Fractured Atmospheres

an Exploration into the Exactness of the World

by Amanda Yakiwchuk

a practicum submitted to the faculty of Graduate Studies of
the University of Manitoba

in partial fulfilment of the requirements of the degree of
Master of Landscape Architecture

Department of Landscape Architecture
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Winnipeg

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Abstract

Fractured Atmospheres

This project examines the spatial relationships that exist between Winnipeg, Canada and Tokyo, Japan, with the intent to develop an understanding of the preciseness of the world. Different site-specific systemic conditions were used as critical tools to explore the implication of distinct design catalysts and inhibitors. I have concentrated on the relationships that exist between time and space, to identify and displace localized, momentary events that exist in one site to the other. Familiarities of my local surroundings were deliberately obscured to make explicit a heightened awareness of my position on the planet. This helps to facilitate discussions.

I have created a space that is dissembled through an abstract understandings of displaced elements in the environment. It is my intention for this space to be experienced in a different way each time we come across it, by shifting and changing ones perception of their character in the world.

Acknowledgments

Fractured Atmospheres

I would like to deeply thank,
Marcella Eaton for inspiring me over the years,
Nat Chard for his ceaseless willing to teach and availability, and whom has really given me new platforms from which to see the world,
Tim Krahn for sharing in my excitement of this planet and for helping me to realize the technicalities of this project,
Richard Perron for our meaningful discussions.

My family, for all of their tireless support,
Terry & Carol Yakiwchuk, and to my brother Benjamin Yakiwchuk and his partner Ashley Dykun, the artistic dentists.

To Mac and Alice Taylor at Innovative Laser Works who helped me out in the 11th hour.

To the Carl Nelson Travel Fellowship which made my to travel to Japan in 2007 possible.

And finally to my partner Matthew M^{c}Fetrick, as an endless source of inspiration and understanding.

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in Linear Time

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'Blood scarf' photograph on page 119 original work by Laura Splan. Permission to use copyrighted photograph obtained from the owner August 8th, 2008 via personal email communication between Splan and myself.

Tokyo.Winnipeg *Chapter* One

The intention of this project examines how to create a connection and understanding towards the preciseness of the world by examining the spatial relationships that exist between Winnipeg, Canada and Tokyo, Japan. To do so I have used different site-specific systematic conditions as a critical tool to discuss the implication of distinct design catalysts and inhibitors. I have concentrated on the relationships that exist between time and space to comparatively identify and displace localized, momentary events that exist in one global site to another. To be able to discuss these relationships I have exploited the familiarities of my local surroundings and deliberately obscure them into a concentrated awareness of my position on the planet. I have used various experimental techniques as a vehicle to allow me to explore how to alter our perception of time and global placement.

The world is as it is because of great refinement and precision. The evolution of nature and its embedded elements are the direct result of distinct conditions on and in the earth. Embedded elements, climate, latitudinal environments, etc. all affect and are effected by networks of action and reaction. By bringing forward these ideas, I am attempting to question the current conditions of and in space and time that are of this planet.


牛角食堂
Gyu-Syoku Dining
2F
カラオケ
カラオケ
歌広場
お好み焼
鉄板焼の店
4F
渋谷センター街
ふらんす亭
since 1979
B1F
松屋
Ducky Duck
2·3F
TRUNK
マクドナルド
ハンバーガー
食べ放題
Buffet


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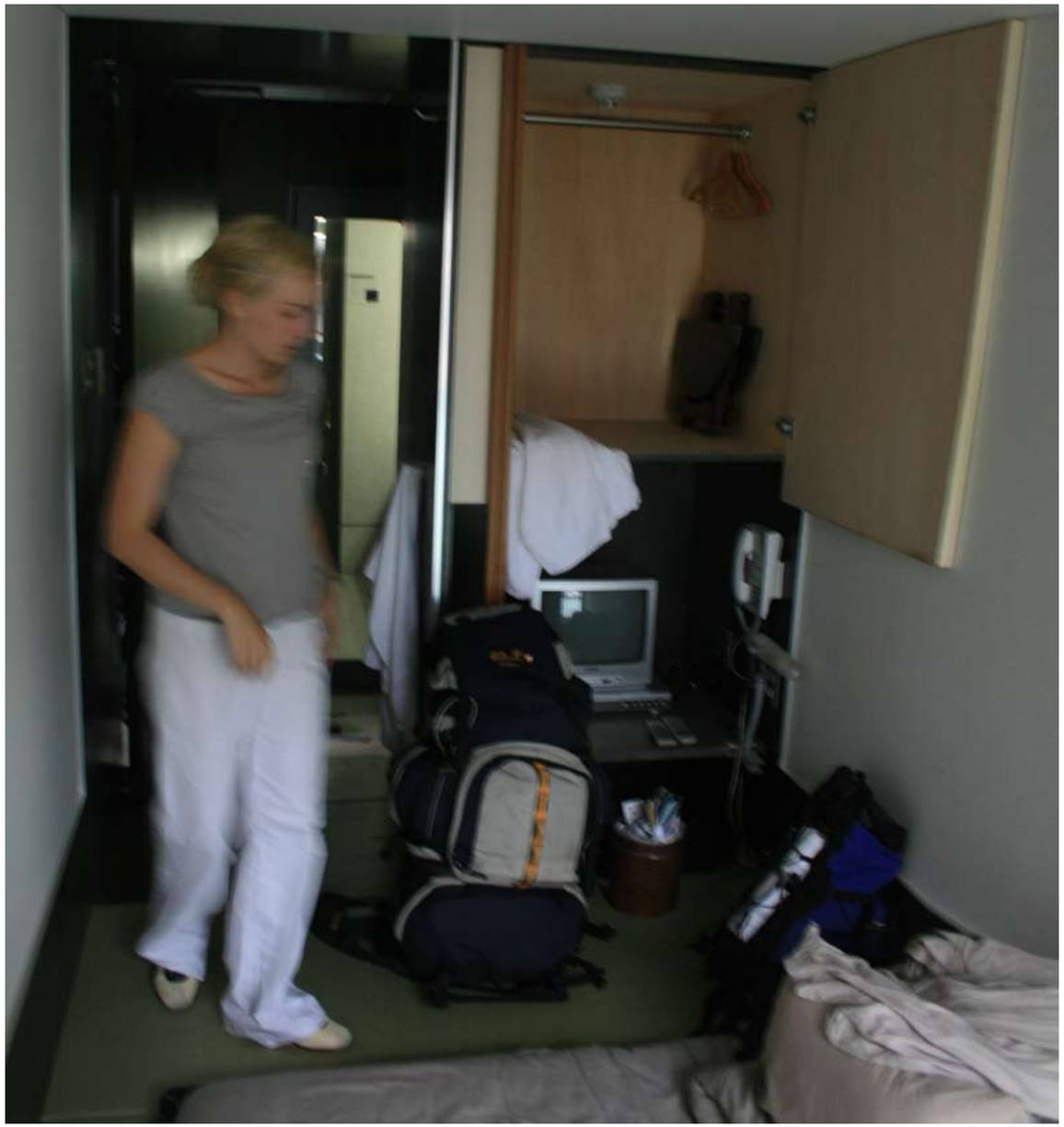
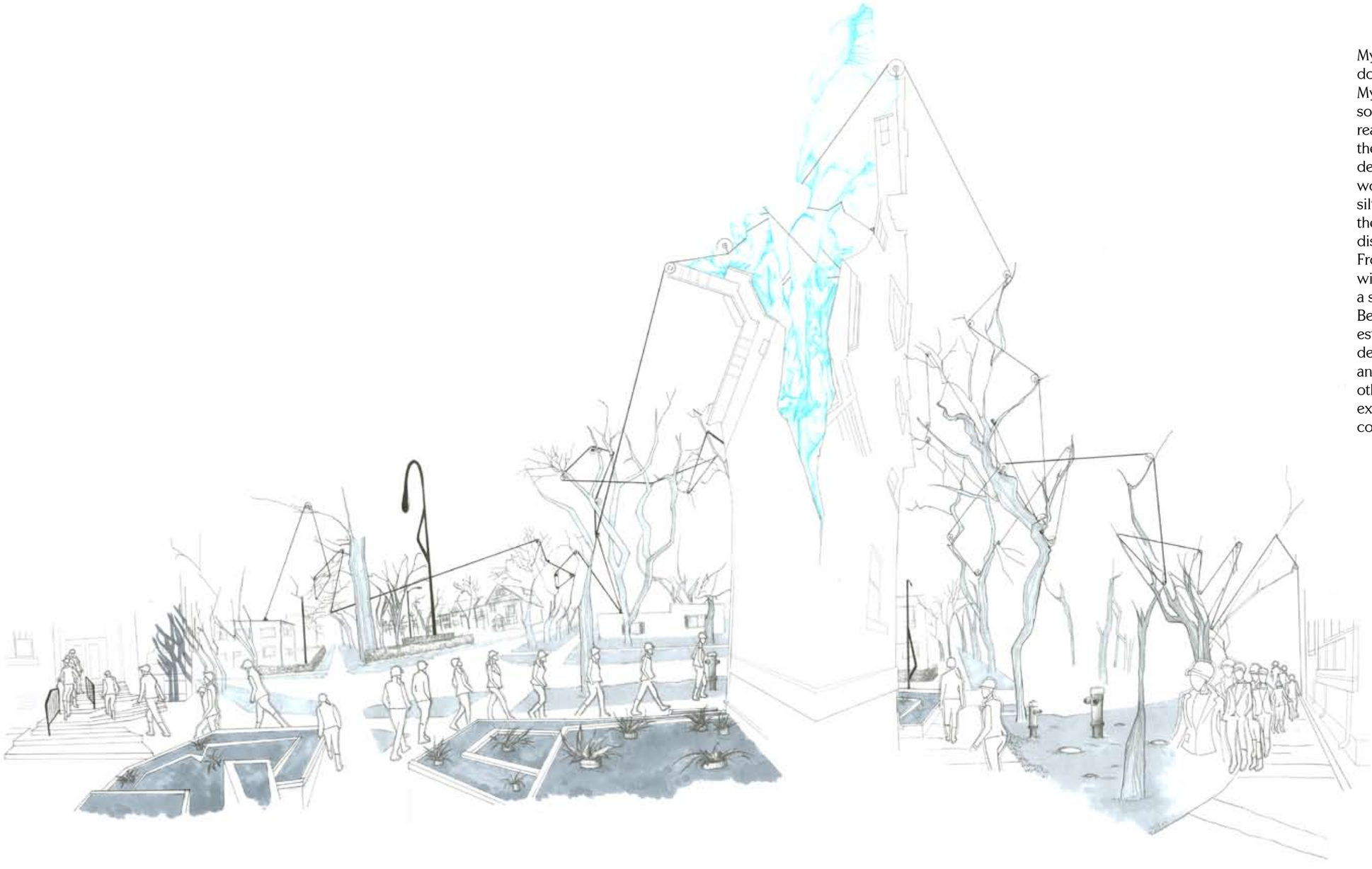


ABOVE: Digital Surgery tool at the National Museum of Emerging Science and Innovation in Tokyo, Japan.
LEFT: Ryokan in downtown Tokyo.

During the summer months of 2007 I traveled to Tokyo, Japan as a result of a particular interest in how emergent technologies in that culture might enhance the functions of our daily lives. Before my journey I was under the assumption that perhaps technological advancements had the capability and capacity to create an entirely new set of connections between people and how they inhabit the natural world. What I experienced in Tokyo was a place that was ultra-compact, with an ever-morphing environment that continuously shifted its compartments to meet the city's ever-changing needs and functions. New advancements allowed for new spaces to fit into [and out of] an increasingly packed occupation of time. I was pleased to see that in a few instances, new technologies allowed me to perceive the world differently due to their advancements, but overall Tokyo's inhabitants were not as integrated to an innovative system or natural world as I thought they might be.

Inspired by the experience I gained from Tokyo I returned to Winnipeg with the intent of examining how I might consider my place in a global setting. From my research and personal experiences, I became more acutely aware that the evolution of nature's elements are all dictated by their site-specific place in the earth's systems. As a result, I found myself compelled to carefully study how these exterior systems affect our environments on a daily, seasonally, minute by minute, hour by hour basis, to become far more aware of subtle yet at times somewhat obvious changes that affect our survival on this planet. In addition to my observations, readings on the philosophy of time and space, physics, relativity and spatial plateaus, led me to become increasingly interested in our perception of time, and time's reciprocal occupancy of space.



My initial attempt at working through these thoughts was done through a large illustration that acted like a filter. My intention was to reflect a place where I could discuss some of the ideas that I had gained from my travels and readings, and begin to construct a visual understanding of the concepts. Set in Winnipeg, the image depicts an inter-dependable systemic space. I wanted to expose the inner workings of the shifting earth. The soil in Winnipeg is a silty-clay composite[1]. It is a fluctuating material that shifts the ground when freezing, and as a consequence creates disturbances in the other elements that exist in that system. From this, it is possible to understand that it is not just the wind that moves the trees, but the actions and reactions of a system working on and below the surface of *this planet*. Beyond the localized condition, it was important for me to establish a global connection. The centrifugal force of ice describing Heard Island, off the coast of the Antarctica, and was discovered by 'digging a hole' through to the other side of the earth[2]. By creating the drawing, I began to explain and manipulate my understanding of the current conditions of the global system and what it might be.

To facilitate the spatial execution of the drawing, I stitched individual photographs together manipulating their conventional relationship to one another. In doing so, I was creating spaces that could bubble, morph and bend referencing Einstein's time and space phenomenon, [and referring to] the consequences of his theories of relativity[3]. The byproduct of this drawing allowed me to discover the blocks of space that my physical body began to occupy as it moved across the drawing plane. This was significant because it made me aware that the spatial volumes around me could also bubble and morph, not just on my paper, and I began to speculate that I could alter them.

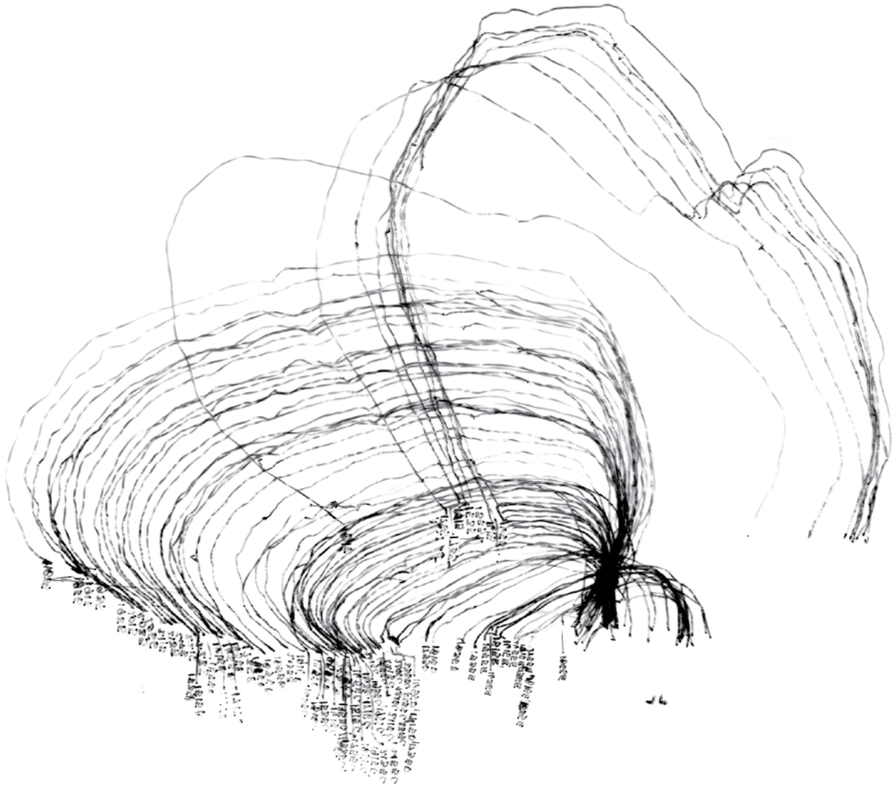
During my research, I have continuously questioned the relationships that exist between Winnipeg, and Tokyo in context to one another. What happens in Tokyo at one moment occupies different spatial volumes to those events occurring in Winnipeg. As part of my research I began to put into question my understanding of time, and how I could begin to manipulate my comprehension of what I think is natural. My interest in the interconnectivity between the elements of space and time initiated a series of experiments intended on manipulating time. Some of my questions were: a: How do I notice time change? b: How do I make it present? and c: How could I make my perception of place present?

