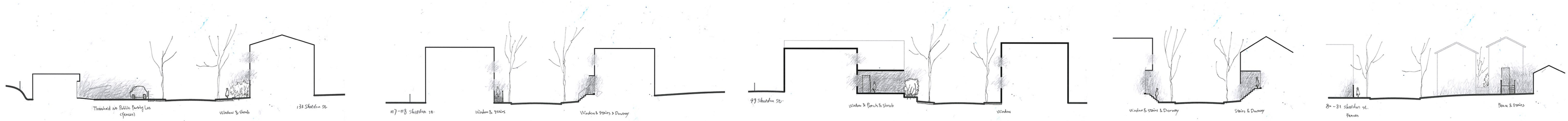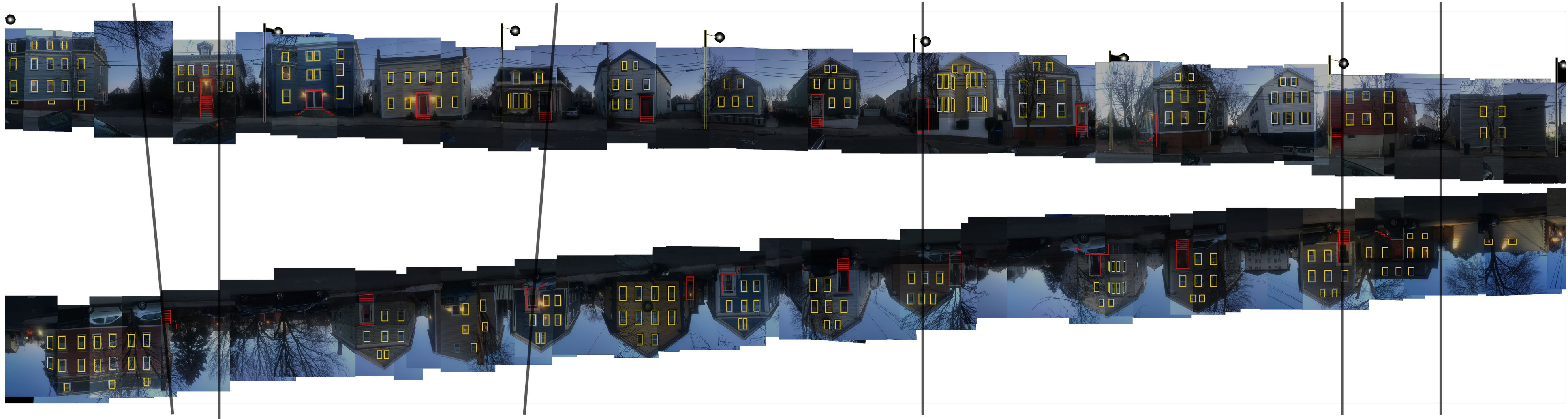
Findings + Conclusions

1/ At the site, the residential unit is organized in a certain way; the spatial sequences lead the programmatic sequences, while the threshold like windows could break the linear sequences and thus relate two spaces with very different properties (like p/p) together, also, the openings create shortcuts and interfaces for different light conditions. Meanwhile, the happenings around "house" and the imagery of "home" add psychological factors in this topic.

2/ relationship between people circulation & artificial light source (street/ door/ wall-lamps):
artificial light sources are always located at where people have activities at night (street—front-yard/doors—in house—backdoor)
Thus, these places are where have most possibilities to have interactions between natural & artificial light as well; while other spaces like backyards, some alleys, and spaces between two units (separated by fences) have more pure light sources (only moonlight).

3/ Because of the contrast of P/P, I chose "windows facing st." as my investigated threshold.

4/ window's quality:
- for people outside (Street): walking along the street, every window (and reflected images & light from inside) is static, while people themselves are moving, therefore have a sense of watching films with a sequence of frames.
- for people inside (Room): looking from a static point, while the "framed scene" outside is changing
- when light-on inside (warm-tone and brighter than outside): warm-tone light permeating to outside; people inside will see both outside & reflections of inside; people outside can look into the room
- when light-off inside (darker than outside): dim cool-tone light permeating to inside; people inside will see outside; people outside cannot look into the room while will see reflections of outside

Assessment

Phase 1 has an important role of questing the essential points in the whole topic. From this aspect, I think I did well, except that I haven't determined one point as the goal to be explored later.

After the review of phase 1, there are two ways for the design going to — 1/ create a threshold for people to observe the phenomena better; 2/ interact with the phenomena directly. And for both of them, the outcomes could be first a site-specific design for this particular neighborhood (street/ backyard), and then finding the discipline to re-structure or re-organize a larger context, and at last, trying to apply to different sites or situations like NYC.

Phase 2

Phenomena Investigation

Abstract

During phase 2 I will develop a deep understanding about the phenomenal changes caused by dawn light in diverse settings at the site in Providence. Based on the conclusion of phase 1 and further on-site investigation, what's the relationship between the phenomenal nuance and the threshold condition? Choose certain phenomena and figure out how to reveal them, along with the revising of the written article. At the end of phase 2, a primary prototype needs to be presented.
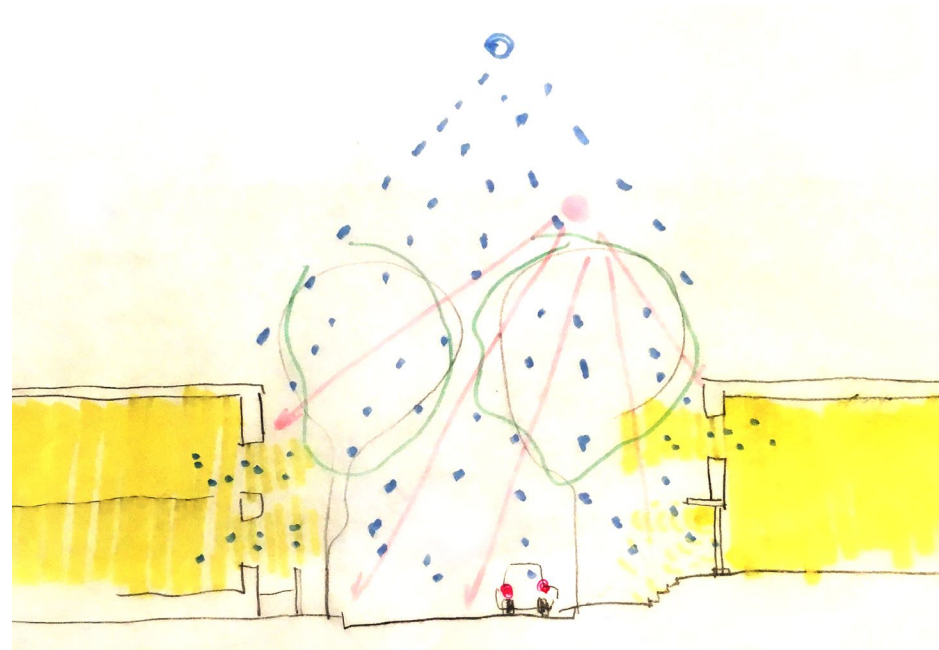

Site & Regular Circulation

Introduction

In phase 2, I'm going to develop a deep understanding about the light condition and related phenomena and how are they intervened by or impacted other elements like people activities, species behavior, plant growth, and most important, how does the light itself change specifically at the site, which requires me to investigate the site further and rely on some scientific studies.
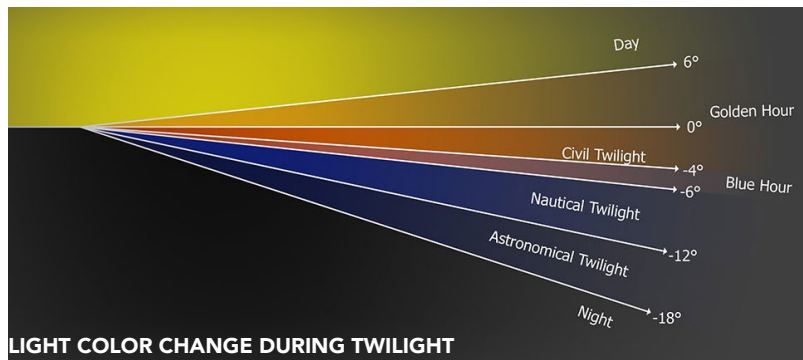
Methods

1. Working model to study the light condition
2. On-site Research
3. Conceptual diagram
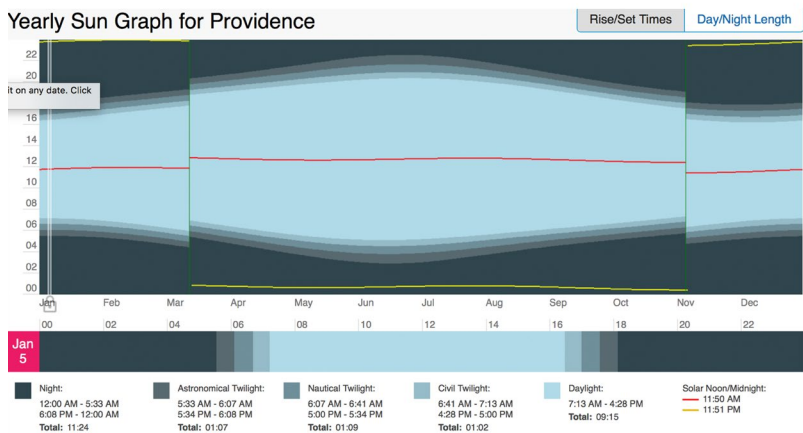4. Digital modeling to simulate the sunlight
5. Scientific research

Phase 2 Principles of Light Change
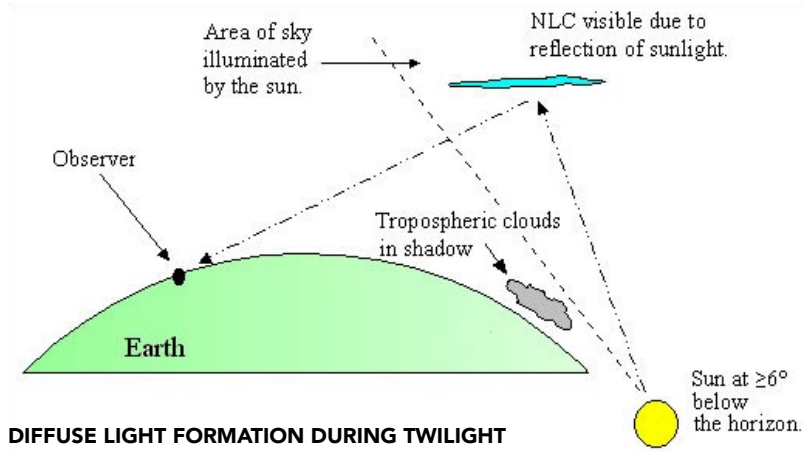
DIFFUSE LIGHT FORMATION DURING TWILIGHT

LIGHT COLOR CHANGE DURING TWILIGHT

"TWILIGHT"
(Source: www.timeanddate.com)

- It is also often seen as a synonym for the period of morning twilight when the Sun is still below the horizon, but its rays are already reflected by the Earth's atmosphere, lighting up the sky.

- Each twilight phase is defined by the solar elevation angle, which is the position of the Sun in relation to the horizon.

- The light-temperature changes from cool-dark blue (beginning of dawn) to balanced-cool shade (during dawn) to extremely warm sunrise (end of dawn), and at last, balanced-warm daylight.

- Civil twilight occurs when the Sun is less than 6 degrees below the horizon. As the Earth's atmosphere scatters and reflects much of the Sun's rays, coloring the sky bright yellow and orange, artificial lighting is generally not required in clear weather conditions to carry out most outdoor activities. (about 30min in morning & 30min at night): brightening/ darkening with dramatical light temperature change from cool to warm-tone —— light temperature change

- Nautical twilight occurs when the geometrical center of the Sun is between 6 degrees and 12 degrees below the horizon. This twilight period is less bright than civil twilight and artificial light is generally required for outdoor activities. In clear weather conditions, the horizon is faintly visible during this twilight phase. (about 30min in morning & 30min at night): brightening/ darkening with cool-tone light —— brightness change

- Astronomical twilight occurs when the Sun is between 12 degrees and 18 degrees below the horizon. To the naked eye, and especially in areas with light pollution, it may be difficult to distinguish astronomical twilight from night time. (about 30min in morning & 30min at night): mainly moonlight (dim, cool-tone, diffuse light, cast blurred shadows) —— constant setting with other phenomena/ changed artificial light sources/ moving moon and stars

FROM NATURAL TO ARTIFICIAL LIGHT SOURCES:

LIGHT TEMPERATURE: COOL -- WARM

BRIGHTNESS: DIM -- BRIGHT

QUALITY: DIFFUSE -- DIRECTIONAL

LEVEL: SKY -- MULTI-LEVEL

Light during twilight: cool-tone; diffuse

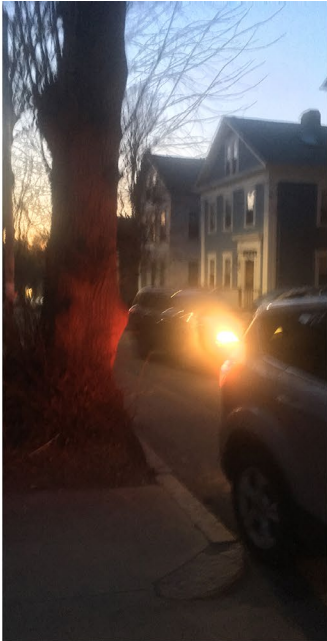
Light during night: warm-tone; sharp shadows

Phase 2 Light Sources
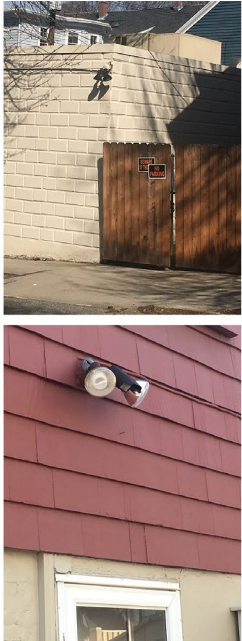

MOON LIGHT:
COOL LIGHT
DIM
DIFFUSE
SKY-HEIGHT

LIGHT FROM INTERIOR:
YELLOW
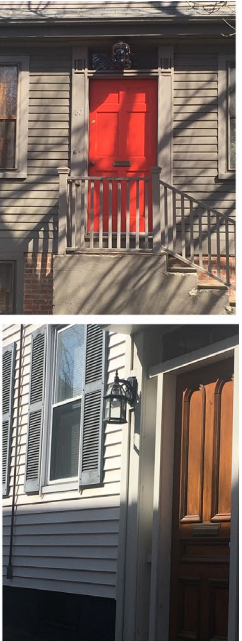DIM
DIFFUSE
PEOPLE-TO-BUILDING HEIGHT

MOBILE LIGHTS:
COLORED
MEDIUM BRIGHTNESS
DIRECTIONAL
GROUND LEVEL

STREET LAMPS:
WHITE
BRIGHT
DIRECTIONAL
BUILDING LEVEL

WALL LAMPS:
YELLOW
MEDIUM BRIGHTNESS
DIRECTIONAL
PEOPLE LEVEL

DOOR LAMPS:
YELLOW
MEDIUM BRIGHTNESS
UNDIRECTIONAL
PEOPLE LEVEL

DARKENING SKY DURING TWILIGHT

SENSORY LAMPS CHANGE LIGHT CONDITION

CAR LAMPS CHANGE LIGHT COLOR

SHADOWS CAST BY ARTIFICIAL LIGHT

Phase 2 Light & Species

PLANTS' IMPACT:
- Changing light & shadow pattern
- Changing color
- Changing spaces