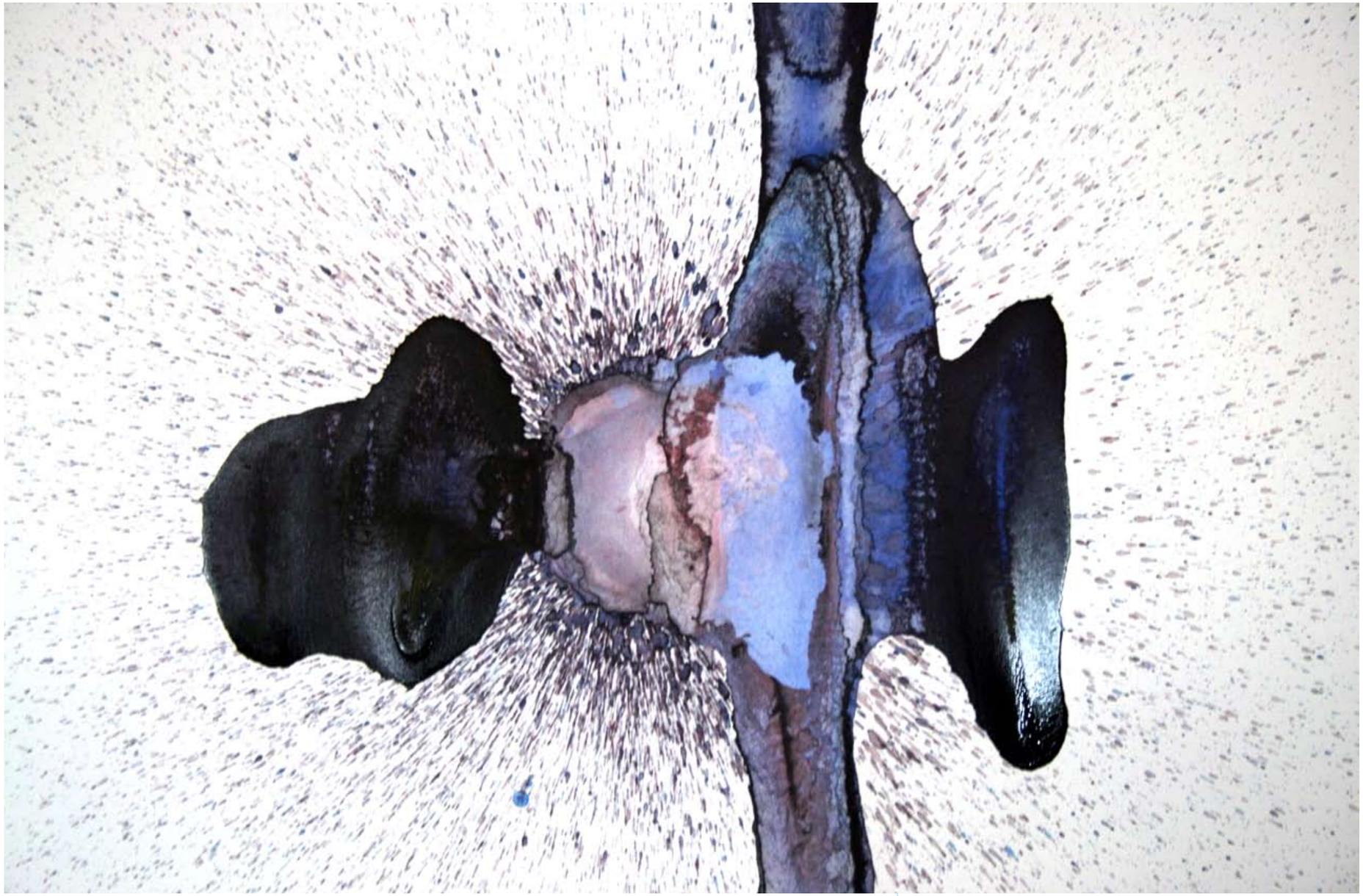
Establishing a Contact with Time

Chapter Two

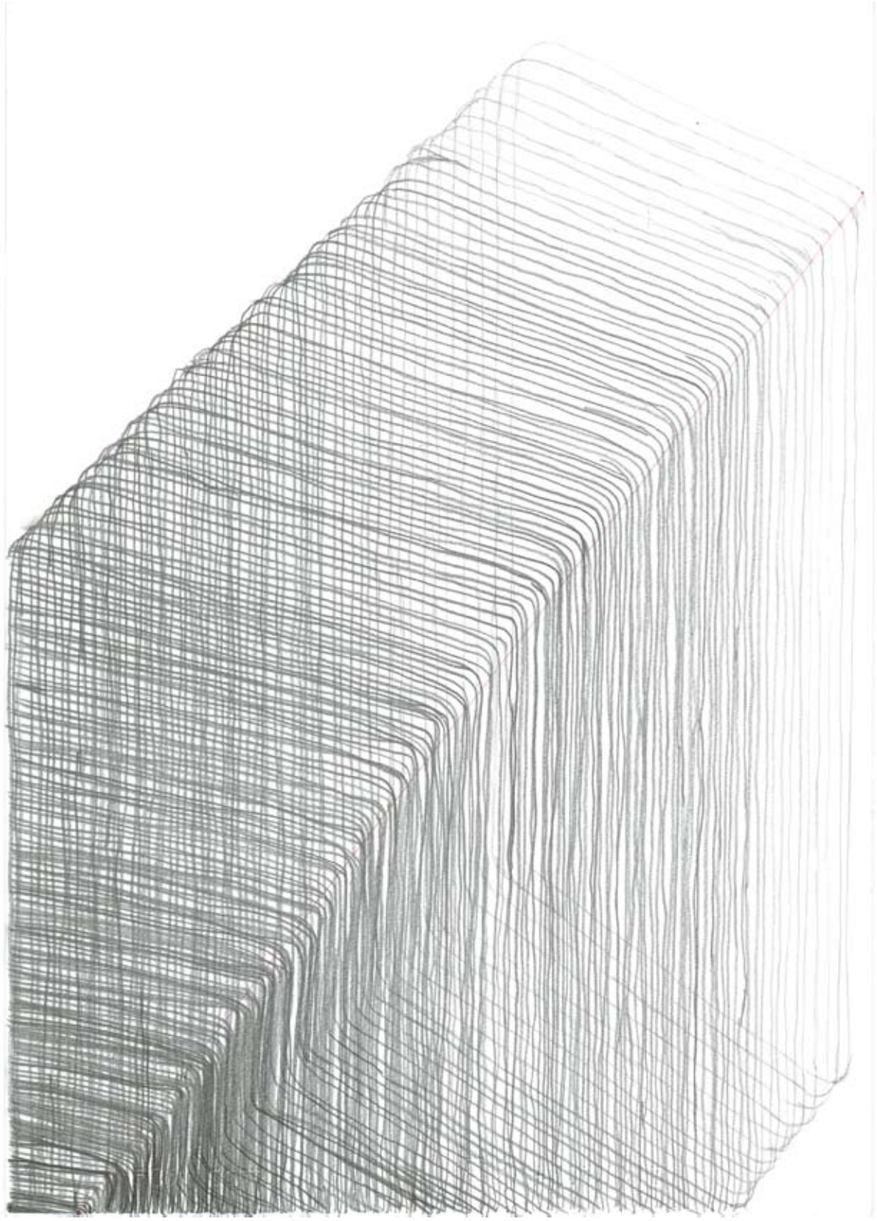
I began my experiments with the purpose of establishing a distinct point of contact with time that would allow me to directly experience certain space/time phenomenon through a series of drawing experiments. In these initial explorations I chose to work with ice because of the changing material qualities that it possesses that can be observed directly by the human eye.

The first drawing was a sequential recording of the melting of a block of ice behind a transparent window. This drawing was done at twenty minute intervals in a space with a controlled temperature of twenty-four degrees Celsius. Over the duration of this experiment the block of ice changed its physical position as its surface melted and contorted. The result was a *map* which illustrated the melting process by a multitude of contour lines, and hinted towards the object's third dimensional possession of space.

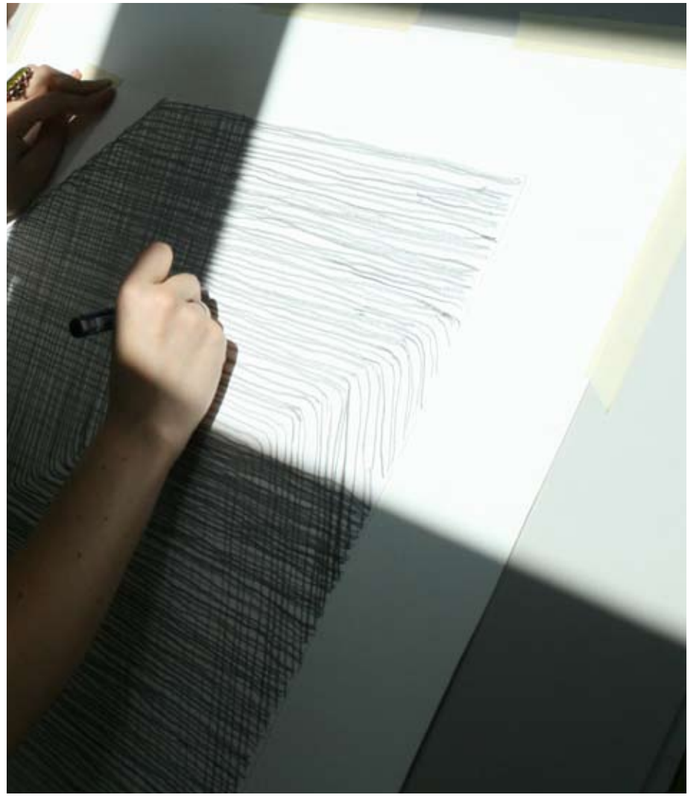


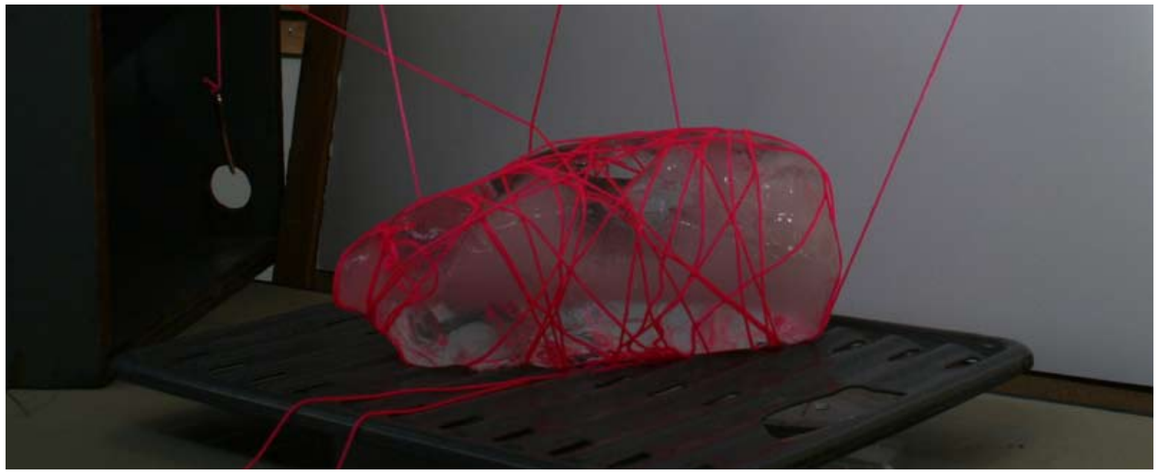


This was followed by a second drawing experiment. I constructed a block of ice that was comprised of three colour layers and suspended it above a piece of hard-pressed water colour paper and let it hang until all of the moisture had been evaporated. The outcome was a recording of time illustrated by the tonal changes that remained on the paper plane. Again, I discovered that I was able to *read* a composite of time from the drawing. Here there were three intervals of time in areas where the spaces overlapped as well as isolated areas that could have developed specific to a momentary action.



In the final time drawing of this series, I recorded the sequential movement of light as it passed across my drawing board with one continuous line of graphite. From this drawing I was able to physically measure the exact movement of the shadows produced by the sun over a one hour period. From these observations I became more aware of how to understand and visually regenerate the changes in an objects spatial embodiment and relationship to a physical plane.