IMPACT OF ARTIFICIAL LIGHT TO SPECIES:
- Nocturnal animals: sleep and hunt
- Migration: "transverse orientation" for birds and insects
- Plants: energy; light spectrum; disrupting seasonal light (i.e. when to bud, flower, germinate, etc.) and for their growth form.
- Protection of Wildlife:
Keep it LOW - mount the fixture as low as possible to minimize light trespass, and use the lowest amount of light needed for the task
Keep it SHIELDED - fully shield the light so bulbs and/or glowing lenses are not visible to minimize light trespass
Keep it LONG - use long wavelength light sources (ambers and reds) in the appropriate lighting fixtures

38
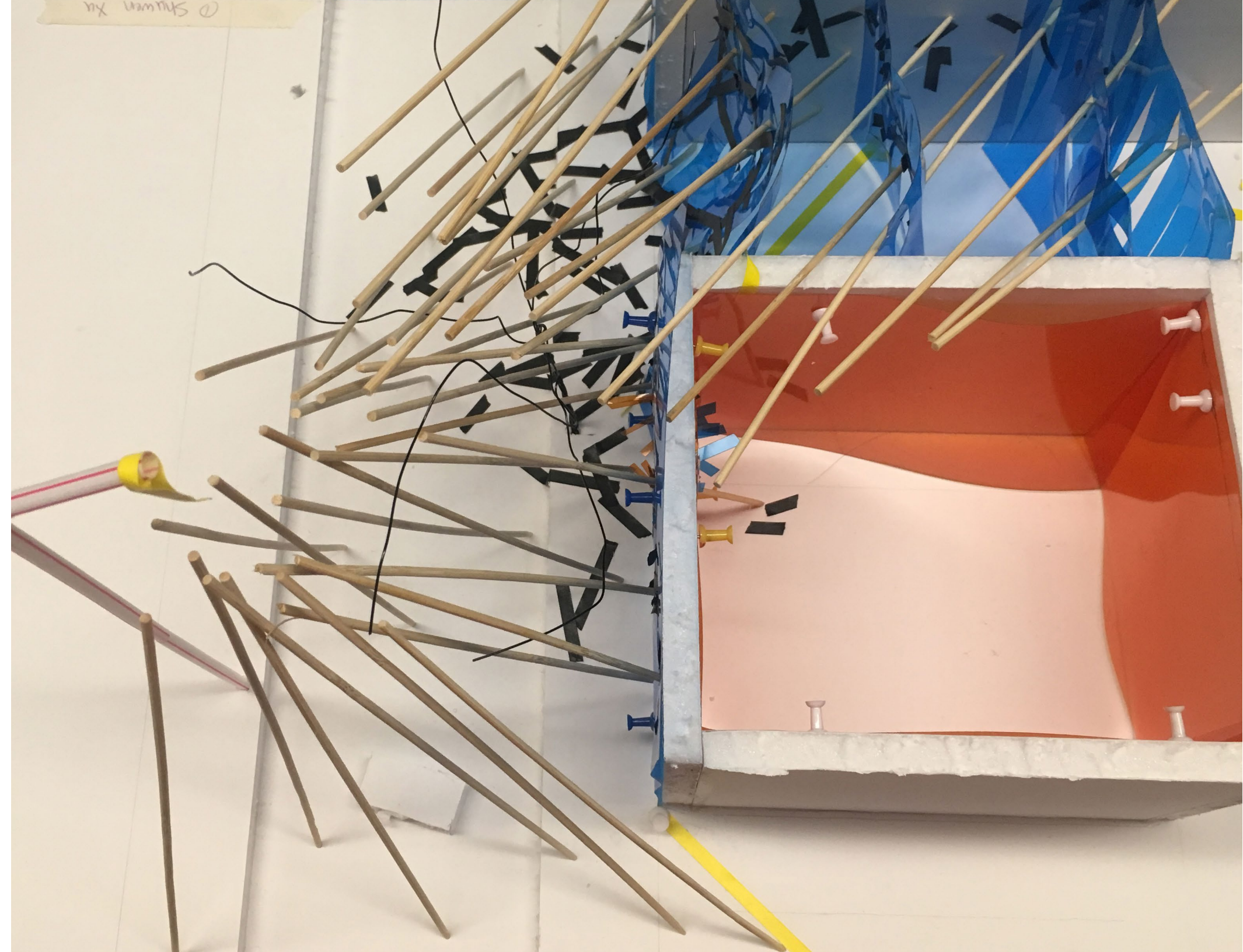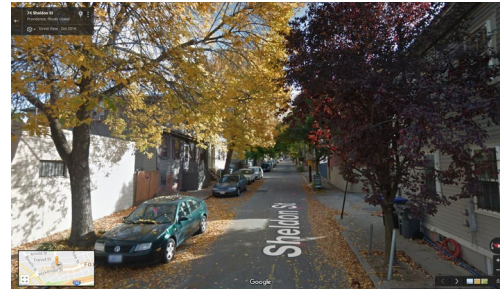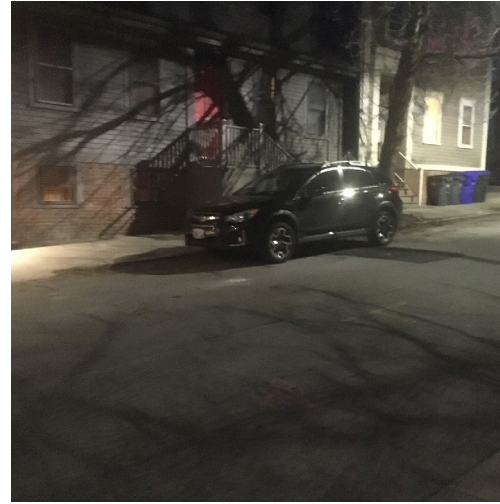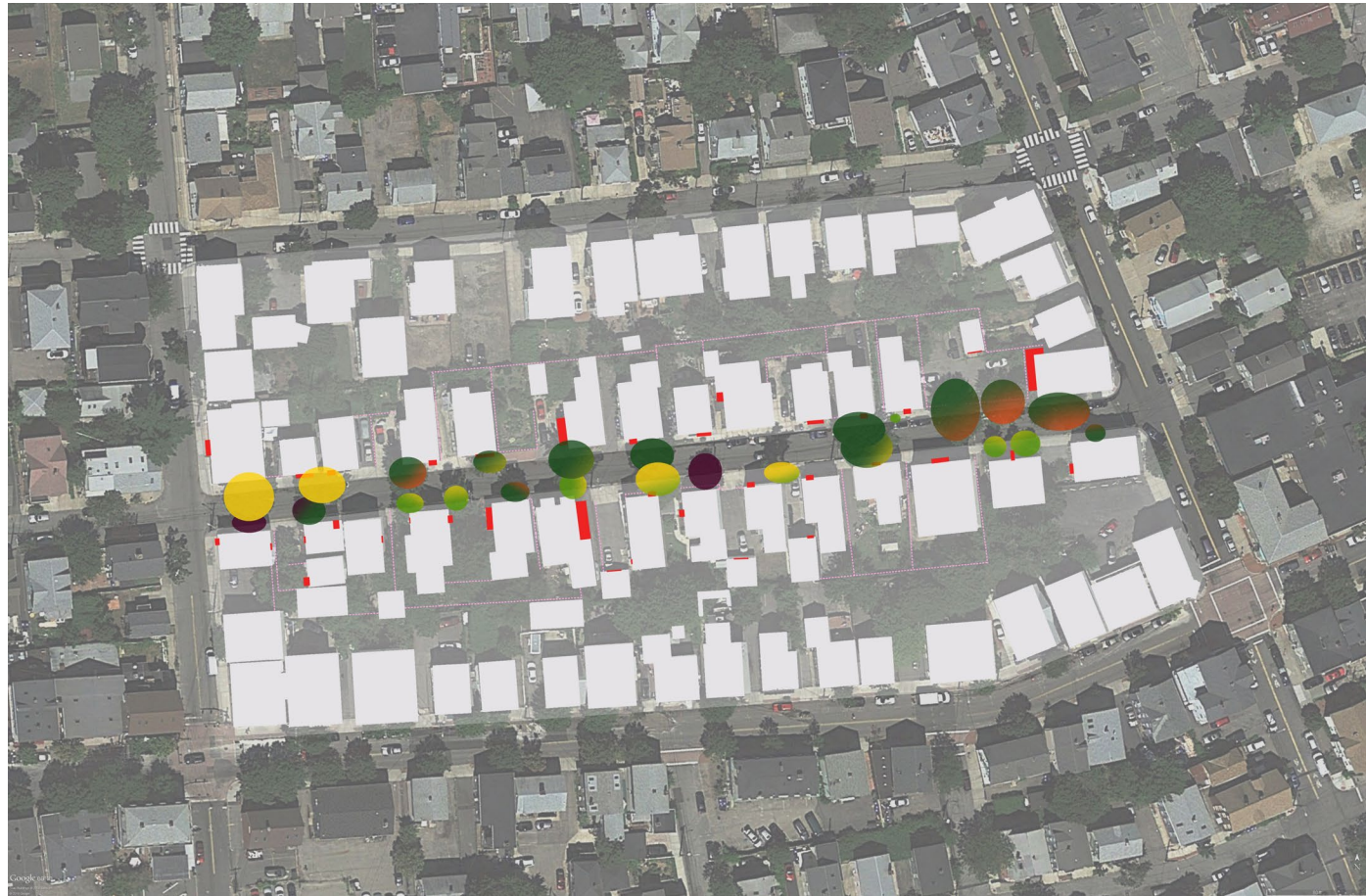
Findings + Conclusions