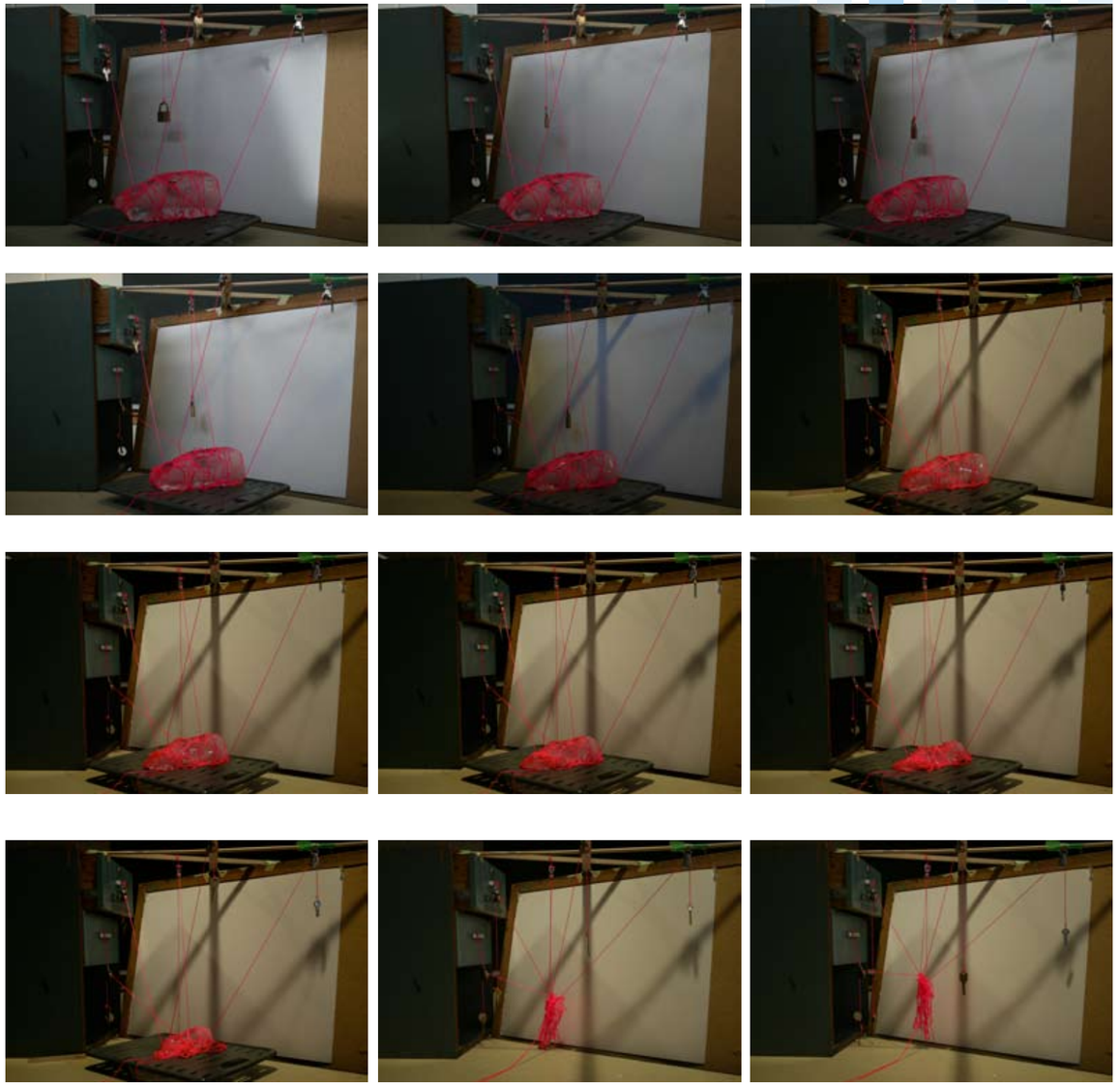


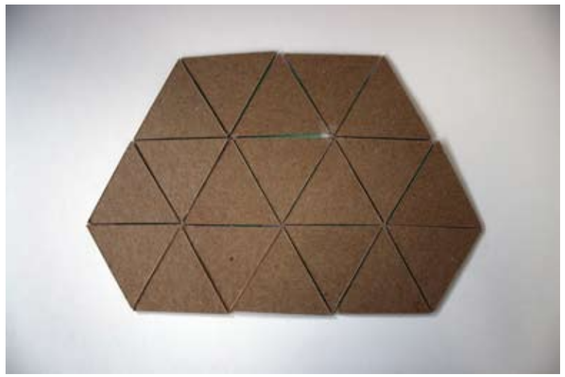


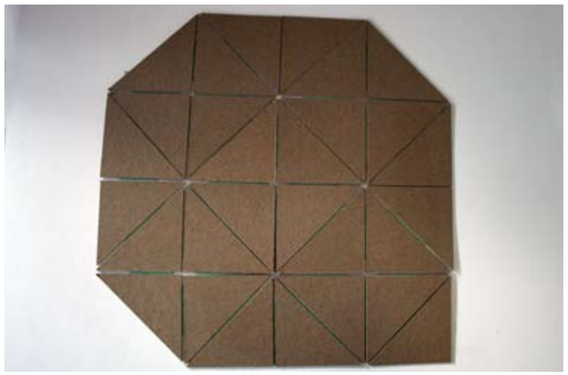
Control in an Interdependent System

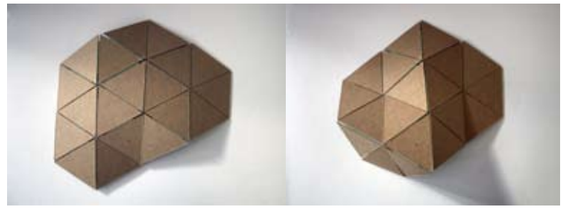
Chapter Three

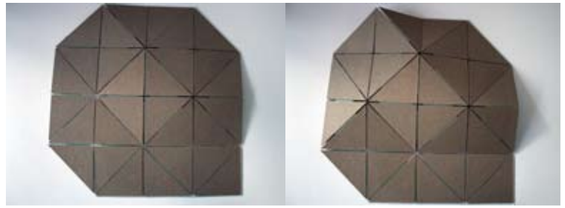
As a consequence of these recording experiments I focused on studying the influence that an object may have in a systemic relationship. This led to a set of small experiments where a pulley system was attached to an ice block and other physical elements, to observe their time-lapsed participation in a system. I first rigged the ice block and pulleys to a series of weights to record what affect tension would have on the elements. From this I was able to observe a change in physical space over a period of time. By altering the organization with weights, I was able to maneuver a change in the system, and visually record the collapse in space.

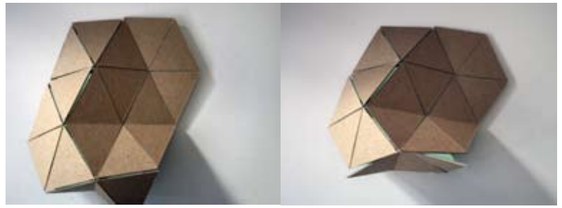


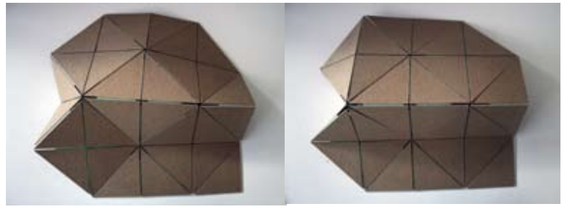




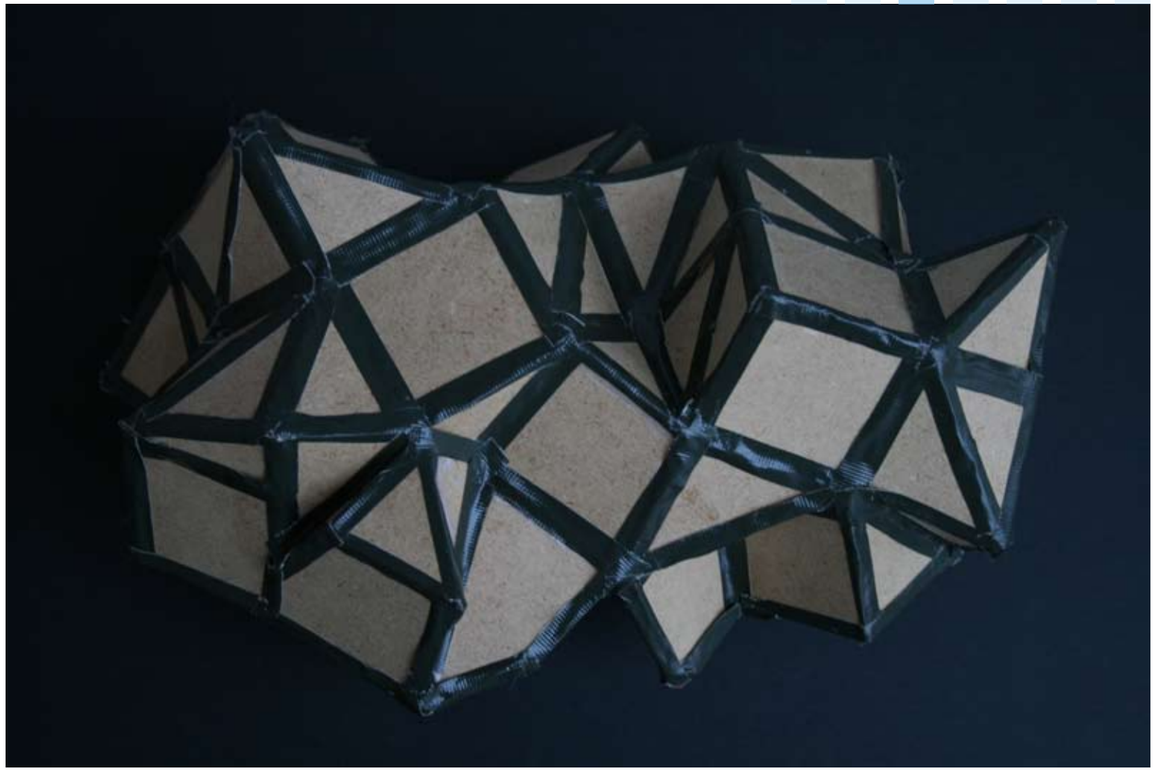






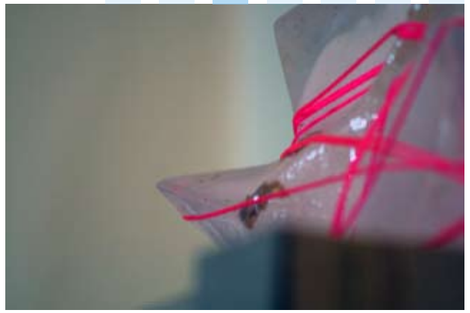


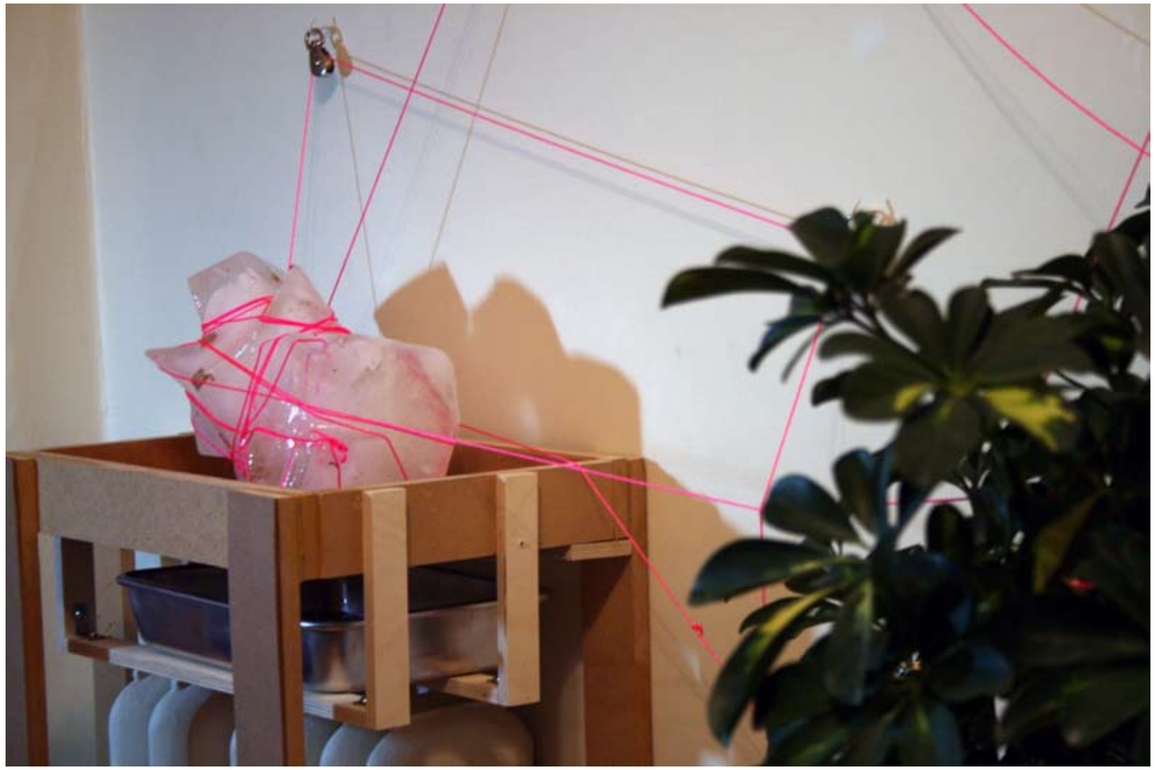
From these early experiments I refined various inputs and variables in an attempt to create a more controlled ‘collapsible’ space. To further study these spaces I analyzed several modular systems by folding pieces of paper to create a three dimensional space from a flat plane. These paper folding charrettes informed the design for a mould to create a sculpted block of ice that would provide the cables more opportunity for movement through a more dramatized topography.

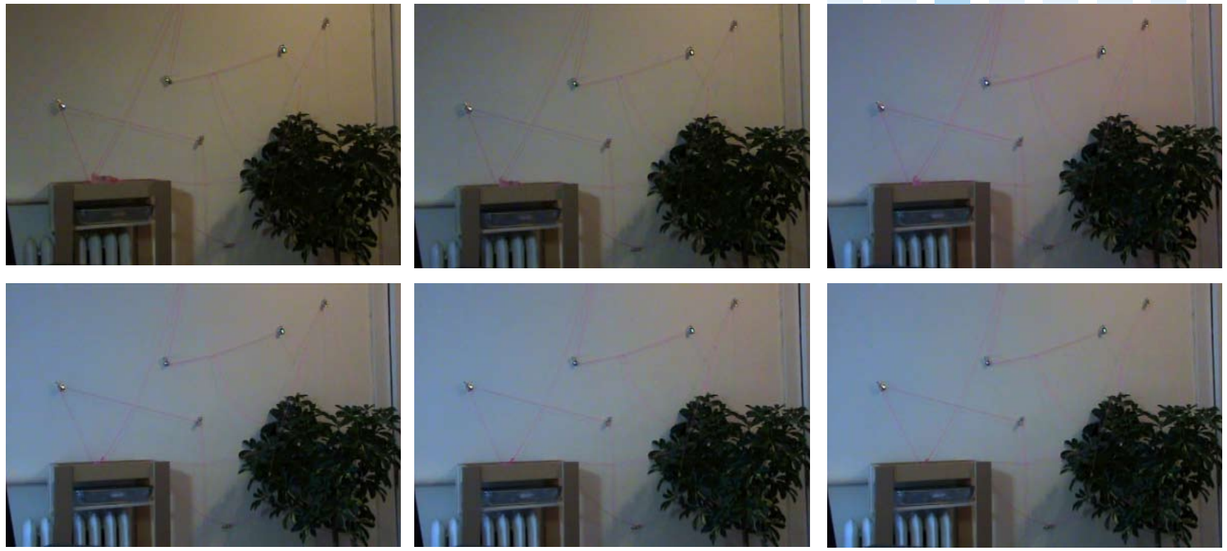


The ice block was then placed indoors over a heated shelf, and attached to a series of pulleys, weights and branches of an umbrella tree by a series of ropes. The intention was to generate a more controlled study of the movements, actions and reactions of one system onto another through time. In trying to gain control over the speed of the experiment through the direct application of heat, I concluded the predominant factor beginning to drive my studies was a desire to control time by controlling the elements in it.

Consequently, I decided to further explore these ideas in an exterior setting that was more vulnerable to, and in closer contact with the natural environment. I wanted to investigate the influence that an element such as heat has on objects, and more specially the influence the sun has on the earth.



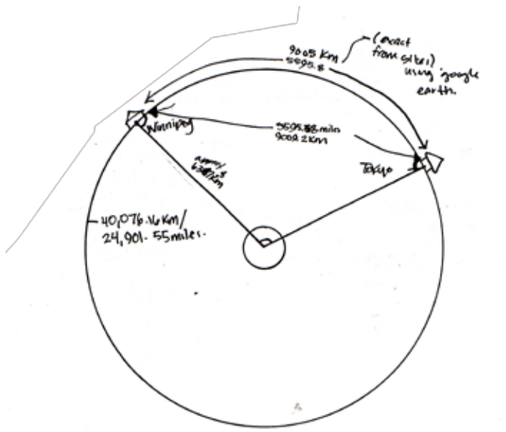




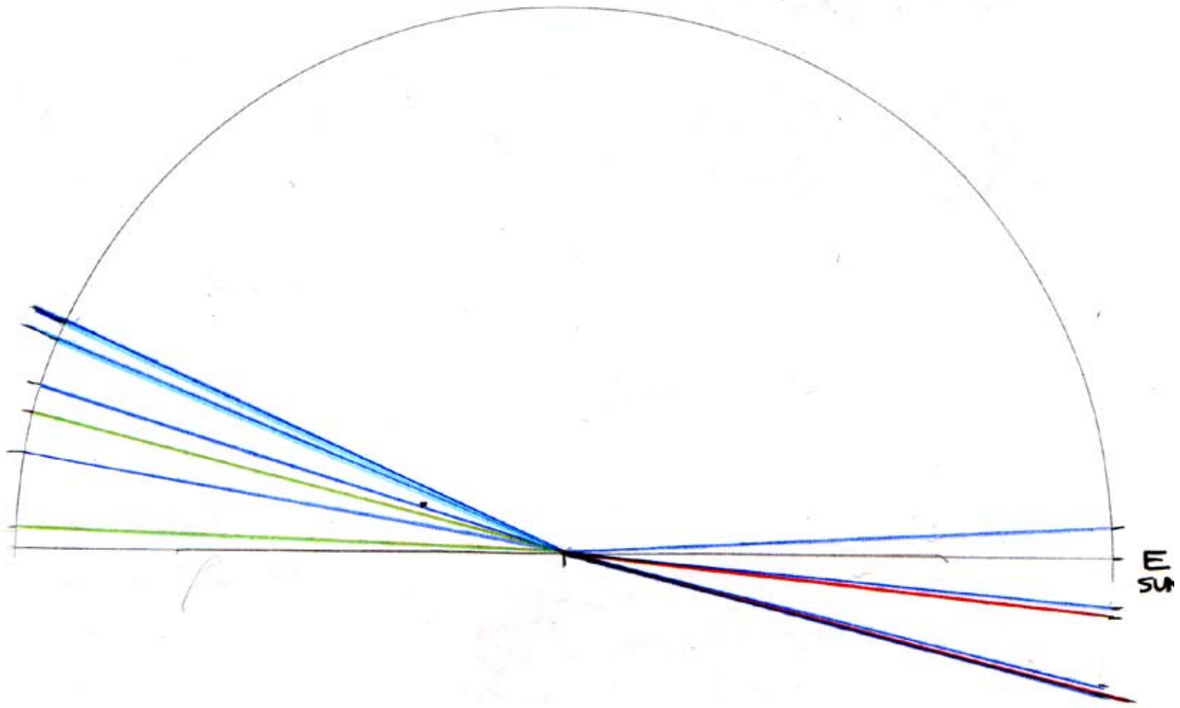
In order to directly engage with external systems I created a five foot diameter ball of snow and positioned it in an open, shadow-free area. The shadows that the ball cast were marked and recorded daily at noon by drilling a metal peg every ten centimeters into the ground, and connecting the markers together with string coloured differently for each day. The experiment was conducted over a thirty-one day period and provided me with a visual understanding of the fluctuating effect that light and heat have on shadows and their movement. What I observed from these recordings were that no two shadows are ever the same. New shapes of the object emerged as a result of the snow ball's exposure to the sun, and the subsequent shadows shrunk as its occupied space diminished. In addition to these observations, I noticed that the frequently shadowed areas retarded change and movement by sheltering the snow from the heat, and the shadows movement shifted daily.

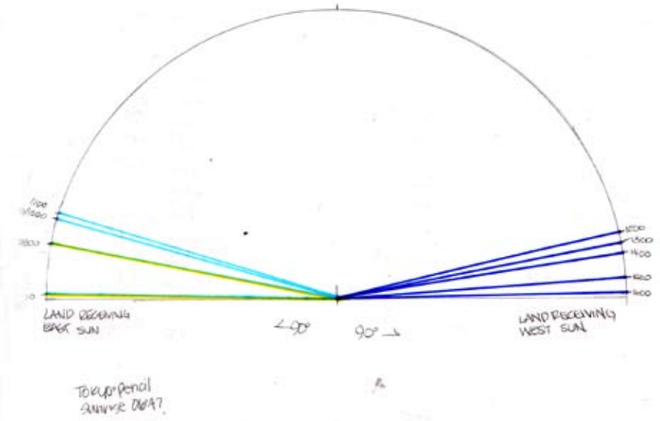
Observation of Global Sites

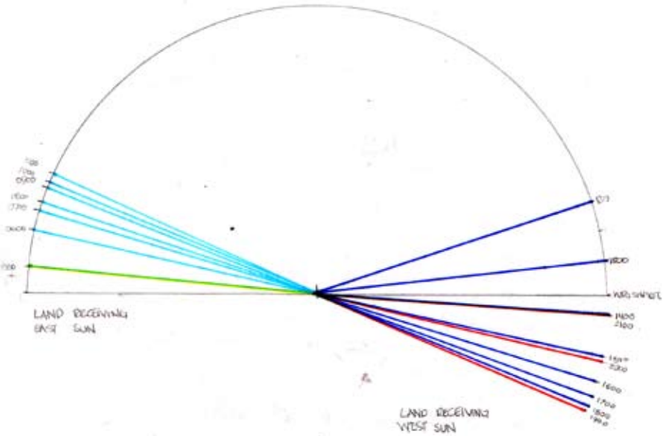
Chapter Four



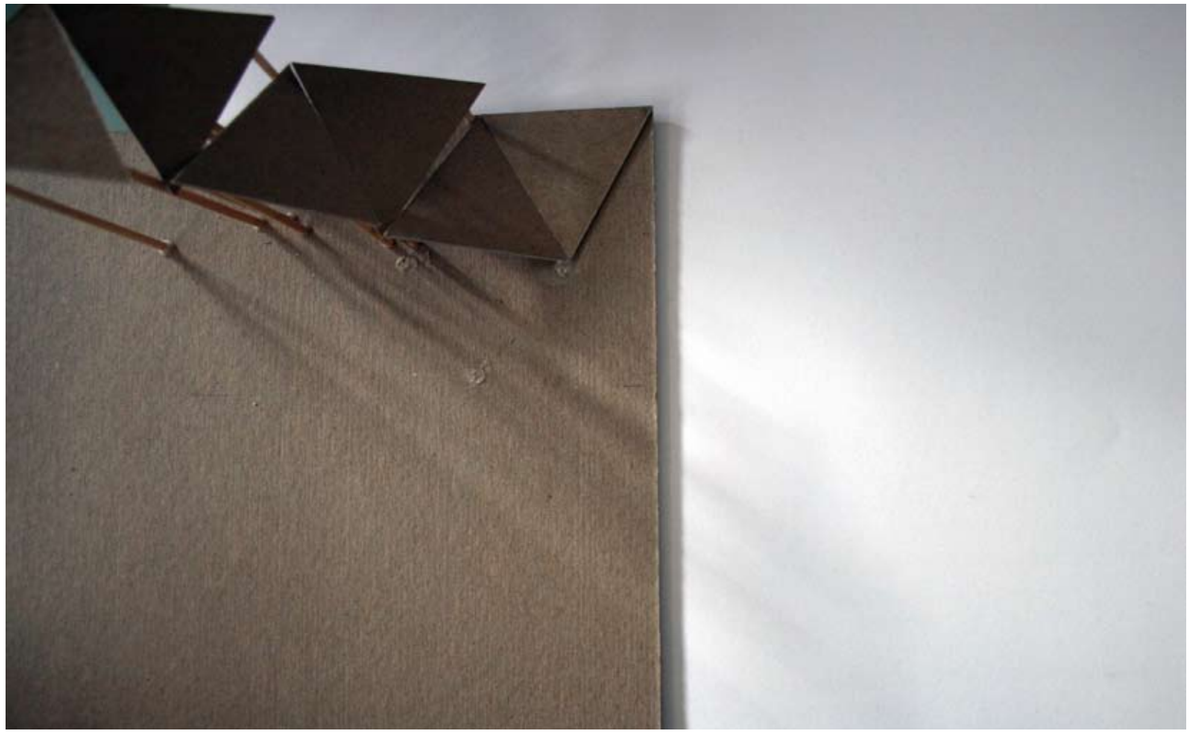
As I was conducting these experiments, I continued my research on the physical relationship that exists between Winnipeg and Tokyo as a global system. I calculated the relationships of distance, latitude, longitude, and angles between each location, their position toward the sun and then recorded the differences between one another. Through my solar research, it became clear that on any day of the year, the sun would create Non-Repetitive Spaces. Equipped with this knowledge, one of the intentions for my design project was to explore how something that is absent could manifest as a spatial form.

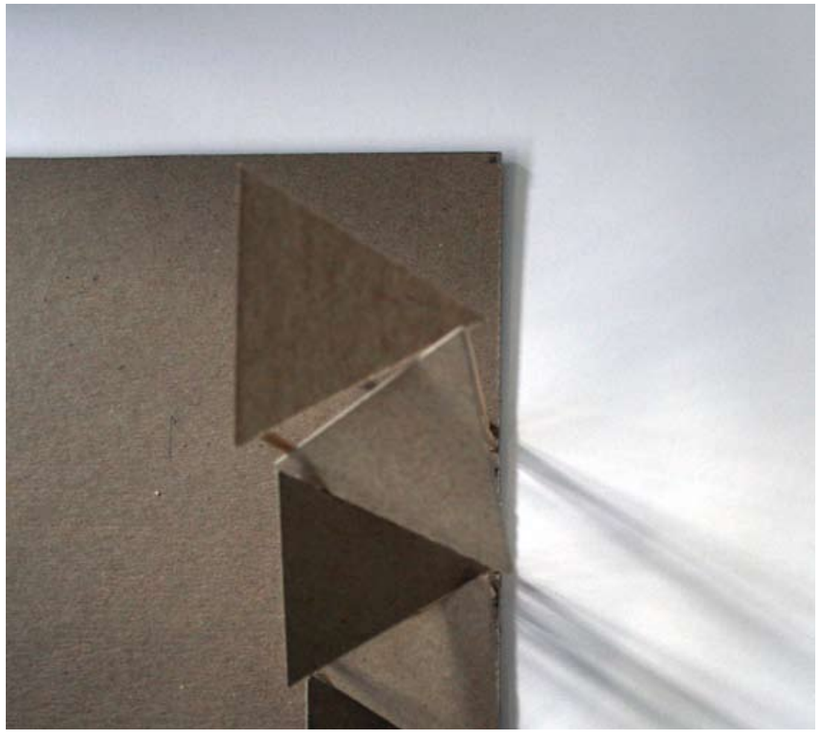






Graphs depict the difference in the suns elevation between Tokyo and Winnipeg. SHOWN AT TOP for December 21st and BELOW for June 21st.





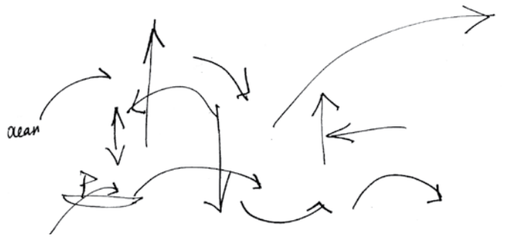
THIS PAGE: A model study of the change in directionality of land needed to aquire Tokyo solar angles.

I decided to compare, contrast and examine two specific sites to design for: the Tsukiji Fish Market in Tokyo, and the Wellington Crescent riverbed Munson Park in Winnipeg because of their promising potential to observe time-sensitive change and fluctuation. I selected the Fish Market because of the regular events that occur there at certain hours of the day, and the Park to facilitate continuous observations and recordings of events that occur during seasonal change.

One of the interesting phenomena that occurred regularly at the Tsukiji Fish Market was that a new 'sub-space' was formed daily by the arrival and disposal of Styrofoam boxes used to transport and hold high volumes of fish. These containers would begin to make their appearance early morning and continuously stack up as the fishermen unloaded their catch to the buyers. Once sold, the boxes would be dismantled and reconfigure into a mountainous heap. From this observation on the movement of space through time, I laser cut a model of this fluctuating Styrofoam terrain to begin to *further* manipulate the behaviors of it's surfaces.


海信水産


海信水産



Thousands of species of fish pass through the Tsukiji Fish Market daily. The daily activities begin at 5am Tokyo time, when the catch is unloaded from the ships.








K
1,600.