1/ Selected phenomenon:
natural light (brightness/ quality: diffuse or direct/ light temperature/ shadow)

How does it change:
- during night & astronomical twilight (about 30min in morning & 30min at night): mainly moonlight (dim, cool-tone, diffuse light, cast blurred shadows) —— constant setting with other phenomena/ changed artificial light sources/ moving moon and stars
- during nautical twilight (about 30min in morning & 30min at night): brightening/ darkening with cool-tone light —— brightness change
- during civil twilight (about 30min in morning & 30min at night): brightening/ darkening with dramatical light temperature change from cool to warm-tone —— light temperature change

2/ Experience:
- During dawn, the light sources are natural cool light (sunlight reflected by earth atmosphere & moonlight), and artificial warm light (street lamps/ lamps at walls or doors/ lights from interior like porches or windows/ colorful sign boards/ passing cars' light)
- Most of the time, the natural light is weaker than the artificial ones. And natural diffused light forms blurry shadows under cars; while artificial light casts clear shadows of trees and other objects against walls and pavements. (cars as moving light sources)
- Near sunrise, the light-temperature changes dramatically.
- There are some spaces enclosed by buildings, fences, and plants as parking lots and yards — threshold between streets and houses; public and private; staying at home and driving out.

3/ "light trap" for insects:
In a behavior called transverse orientation, some insects navigate by flying at a constant angle relative to a distant light source, such as the moon. But around man-made lights, such as a campfire or your porch light, the angle to the light source changes as a moth flies by. This confuses it.

Assessment

Feedbacks in Phase 2 Review:
1/ Be precise about "light":
light reflecting & light-meter — brightness map (different level/ time period?)
2/ Be clear about the "light intention": (what it means to me)
street lamps vs. moonlight?
light change during twilight? (light temperature & diffuse/ sharp shadows)
3/ try to think at "landscape scale": (what the light make to the street?)
e.g: "social light project" in London

My Thoughts:
1/ light-meter:
night (ally/ moonlight/ lamps): under — 0.6 — 1.6
daylight (porch/ shadow/ sunshine): 16 — 40 — 114
 2/ different intention during twilight/ under moonlight:
- during twilight: emphasize the subtle changing process of darkening from white daylight to cool-diffuse-light (to artificial light)
- during night: moonlight/ valuable "darkness" with limited light sources at necessary places (ar-li) not changing light condition

After I reviewed my initial thoughts about "twilight" at the beginning of the semester (below), I found what attracts me most is:
1/ calming down street with decreasing people activities;
2/ darkening diffuse-cool-light (prelude of night)
— no obvious shadows by natural light; no obvious light temperature change; but the artificial light starts

— if I want to keep the natural process without artificial intervention (1 hour: civil twilight <okay for outdoor activities & brightest stars> + nautical twilight <faintly visible horizon & bright stars>), the street might have insufficient light for activities.

Phase 3

Revelation + Strategies

Abstract

Phase 3 is built on phase 1 and phase 2 to develop several strategies in order to enhance people's perception of the phenomena related to natural and artificial light during twilight, corresponding prototypes, and their further potentials, along with the final written article.
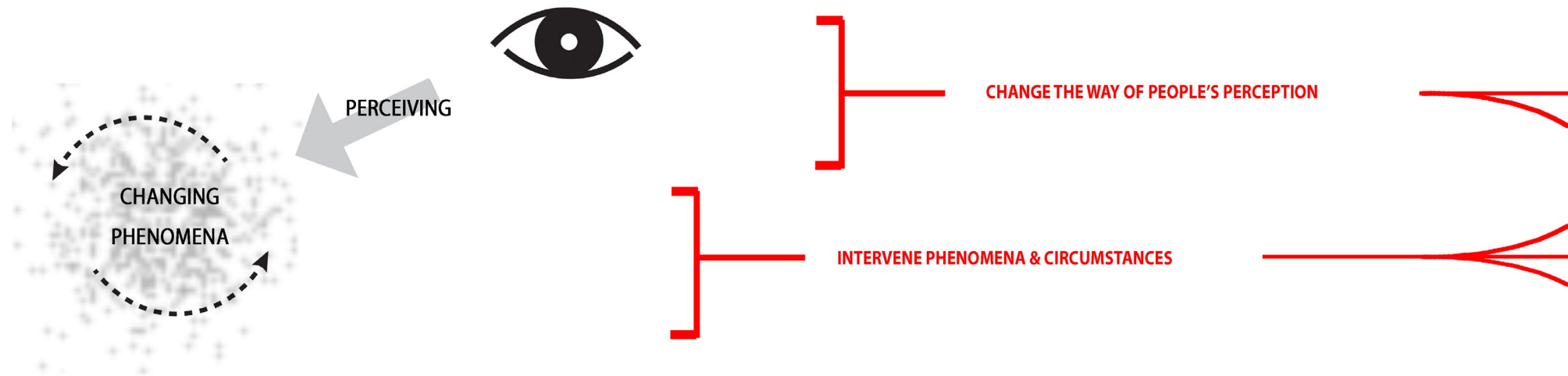
Introduction

As is shown below, the result of "perceiving" could be influenced by the change of two process -- the first is the way of people's perception, which develops into Strategy A and B; and the second is the intervention to phenomena and circumstances, which includes Stratege C, D, and E. For every strategy, the way it works is presented by drawings or models, and potential development as a systerm is considered as well.

Methods

1. Logical analysis and classification
2. Drawing
3. Photo montage
4. Modeling
5. Writing

PERCEIVING

CHANGING PHENOMENA

CHANGE THE WAY OF PEOPLE'S PERCEPTION

INTERVENE PHENOMENA & CIRCUMSTANCES

STATEGY A/ PROVIDE NEW SPACES FAR AWAY FROM ARTIFICIAL INTERVENTION .... **DEVELOP BACKYARD NEIGHBORHOOD AS A SYSTEM**

STATEGY B/ ADDITIONAL SPACES &PROGRAMS AT THRSHOLD TO ENCOURAGE PHENOMENA OBSERVATION .... **DESIGN INSERTED SPACES AS CERTAIN MODULES**

STATEGY C/ LIGHTING DESIGN TO ENHANCE PERCEPTION OF MOONLIGHT & SHAKING BRANCHES .... **CREATE NEW LIGHT & SHADOW PATTERN IN A LARGER SCALE**

STATEGY D/ UNIFORM SURFACES TO EMPHASIZE THE LIGHT QUALITY (BRIGHTNESS & COLOR) .... **INDIVIDUAL'S BEHAVIOR OR ORGANIZED EVENTS TO PAINT**

STATEGY E/ SPATIAL INSTALLATION TO REVEAL LIGHT & SHADOW IN SPACES .... **INSTALL IN SELECTED ALLEYS TO CREATE SPECIAL STREETSCAPES**

## Strategy A/ Provide new spaces far away from artificial light intervention

-- Prototype: tower & path located in backyard
-- Development: systematic backyard-neighborhood
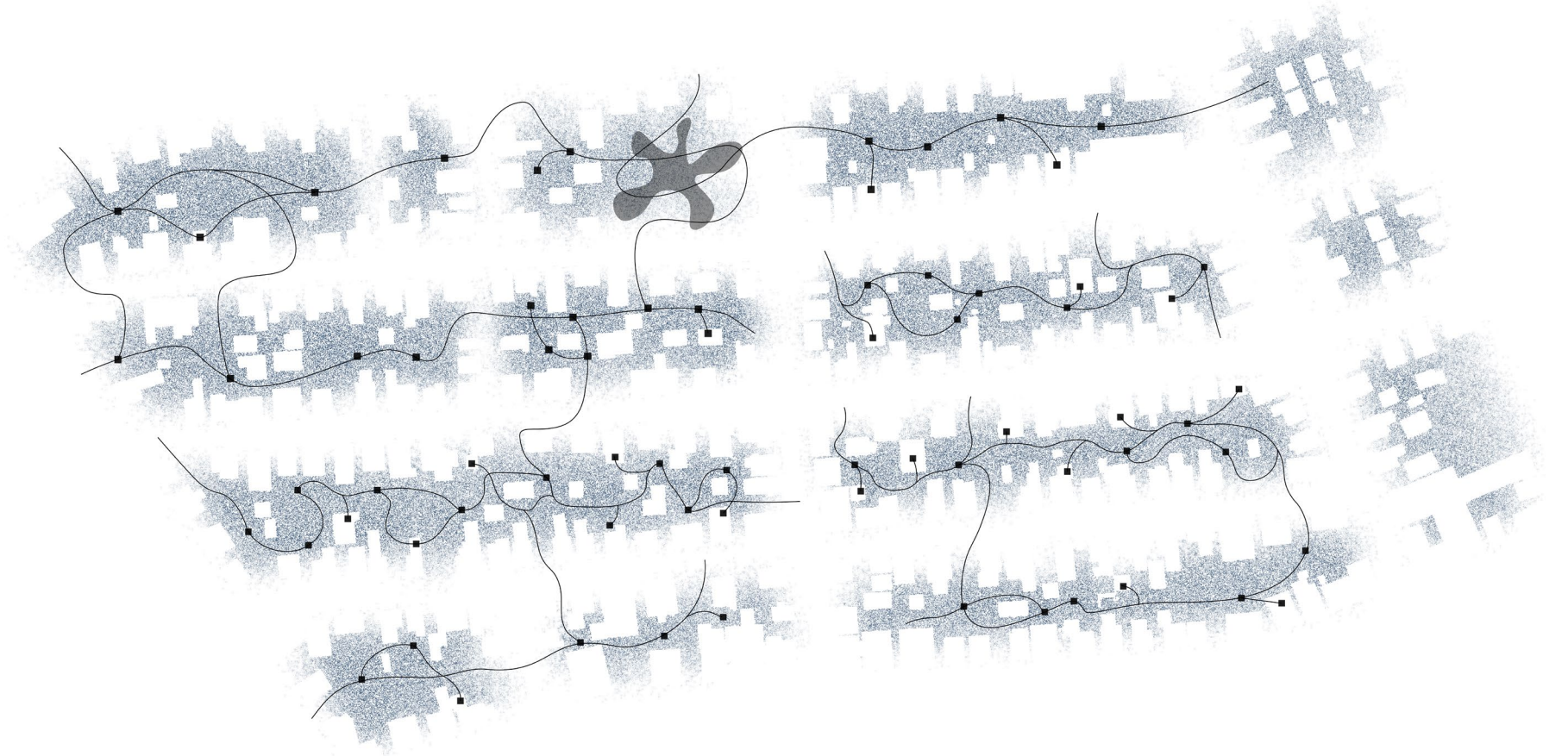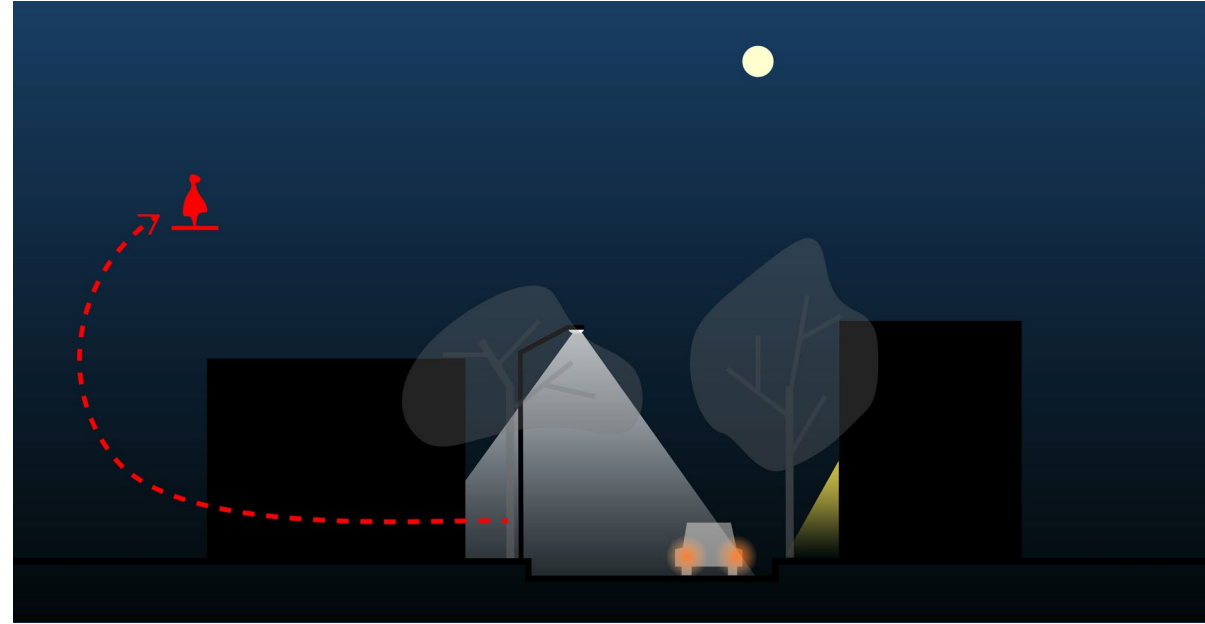
Strategy B/ Additional spaces & programs at threshold to encourage phenomena observation