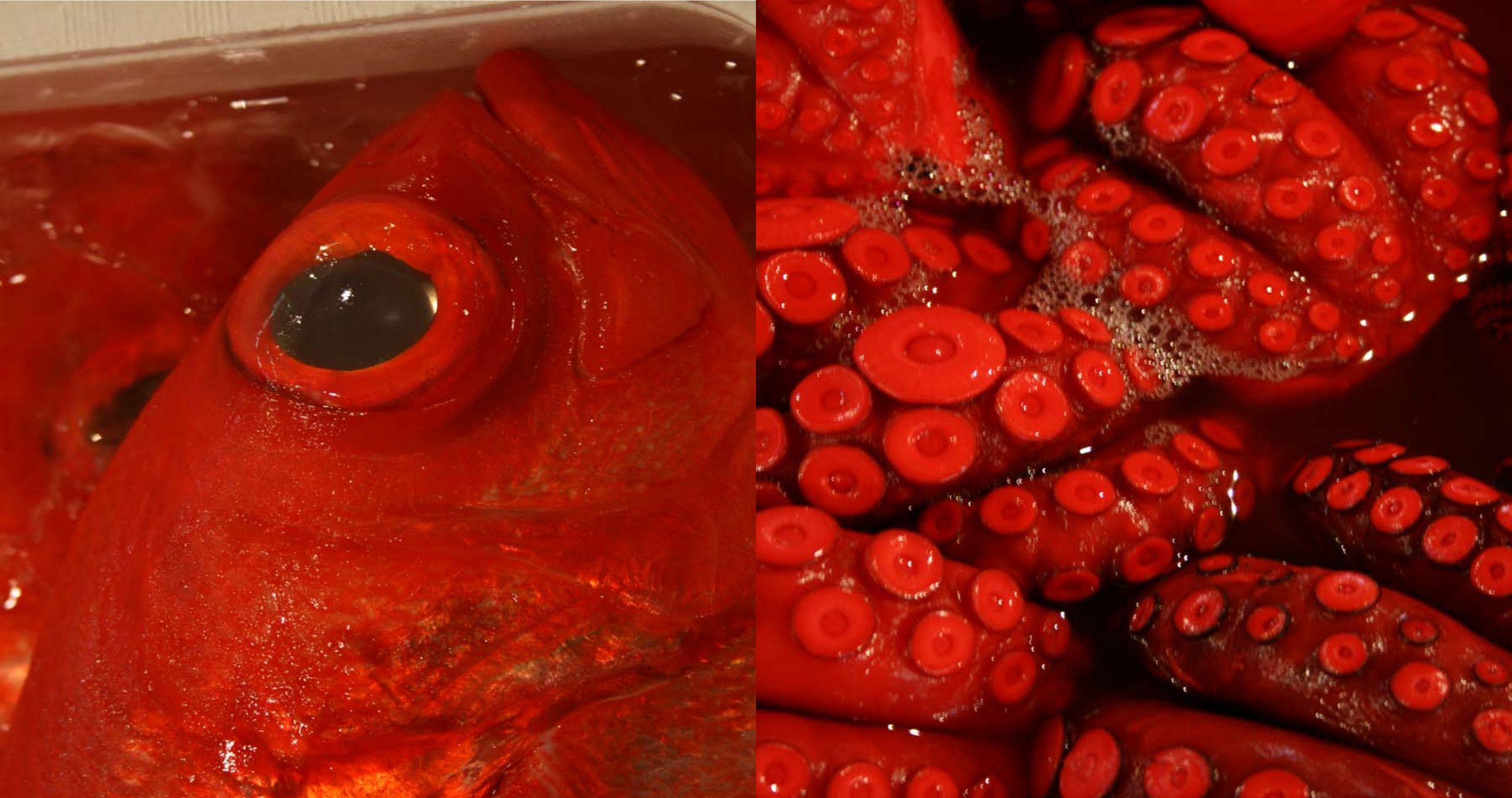








川崎商店
カンパチ
400



Munson Park, Winnipeg, March 31st

March



April



May



June





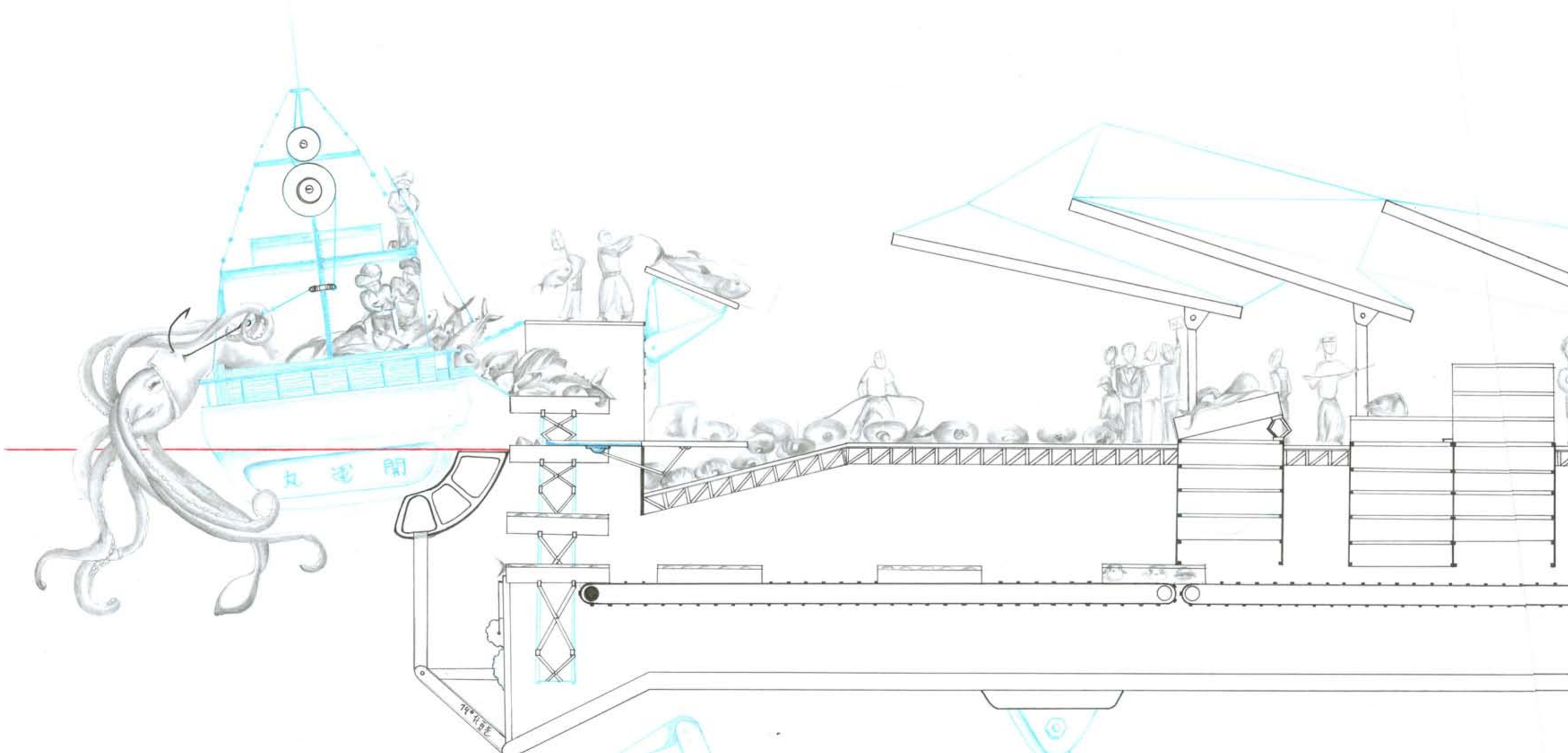


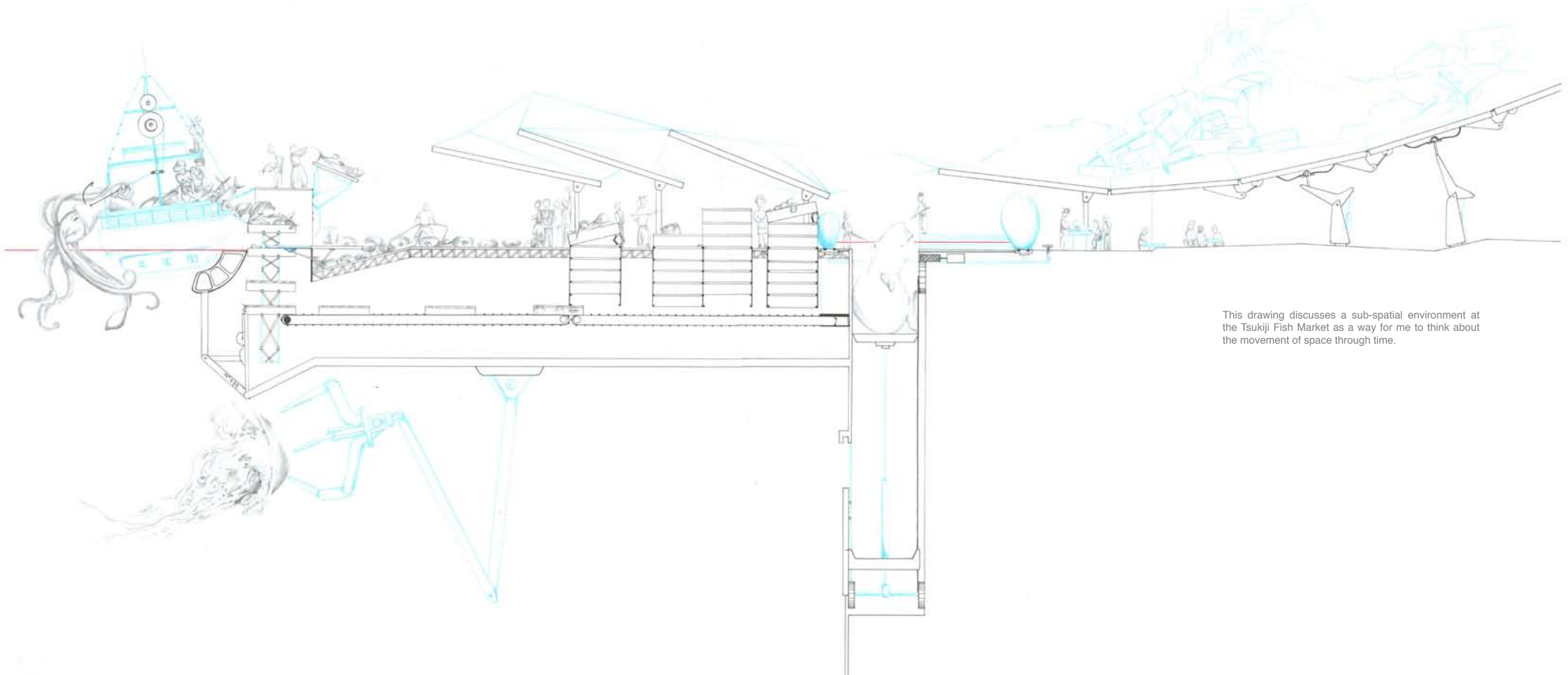




Observational photographs of the seasonal changes in the Munson park site. TOP ROW: The month of March, followed by April, thru to June.

Munson Park, Winnipeg, May 28th
Opposite: June 3rd



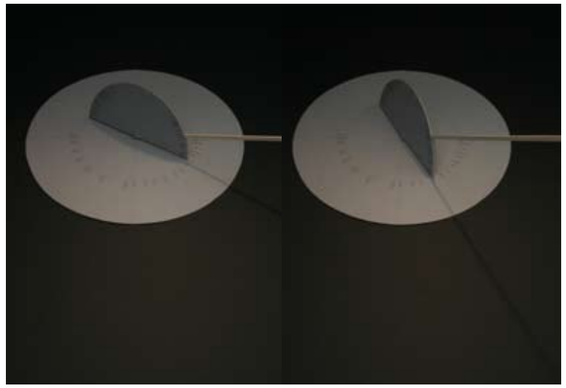


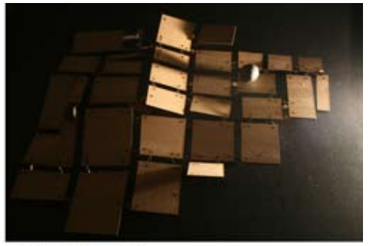
This drawing discusses a sub-spatial environment at the Tsukiji Fish Market as a way for me to think about the movement of space through time.

Sub-spatial Solar Studies

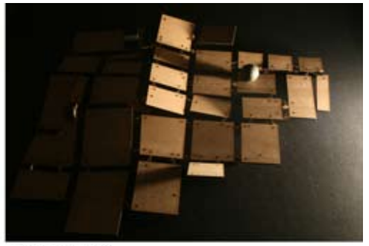
Chapter Five

On the ‘fish box’ terrain model, I conducted several lighting studies using the location of the sun for the March Equinox. Using a tripod and camera, I positioned the model so that it was stationary on the picture plane and visually simulated and recorded the solar cycles for both Tokyo and Winnipeg. The images that resulted from this were compared and contrasted to discover the similarities and differences that existed between the light and dark areas that were created by the movement of sun during each corresponding hour.





Tokyo Sunrise 05:42 March 21/08



Tokyo 06:00 March 21/08

Tokyo 07:00 March 21/08

Tokyo 10:00 March 21/08

Tokyo 11:00 March 21/08

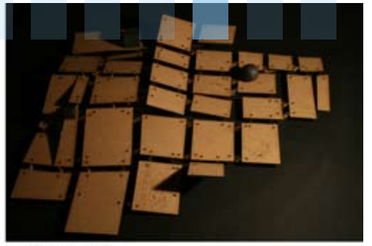
Tokyo 12:00 Noon March 21/08

Winnipeg 10:00 March 21/08

Winnipeg 11:00 March 21/08

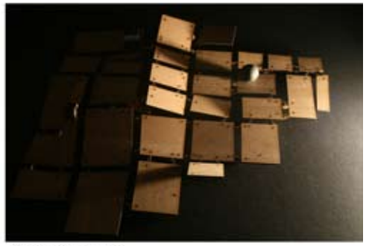
Winnipeg 12:00 Noon March 21/08

Tokyo 08:00 March 21/08



Tokyo 09:00 March 21/08

Winnipeg Sunrise 07:44 March 21/08

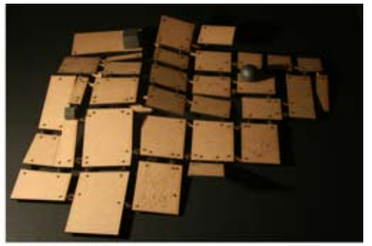


Winnipeg 08:00 March 21/08

Winnipeg 09:00 March 21/08

Tokyo 13:00 March 21/08

Tokyo 14:00 March 21/08



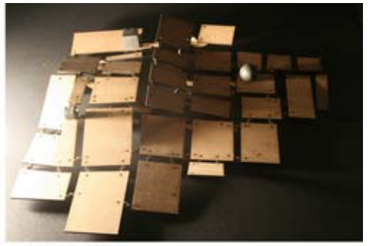
Tokyo 15:00 March 21/08

Winnipeg 13:00 March 21/08

Winnipeg 14:00 March 21/08

Winnipeg 15:00 March 21/08

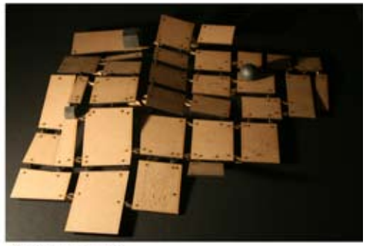
Tokyo 16:00 March 21/08



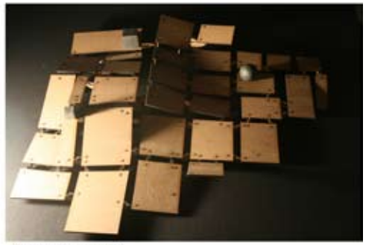
Tokyo 17:00 March 21/08

Tokyo Sunset 17:55 March 21/08

Winnipeg 16:00 March 21/08



Winnipeg 17:00 March 21/08



Winnipeg 18:00 March 21/08

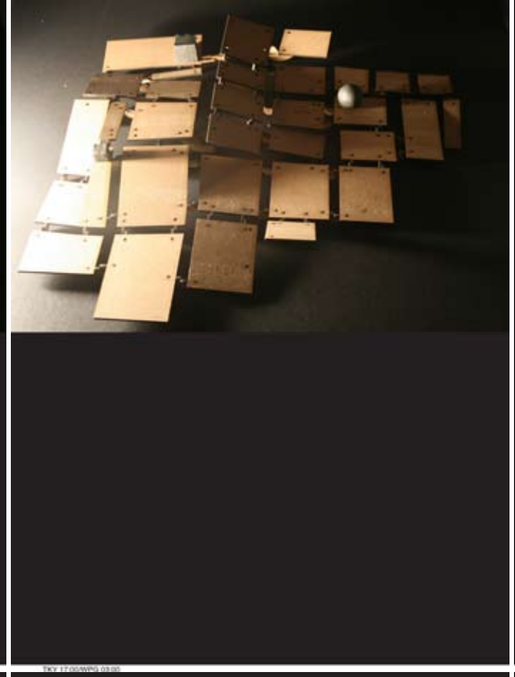
Winnipeg 19:00 March 21/08

Winnipeg 19:44 March 21/08

I then compiled the still images to create a short stop-motion animation that permitted me to compare the solar cycles in 'real time'. This gave me the ability to visually experience the movement of the earth. In recording my observations of the movement, I became aware that the shadows appeared to 'reset' themselves while the comparison city was sleeping, and then rematerialized on the other side of the plane [planet]. This gear-like movement of sun and the resultant shadows created a wave of volumes onto the 'fish box' topography. What I discovered from this exercise was that when the sun moves the reciprocating shadows appear to grow and shrink the volumes of space. In addition, I was intrigued that both cities also share a 'dark' space[4], which became visually present in the study and prompted the understanding of the physical size of this shared place on the globe: A space that is physically occupied by the two places simultaneously.