-- Prototype: blocks intalled at thresholds like windows/ stairs/ porches
-- Development: certain modules and variations to for industrial production
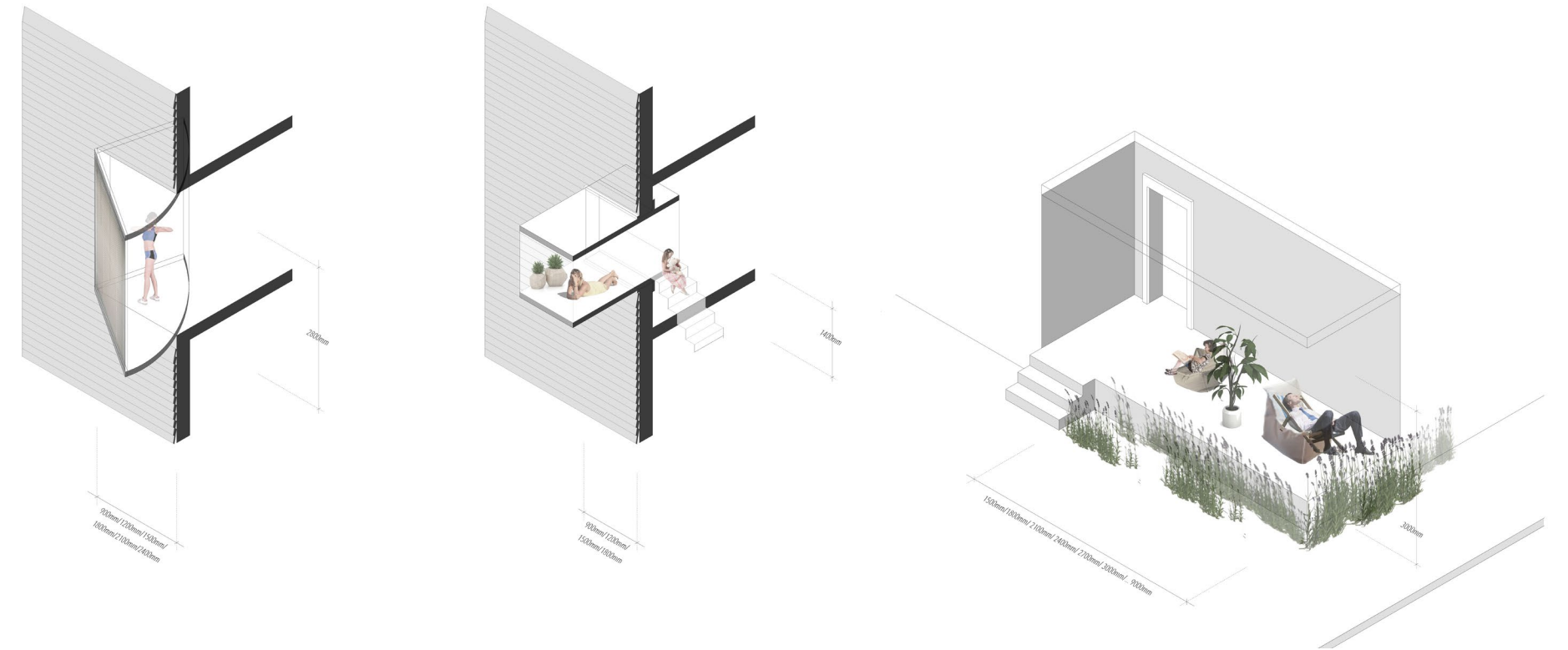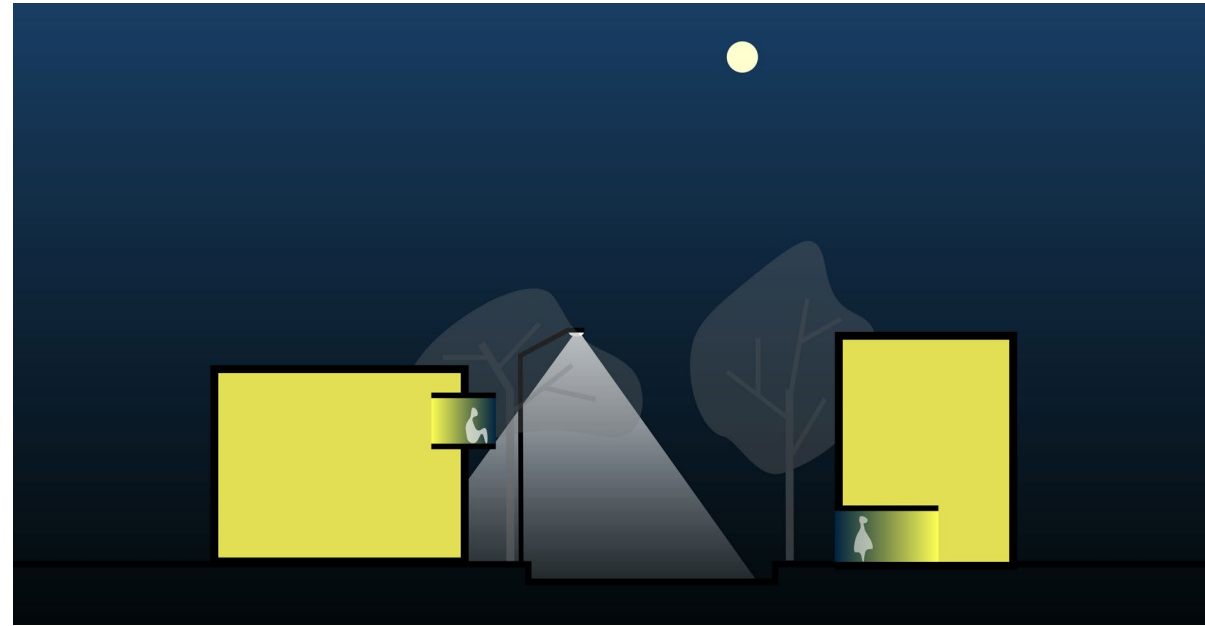
Strategy C/ Lighting & plant design to enhance perception of moonlight & shaking branches