TKY 15:00/WPG 01:00

TKY 16:00/WPG 02:00



TKY 17:00/WPG 03:00

TKY 18:00/WPG 04:00

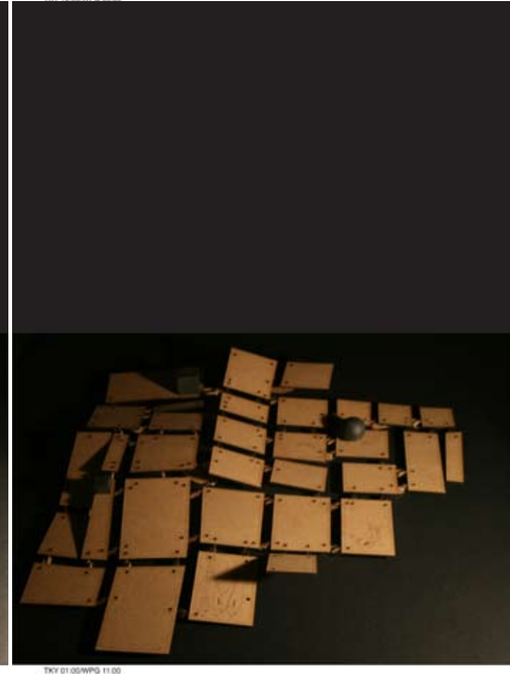
TKY 19:00/WPG 05:00

TKY 21:00/WPG 07:00

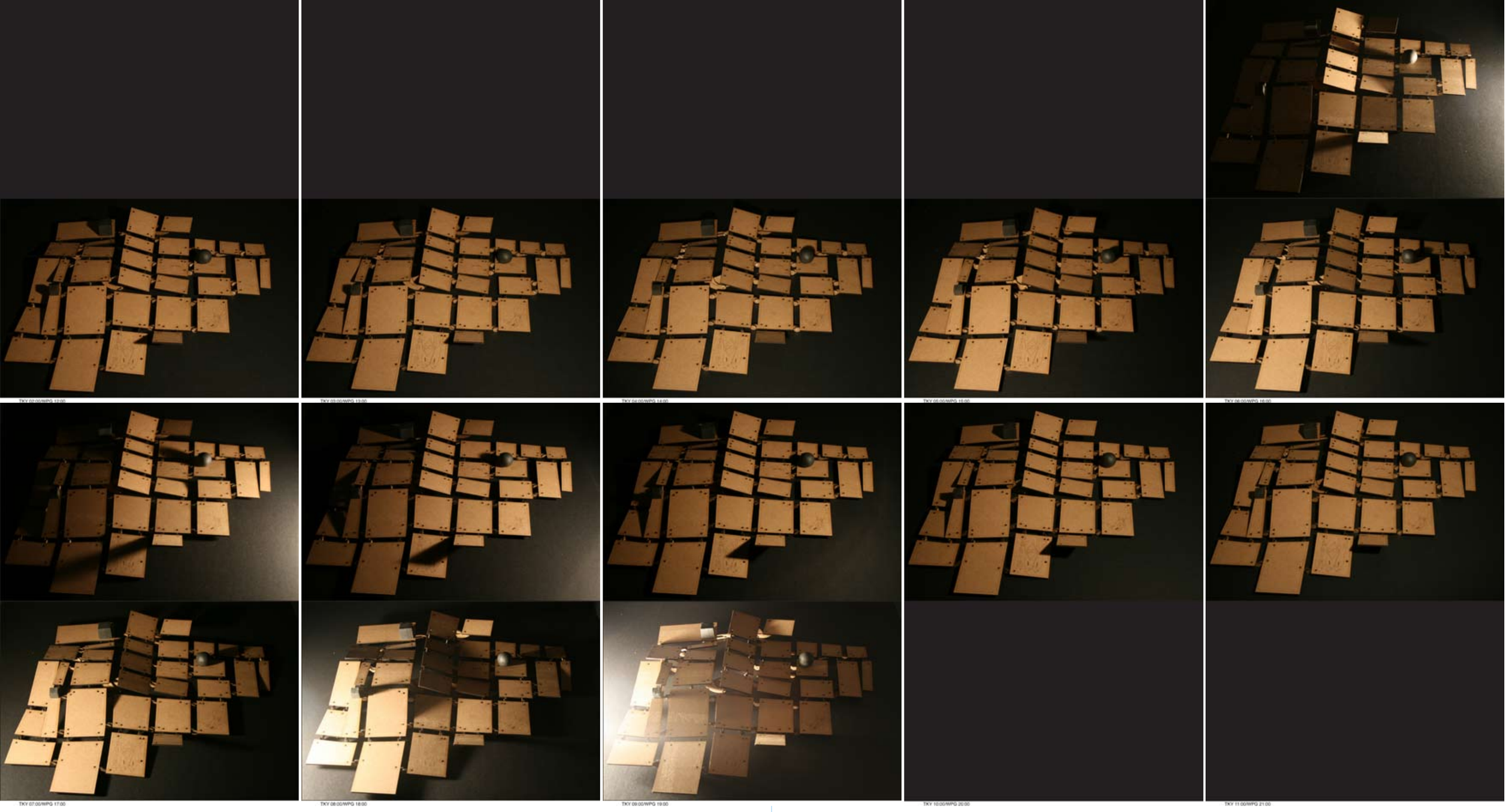
TKY 22:00/WPG 08:00

TKY 23:00/WPG 09:00

TKY 24:00/WPG 10:00



TKY 01:00/WPG 11:00


TKY 07:00/WPG 12:00
TKY 03:00/WPG 13:00
TKY 04:00/WPG 14:00
TKY 05:00/WPG 15:00
TKY 06:00/WPG 16:00
TKY 07:00/WPG 17:00
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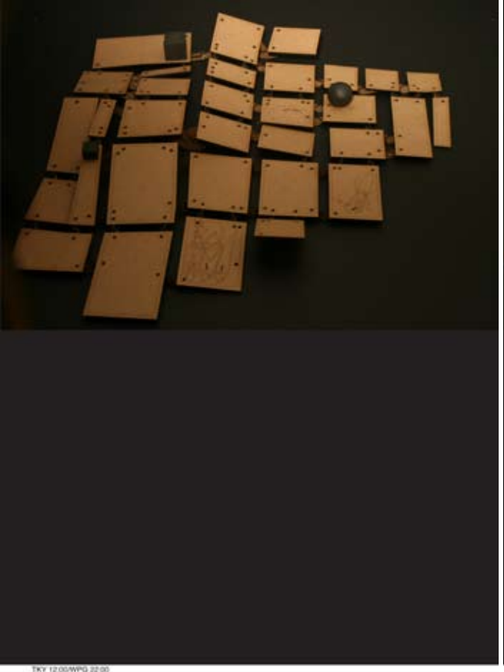
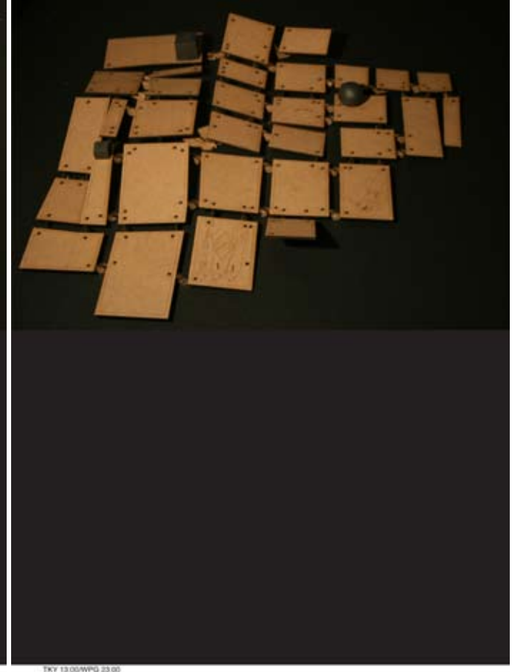
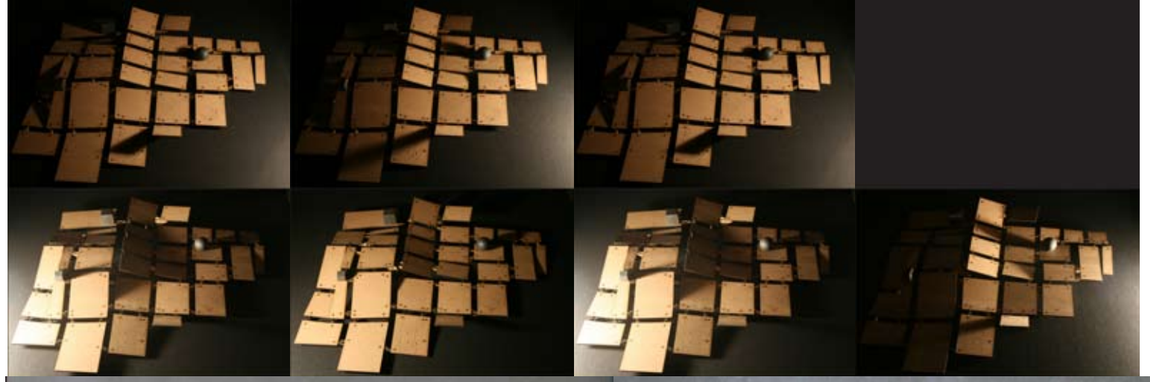
TKY 09:00/WPG 19:00
TKY 10:00/WPG 20:00
TKY 11:00/WPG 21:00

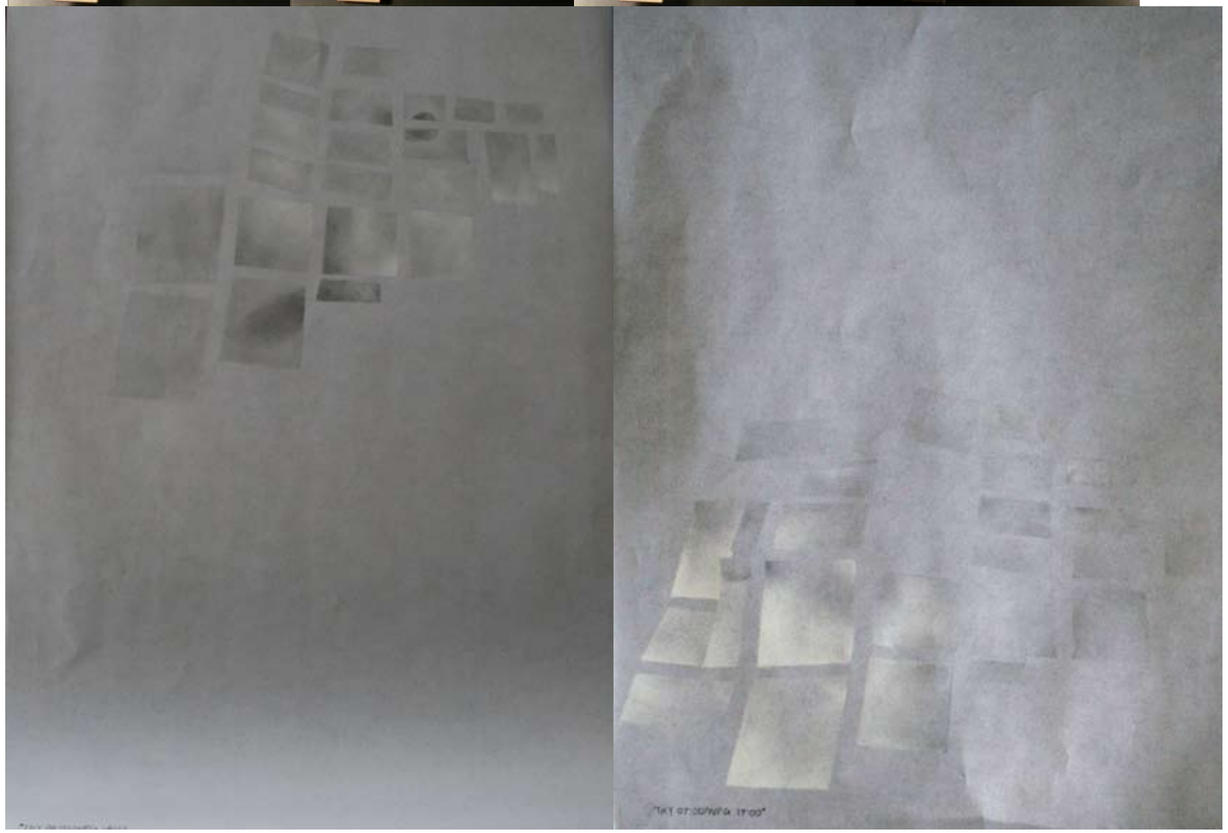


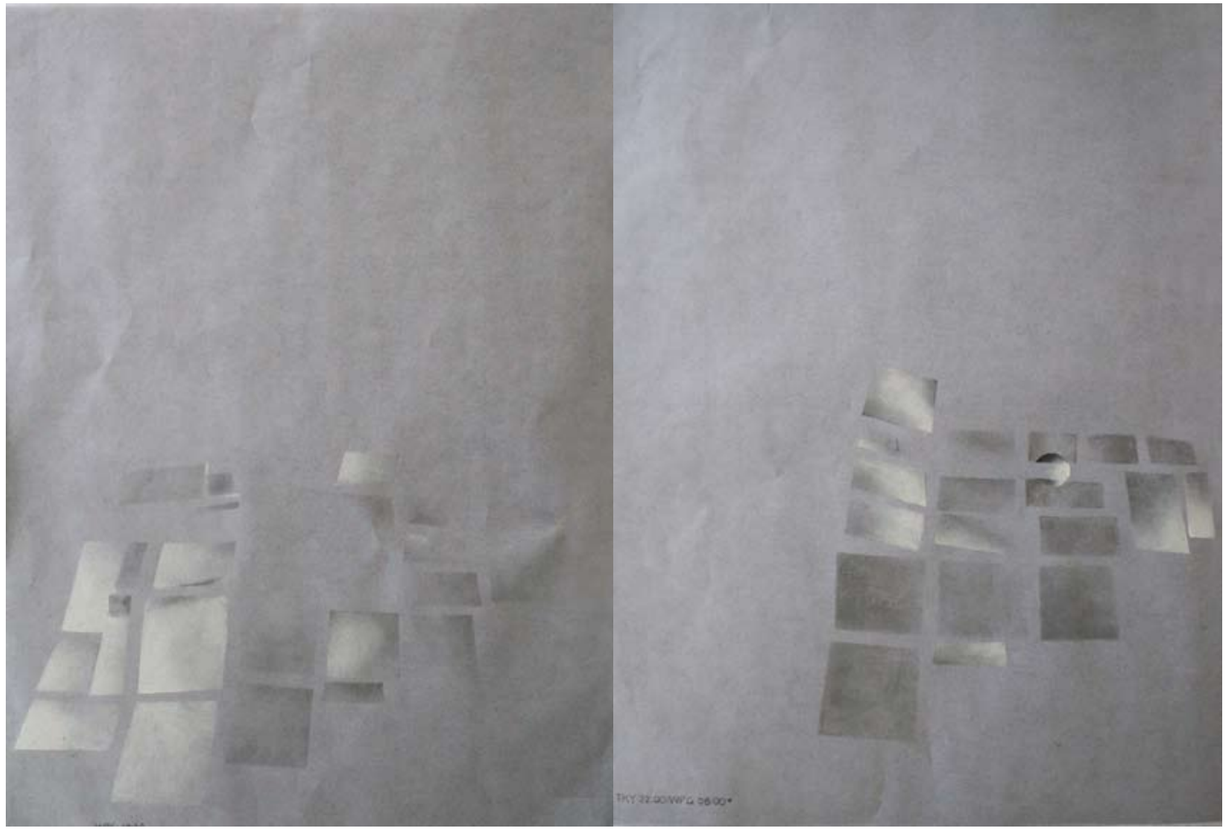


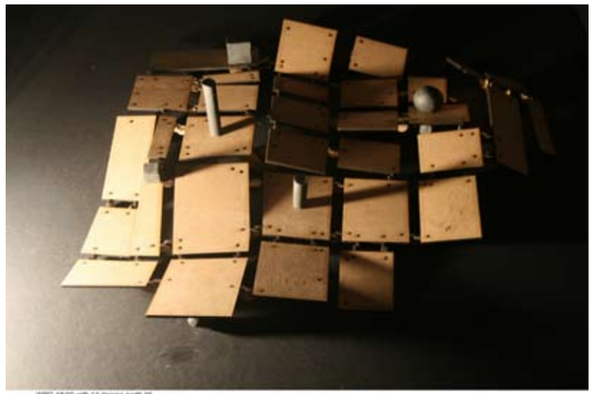
Subsequently, I transformed these light and shadow volumes into to a set of graphite drawings that specifically examined the quality of light that hit the surface of the 'fish box' topographic model. These renderings allowed me to detect the differences that exist in the spaces of light and shadow when the equivalent same-hour images are overlaid from the satellite city. As a result I hypothesized that if I tilted the land/surface plane of one place i.e. Tokyo, to receive the solar angles of its 'counter' city i.e. Winnipeg, I could produce closer similarities in the quality of light on the surface to that of the counter city than to the 'natural' occurrence in the original city. I tested the idea by precisely adjusting the angles of three specific planes on the 'fish box' model, and lit them according to Tokyo solar angles, delightfully finding my theory to be correct. The effect that resulted from the tilting produced a surface condition that appeared to fluctuate very similar to how a plant flexes its leaves up and down towards the sun to receive it's energy.

Perhaps most interesting, was that the quality of light in the simulated situation was closer to that of its simulated place than its original environment. The results of these studies raised the exciting possibility that I was able to gain control over how the sun would actually act on the land.





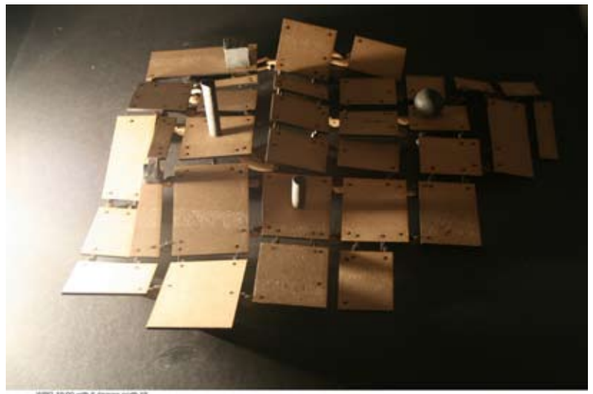




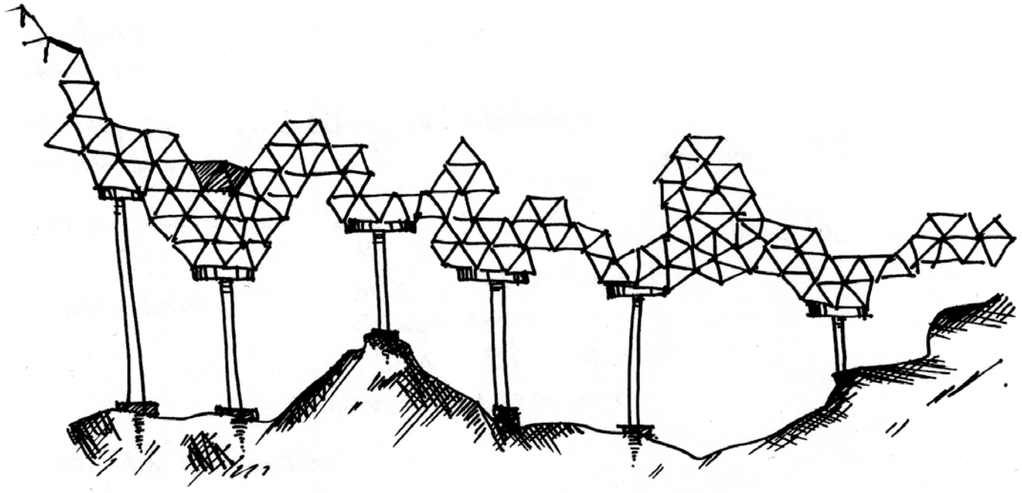
RIGHT: A stop motion animation series that compares light qualities between Winnipeg [TOP], Tokyo [MIDDLE] and a new Hybrid space [BOTTOM].

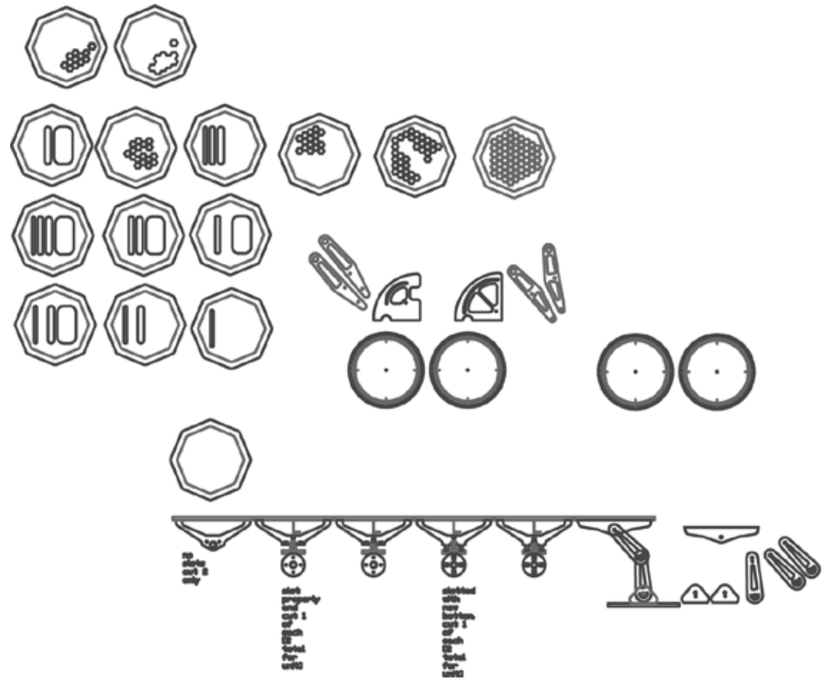
WPG 11:00 with 24 degree south tilt

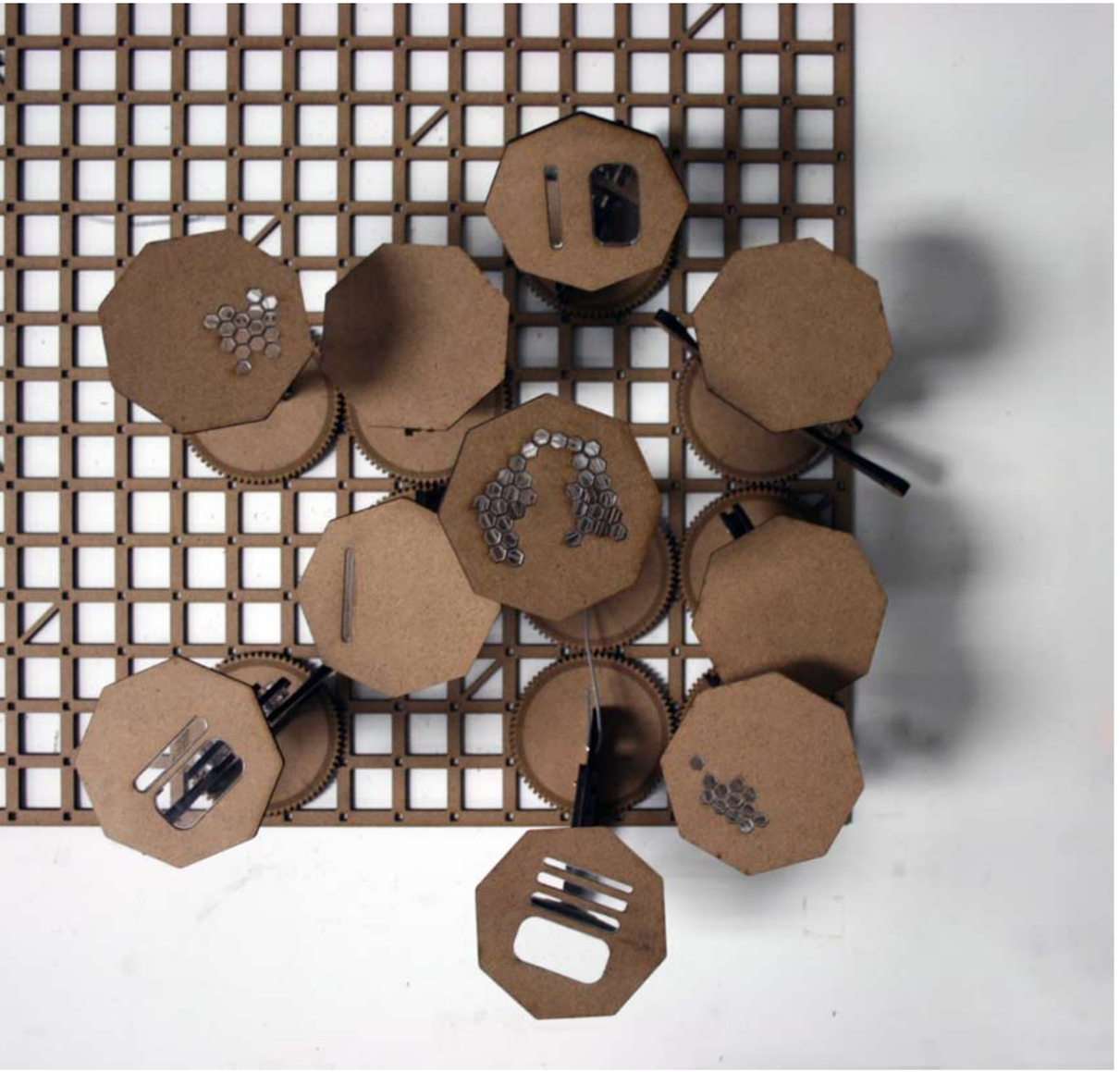
WPG 15:00 with 5 degree north tilt

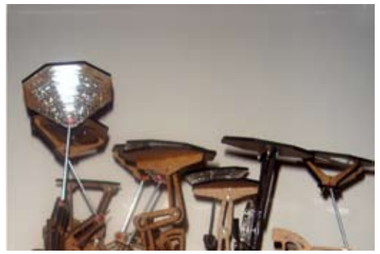


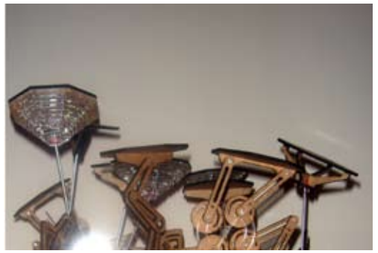
WPG 19:00 with 6 degree north tilt











The rigidity of my preliminary ‘fish box’ model only allowed me to simulate the movement for the azimuth, and restricted any type of twisting that selected portions of land needed to meet the difference in the sun’s elevation angle on the horizon. Subsequently, I created with a second terrain model which allows the land parcels to move to any chosen direction and height in space, permitting me to achieve multi-axis directionality and movement.

To study these findings as architectural ideas, presents the opportunity that I might manipulate the natural cycle of the sun's system to alter our perception of time by means of displacement. From my experiments I discovered that both time and space act together yet both can be altered creating affects on one another. While I may not be able to control time, I am able to design space, and by altering space, I hope to vary our perception of time. Aware that I cannot physically move the sun, the tangible form of this time/space shift could be realized by 're-aligning' the surface of the earth different from it's natural alignment. Such a move generates consequential effects on the environment's systems, exponentially producing new opportunities of adaptation which I refer to as 'symptoms'. It is these generations of such symptoms, which play a key role in evolution on earth, and those which make up the unprecedented events of a new environment.

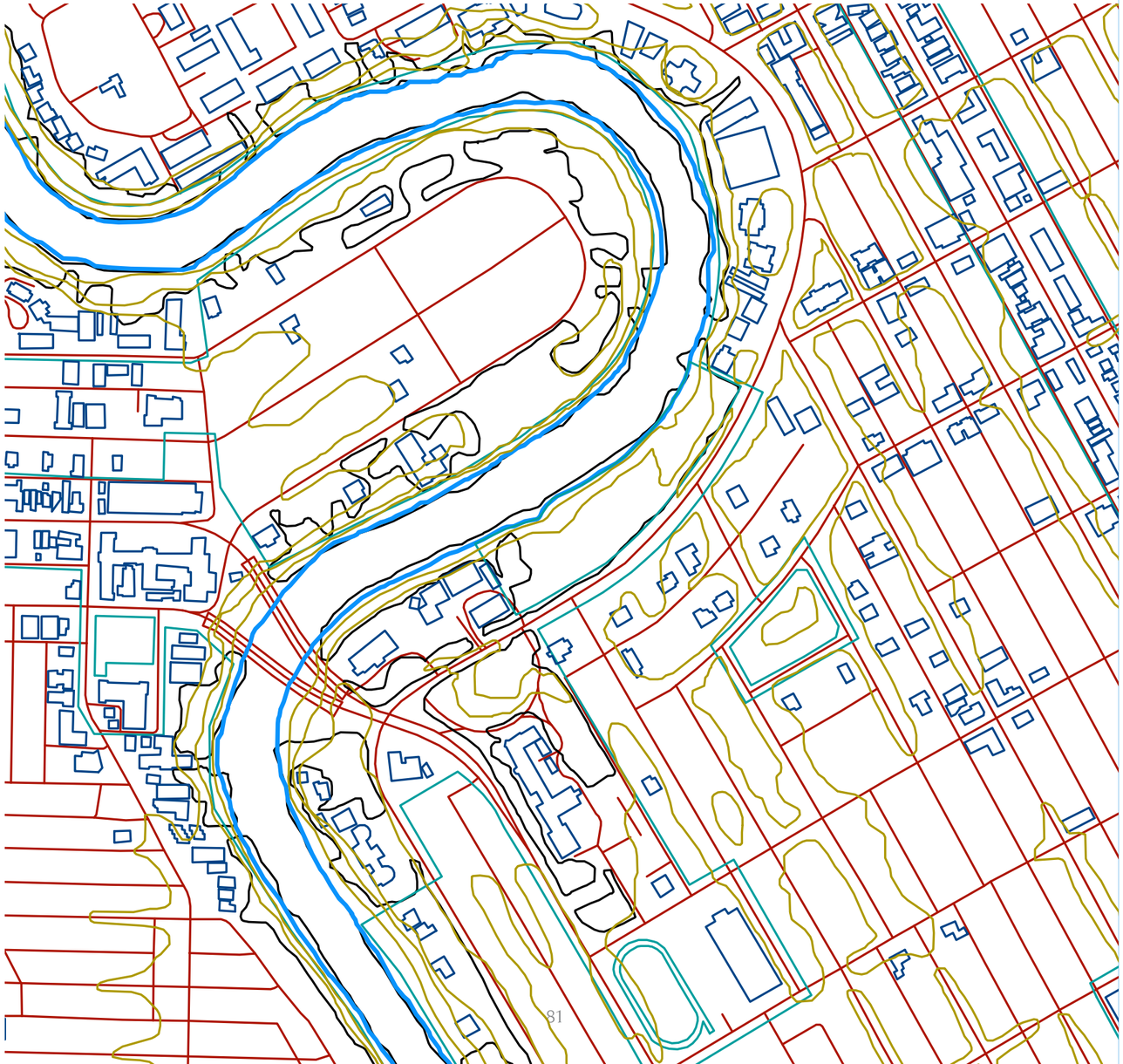
To further this theory, I used the Tokyo and Winnipeg sites to explore how these ideas might guide architectural projects. Focusing on Winnipeg as my primary site, my goal for this project is to design opportunities for a new type of environment to develop; one that is generated by displaced events, evolving to form unusual spaces and new varieties of volumes.

a Physical Model of Time

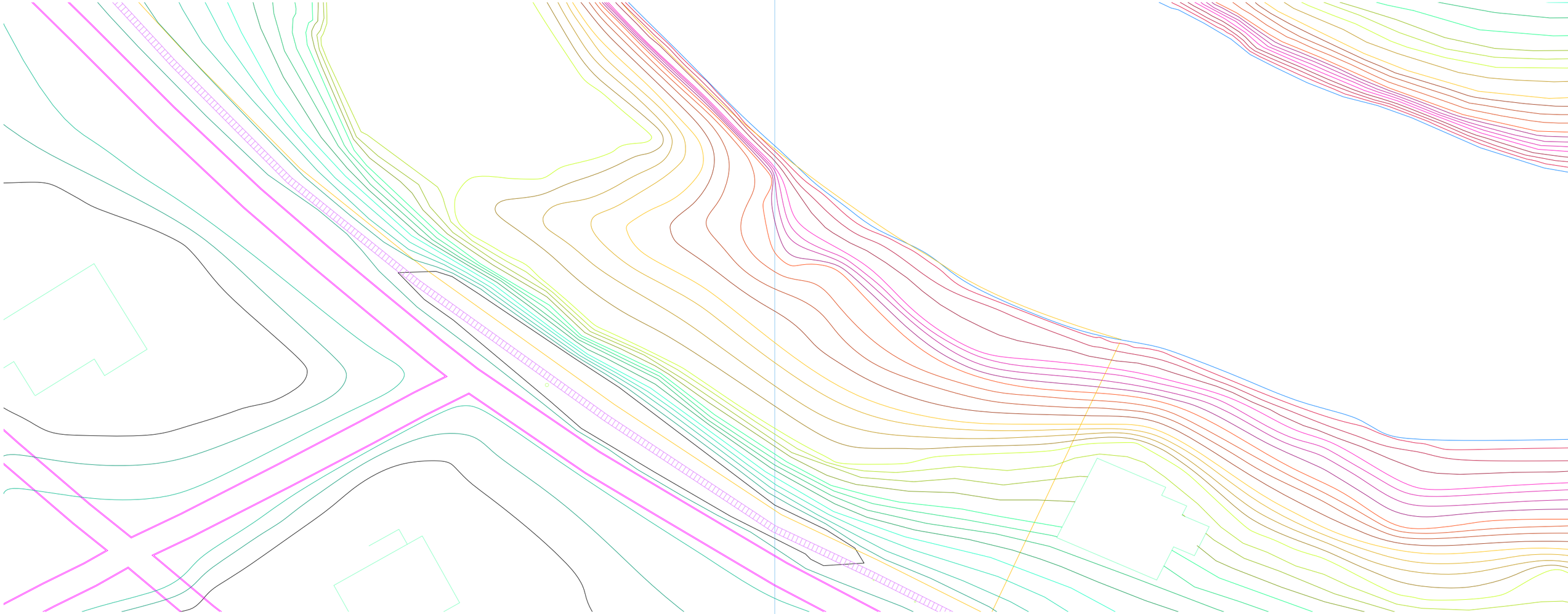
Chapter Six

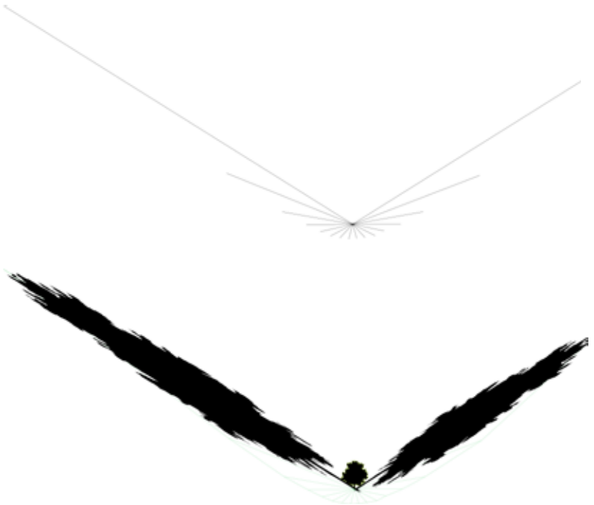
A working model was constructed to make a physical realization of my findings. I used the chosen site in Winnipeg to discuss my thoughts.