-- Prototype: lower street lamps intalled in shrubs to illuminate sidewalk & shielded wall lamps
-- Development: create certain light & shadow patterns in neighborhood
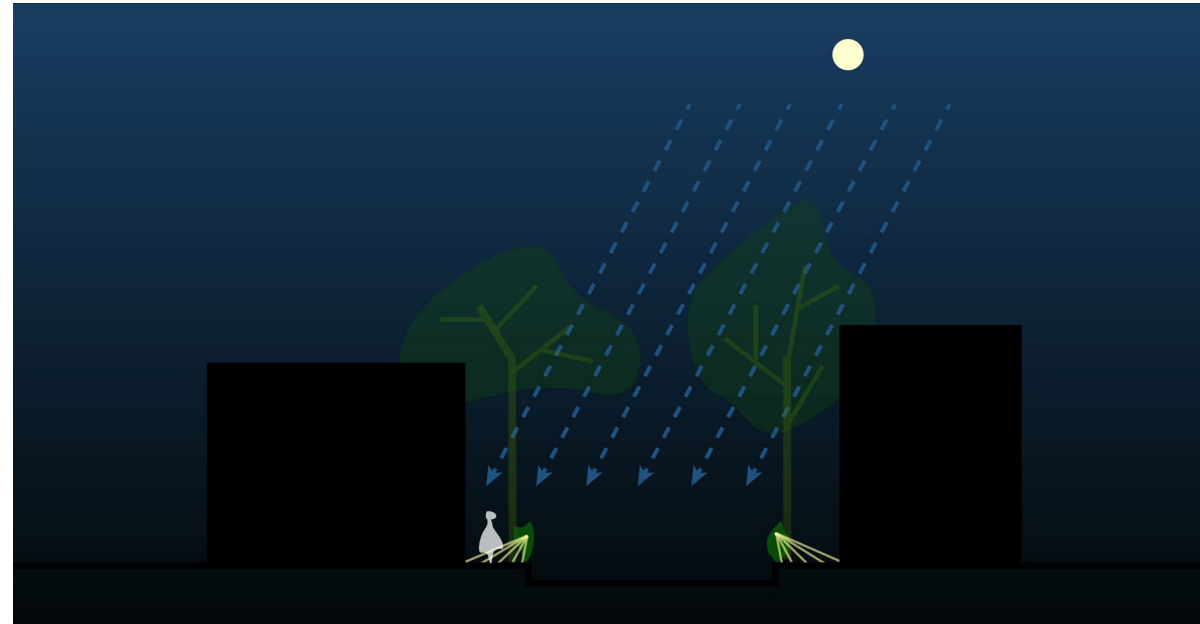
Strategy D/ Uniform surfaces to emphasize the change of light (brightness & color)

-- Prototype: use white paint which reflect light most and reveal the color of light best
-- Development: individual's behavior or organized events to paint
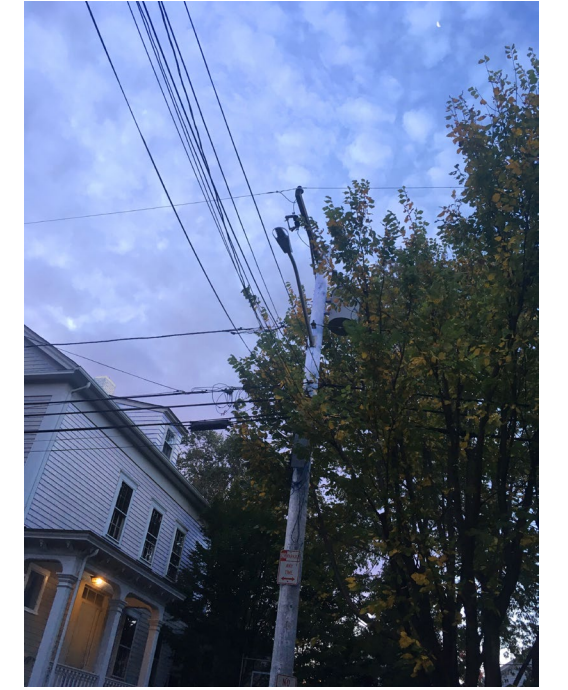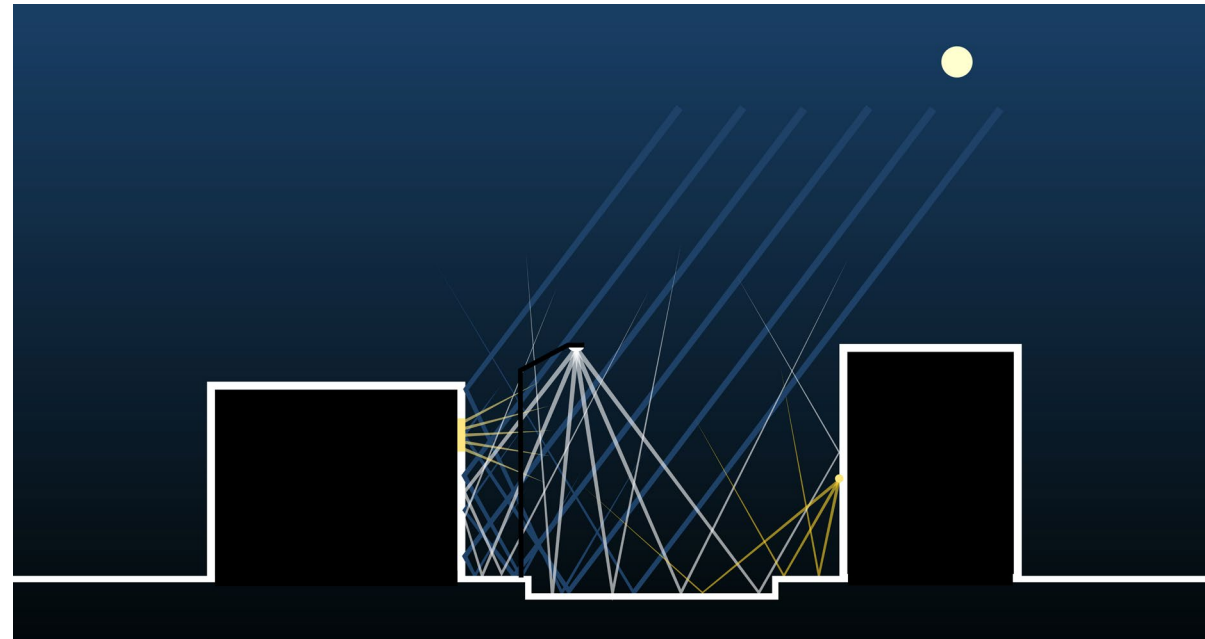
Strategy E/ Spatial installation to reveal the volume and change of light & shadow

-- Prototype: hung strings in the alley space
-- Development: intall in selected alleys to create spetial streetscapes

Findings + Conclusions

I found that to propose certain stategies according to a logical classification is quite helpful. In phase 3, I figured out the factors that could influence perception and light working system first, and then list all the potential strategies based on different layers, intentions, and scales -- this method definitely help the thesis development.

	manipulated layers	specific intention	strategy at building-scale	strategy at block-scale	strategy at district-scale
space	above lamps & canopy & roof	let people observe the sky directly	observation tower	observation towers at public yard; connected by path	observation towers at public yard; connected by path; with hierarchy
	between facade & trees: the threshold space between interior & exterior	let people at home experience the nature better	protruding threshold space	create rhythm by those protruding volumes; directional, like facing scenery	design a prototype/ modules for construction
	sidewalks below canopy: where pedestrian mainly locates & leading circulation	provide potential places for pedestrian to stay and observe	small scale staying places, like seats	customized parklet along street	expanded spaces at some certain nodes
	motorway: where cars locate & parking & in the middle of street	walking in the middle of street/ use parking lane			
	stairs/ porch/ front-yard	let people stay longer and observe			
	alley: bounced light between walls	being observed both from street & interior	remove excessive objects in it — regarded as a stage for light (distinct from street spaces) & consider where is the audience	might choose some certain alleys as the "light container"/ all alleys	???
	back-yard	quiet observation places far from street lights	backyard design	separated while connected at certain places (fences)	backyard-neighborhood system
trees	canopy&branches: as a filter of sky&light; will impact light-color	filters: maintain the diversity of trees (different color/ forms of leaves/ flowers)			
	trunks: define street spaces & circulation	associate with parklet design			
	plan arrangement: impact canopy density	balanced??			
	height	people cannot touch, only visually perceived; consider buildings' height			
buildings	roof	for people activities?	additional construction		
	facade	unified neutral color to decrease intervene; matte/ uneven material to diffuse light	white or grey paints/ high reflection glass facade	white or grey paints/ high reflection glass facade	white or grey paints/ high reflection glass facade at certain blocks
	doorway/ window: shaded & threshold spaces	change program sequences/ programmatic mixture	installation at doorway/ window	systematic installation as a new street-scene	associated with certain nodes
ground	pavement material	unified color & material			
	topography	associate with street/ parklet design			consistency & continuity
lamps	street-lamps:	no brightly-lit street lamps that is higher than eye-level during twilight	lamps on ground level/ shielded/	linear ground lamps/ shielded	linear ground lamps
	door/ wall lamps: for people entering house	restricting impacted area: directional; shielded; limited brightness			
	car	no parking on street which will block circulation & view	re-arranged parking area	public parking lot	
fence	separate ownership (block visually/ circulation)	associate with backyard design; unified material		as a system & organize backyards	

Assessment

First of all, the five strategies were selected from the whole list in order to stand for diverse aspect of landscape design like systematic constructions, architecture, lighting design, manipulation of surfaces, and spatial installation. I think the whole structure is clear, and the diagrams could express my intentions.

However, like the critiques, every strategy haven't been digged deep enough, and the "potential development" part could be thought from specific users or perspectives, like environmental impact, residents' routine, and so on. Another shortage is I didn't have enough time to finish the part of application to other sites.

Overall Assessment

Final Conclusions

First of all, what I want to address most is neither a spefic design, nor a tactic strategy, but a new attitude towards the circumstances that surround us, especially the changing natural phenomena, because our eyes are always too habituated to those subtle magics to perceice their beauty.

In phase 1, I undertand the "site" itself better from the persepectives of physical constrcutions, spatial thresholds, prgrammatic sequences, plants, surfaces, light sources, circulation, and so on; in phase 2, I got the knowledge of light working system from both scientific researches and on-site experiences; in phase 3, various strategies were propsed based on intentions from different perspectives and at different scales.

Returned to the initial questions:
1/ How can we have a more modest attitude towards nature in landscape design -- we shoud respect the role of nature in our designs. For instance, the design could be based on the natural changes, including responses to them, establishment of (physical or abstract) relationships with them, pure revelation of those changes, fabrication of further potential changes, and so on, instead of create something regardless of surrounding circumstances.

2/ How to emphasize the changing phenomena that people might be habituated to during twilight and night at site -- I have proposed five strategies involving systematic constructions, architecture, lighting design, manipulation of surfaces, and spatial installation, however, wider and deeper explorations are needed for the open question.

Final Assessment

In the thesis, I chose a certain phenomenon (light) in a certain period of time (twilight) as my investigated object. The working method of natural light is far more complicated than I assumed, thus I tried to figure it out through several levels -- the twilight formation, the twilight definition and classification, the twilight properties, the light propagating principle theoretically, and my on-site experiences. In the studio, I worked through diagramming, drawing, photo-montage, making experimental models to undertand that system. Also, I de-constructed different layers of elements like physical constrcutions, spatial thresholds, programmatic sequences, plants, surfaces, light sources, circulation, and so on in order to understand the site itself better. However I felt I made many detours in this period, because I was not pretty sure about which way was necessary or essential to my thesis, thus I spent a lot of time on the work that never showed on later reviews. And then the strategies were proposed based on both the "site" and the "light working system".

The overall schedule worked out while several deeper investigation was difficult to be carried out on time, instead, the working mode was quite iterative, but I thought it was common in thesis study. However, the result was not critical enough for the same reason. Usually my intuitive perception was difficult to be transformed into analytical conclusion -- this is partly because of the thesis topic as well -- I chose the topic quite intuitively and the driving power came from purely visual beauty mostly, therefore, I didn't have many statistical analysis and objective consideration for the public in the thesis.

Looking at the result and thinking back to the initial ideas of the whole thesis, I did deviate a bit. I will return to the point of "home" again, and research more about the program sequences happening from the street to the inner room -- I will figure out the corresponding relationship between programs, spaces, and time, and try to break the interfaces between them or break down abd re-organize the usual sequences through light condition -- this will become the intention and logic of light control, instead of impact to species or streetscapes.

Bibliography

1/ "Sculpture In The Expanded Field", Rosalind Krauss

2/ "Eidetic Operations And New Landscapes", James Corner

3/ "The Word Itself", "Discovering The Vernacular Landscape", John Brinckerhoff Jackson

4/ Transparency: Literal and Phenomenal, Robert Slutzky, first published in 1963

5/ Richard Serra Sculpture, Rosalind E. Krauss

6/ Richard Serra: Sculpture, Architecture and the Body, Gideon Fink Shapiro, https://svbscription.com blog/richard-serra-sculpturearchitecture-and-the-body

7/ Richard Serra: The Matter Of Time, Carmen Giménez

8/ One Place After Another: Notes on Site Specificity, Miwon Kwon

9/ A Public Conversation Between Robert Irwin And Jennifer Winkworth, July 2013, on the occasion of his installation at the Secession Exhibition Hall of Contemporary Art, Vienna, Austria

10/ Being and Circumstance - Notes Toward a Conditional Art, Robert Irwin

11/ "Photosynthesis under artificial light: the shift in primary and secondary metabolism": https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3949401/

12/ "Do plants grow as well under artificial light?": http://earthsky.org/human-world/artificial-light-plant-growth

13/ "Artificial light at night — the impact on plants and ecology": http://ec.europa.eu/environment/integration/research/newsalert/pdf/artificial_light_at_night_impact_on_plants_and_ecology_455na2_en.pdf

14/ "Like Moths to A Flame": http://www.alimirjalili.com/MFO.html

15/ "Why Are Moths Drawn to Artificial Lights?": http://www.livescience.com/33156-moths-drawn-artificial-lights.html

16/ "Orientation in high-flying migrant insects in relation to flows: mechanisms and strategies": http://rstb.royalsocietypublishing.org/content/371/1704/20150392

17/ "The biological impacts of artificial light at night: the research challenge": https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4375372/

18/ "The effect of artificial lights on birds" & more about wildlife lighting: http://myfwc.com/conservation/you-conserve/lighting/pollution/birds/

19/ "Light Pollution Effects on Wildlife and Ecosystems": http://darksky.org/light-pollution/wildlife/

20/ "Light Pollution Harms the Environment": http://cescos.fau.edu/observatory/lightpol-environ.html

21/ www.timeanddate.com

CONTACT:

Shuwen Xu

www.shuwenxu.com

sxu01@risd.edu

xsw-1231@hotmail.com