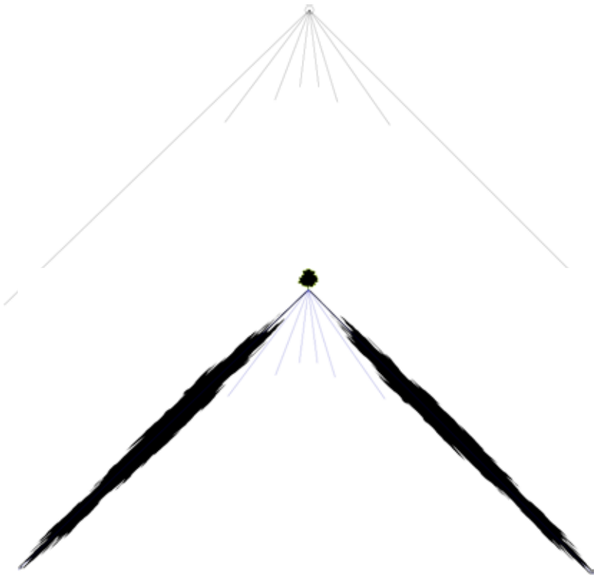
BELOW: Map compiled with Geospace GIS data.
OPPOSITE: The frame below the model refers to street grid dimensions. In the area surrounding my developed site the frame spacing refers to a Winnipeg street grid. In my chosen site for development in the grid is tilted in reference to the latitudinal difference in Tokyo.



BELOW: The surrounding context for Munson Park in Winnipeg. Contours are shown at 1/4 m intervals.







ABOVE: Diagrams illustrate the process of how I drew the annual shadows that were adjusted for the objects' height. THIS PAGE [LEFT]: Angles for summer shadows. [RIGHT]: Angles for winter shadows.

Winnipeg

June 21st
Solar Elevation
2:00pm = 62 degrees
Noon = 58 degrees

Azimuth
2:00pm = 195 degrees (105 degrees SW on my chart)

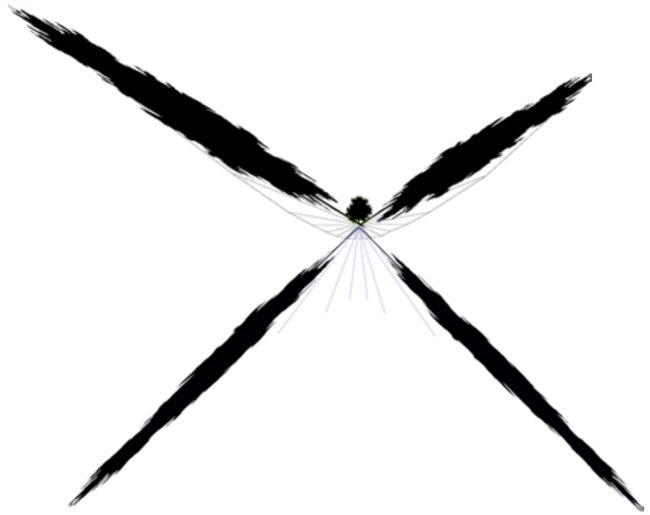
December 21st
2:00pm = 13 degrees
Noon = 17 degrees

Therefore:
For the gate in front of

A t 45 foot tree on June 21st would make a shadow that is 23.9 feet long
A 45 foot tree on December 21st would make a shadow that is 194.92 feet long

b = a/tanA
b = 45/tan62
b=23.93 feet long (7.29 meters)

b = a/tanA
b = 45/tan13
b=194.92 feet long (59.41 meters)



June 21st

	Solar Elevation	Azimuth	New Shadow Length 45'ft tree	5'7" person (5.58 ft)
5:20am:	0.1 degrees	51 degrees	n/a	n/a
6:00am:	6 degrees	58 degrees	428 ft / 130.45 m	53.09 ft/ 16.18 m
7:00am:	12 degrees	69 degrees	211.71 ft / 64.53 m	26.25 ft/ 8.00 m
8:00am:	22 degrees	80 degrees	111.38 ft / 33.95 m	13.81 ft/ 4.21 m
9:00am:	31 degrees	90 degrees	74.89 ft/ 22.83 m	9.29 ft/ 2.83 m
10:00am:	42 degrees	102 degrees	49.98 ft/ 15.23 m	6.20 ft/ 1.89 m
11:00am:	49 degrees	117 degrees	39.12 ft/ 11.92 m	4.85 ft/ 1.48 m
12:00noon:	58 degrees	137 degrees	28.12 ft/ 8.57 m	3.49 ft/ 1.06 m
1:00pm:	63 degrees	164 degrees	22.93 ft/ 6.99 m	2.84 ft/ 0.87 m
2:00pm:	62 degrees	195 degrees	23.93 ft/ 7.29 m	2.97 ft/ 0.91 m
3:00pm:	57 degrees	223 degrees	29.22 ft/ 8.91 m	3.62 ft/ 1.10 m
4:00pm:	49 degrees	242 degrees	39.12 ft/ 11.92 m	4.85 ft/ 1.48 m
5:00pm:	41 degrees	257 degrees	51.77 ft/ 15.78 m	6.42 ft/ 1.96 m
6:00pm:	32 degrees	269 degrees	72.05 ft/ 21.95 m	8.93 ft/ 2.72 m
7:00pm:	22 degrees	280 degrees	111.38 ft/ 33.95 m	13.81 ft/ 4.21 m
8:00pm:	12 degrees	292 degrees	211.71 ft/ 64.53 m	26.25 ft/ 8.00 m
9:00pm:	4 degrees	302 degrees	643.53 ft/ 196.15 m	79.80 ft/ 24.32 m
9:41pm:	0.1 degrees	310 degrees	n/a	

December 21st

	Solar Elevation	Azimuth	New Shadow Length 45'ft tree	5'7" person (5.58 ft)
8:24am:	0.1 degrees	127 degrees		
9:00am:	3 degrees	135 degrees	858.65 ft/ 261.72 m	106.47 ft/ 32.45 m
10:00am:	9 degrees	145 degrees	284.12 ft/ 86.60 m	35.23 ft/ 10.72 m
11:00am:	13 degrees	163 degrees	194.92 ft/ 59.41 m	24.17 ft/ 7.37 m
12:00noon:	16 degrees	174 degrees	156.93 ft/ 47.83 m	19.46 ft/ 5.93 m
1:00pm:	16 degrees	187 degrees	156.93 ft/ 47.83 m	19.46 ft/ 5.93 m
2:00pm:	13 degrees	201 degrees	194.92 ft/ 59.41 m	24.17 ft/ 7.37 m
3:00pm:	9 degrees	217 degrees	284.12 ft/ 86.60 m	35.23 ft/ 10.72 m
4:00pm:	3 degrees	226 degrees	858.65 ft/ 261.72 m	106.47 ft/ 32.45 m
4:30pm:	0.1 degrees	231 degrees		

Great Expectations House
June 21st

	Solar Elevation	Azimuth	12.78 m Great Expectations House or 503.15 inch.
5:20am:	0.1 degrees	51 degrees	n/a
6:00am:	6 degrees	58 degrees	4787.15 inch
7:00am:	12 degrees	69 degrees	2367.14 inch
8:00am:	22 degrees	80 degrees	1245.34 inch
9:00am:	31 degrees	90 degrees	837.38 inch
10:00am:	42 degrees	102 degrees	558.80 inch
11:00am:	49 degrees	117 degrees	437.38 inch
12:00noon:	58 degrees	137 degrees	314.40 inch
1:00pm:	63 degrees	164 degrees	256.37 inch
2:00pm:	62 degrees	195 degrees	267.53 inch
3:00pm:	57 degrees	223 degrees	326.75 inch
4:00pm:	49 degrees	242 degrees	437.38 inch
5:00pm:	41 degrees	257 degrees	578.81 inch
6:00pm:	32 degrees	269 degrees	805.21 inch

TREE 1
June 21st

	Solar Elevation	Azimuth	40 ft tall Tree. 48
5:20am:	0.1 degrees	51 degrees	n/a
6:00am:	6 degrees	58 degrees	4566.90 inch.
7:00am:	12 degrees	69 degrees	2258.22 inch.
8:00am:	22 degrees	80 degrees	1188.04 inch.
9:00am:	31 degrees	90 degrees	789.85 inch.
10:00am:	42 degrees	102 degrees	533.09 inch.
11:00am:	49 degrees	117 degrees	417.26 inch.
12:00noon:	58 degrees	137 degrees	299.94 inch.
1:00pm:	63 degrees	164 degrees	244.57 inch.
2:00pm:	62 degrees	195 degrees	255.22 inch.
3:00pm:	57 degrees	223 degrees	311.72 inch.
4:00pm:	49 degrees	242 degrees	417.26 inch.
5:00pm:	41 degrees	257 degrees	552.18 inch.
6:00pm:	32 degrees	269 degrees	768.17 inch.
7:00pm:	22 degrees	280 degrees	1188.04 inch.
8:00pm:	12 degrees	292 degrees	2258.22 inch.
9:00pm:	4 degrees	302 degrees	6864.32 inch.
9:41pm:	0.1 degrees	310 degrees	n/a

December 21st

	Solar Elevation	Azimuth	40 ft tall Tree. 48
8:24am:	0.1 degrees	127 degrees	n/a
9:00am:	3 degrees	135 degrees	9158.95 inch.
10:00am:	9 degrees	145 degrees	3030.60 inch.
11:00am:	13 degrees	163 degrees	2079.11 inch.
12:00noon:	16 degrees	174 degrees	1673.96 inch.
1:00pm:	16 degrees	187 degrees	1673.96 inch.
2:00pm:	13 degrees	201 degrees	2079.11 inch.
3:00pm:	9 degrees	217 degrees	3030.60 inch.
4:00pm:	3 degrees	226 degrees	9158.95 inch.
4:30pm:	0.1 degrees	231 degrees	n/a

TREE 2
June 21st

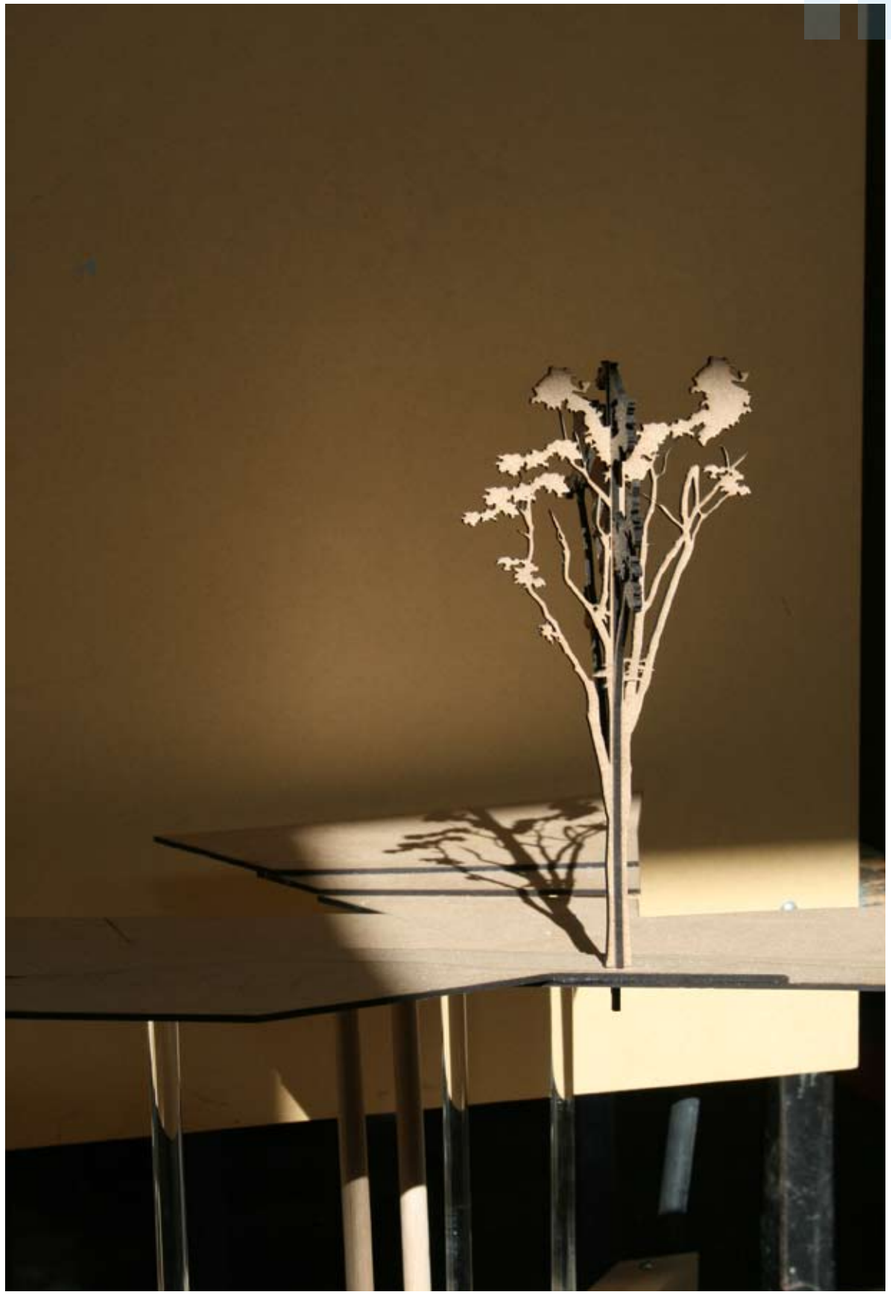
	Solar Elevation	Azimuth	25 ft tall Tree. 300
5:20am:	0.1 degrees	51 degrees	n/a
6:00am:	6 degrees	58 degrees	2854.31 inch.
7:00am:	12 degrees	69 degrees	1411.39 inch.
8:00am:	22 degrees	80 degrees	742.53 inch.
9:00am:	31 degrees	90 degrees	499.28 inch.
10:00am:	42 degrees	102 degrees	333.18 inch.
11:00am:	49 degrees	117 degrees	260.79 inch.
12:00noon:	58 degrees	137 degrees	187.46 inch.
1:00pm:	63 degrees	164 degrees	152.86 inch.
2:00pm:	62 degrees	195 degrees	159.51 inch.
3:00pm:	57 degrees	223 degrees	194.82 inch.
4:00pm:	49 degrees	242 degrees	260.79 inch.
5:00pm:	41 degrees	257 degrees	345.11 inch.
6:00pm:	32 degrees	269 degrees	480.10 inch.

51 degrees	n/a
58 degrees	4566.90 inch.
69 degrees	2258.22 inch.
80 degrees	1188.04 inch.
90 degrees	789.85 inch.
102 degrees	533.09 inch.
117 degrees	417.26 inch.
137 degrees	299.94 inch.
164 degrees	244.57 inch.
195 degrees	255.22 inch.
223 degrees	311.72 inch.
242 degrees	417.26 inch.
257 degrees	552.18 inch.
269 degrees	768.17 inch.
280 degrees	1188.04 inch.
292 degrees	2258.22 inch.
302 degrees	6864.32 inch.
310 degrees	n/a

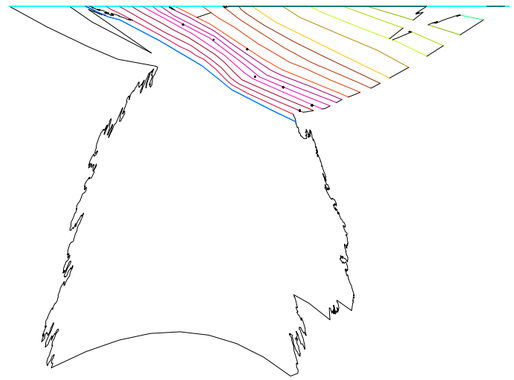
Azimuth	40 ft tall Tree. 480 inch.
127 degrees	n/a
135 degrees	9158.95 inch.
145 degrees	3030.60 inch.
163 degrees	2079.11 inch.
174 degrees	1673.96 inch.
187 degrees	1673.96 inch.
201 degrees	2079.11 inch.
217 degrees	3030.60 inch.
226 degrees	9158.95 inch.
231 degrees	n/a

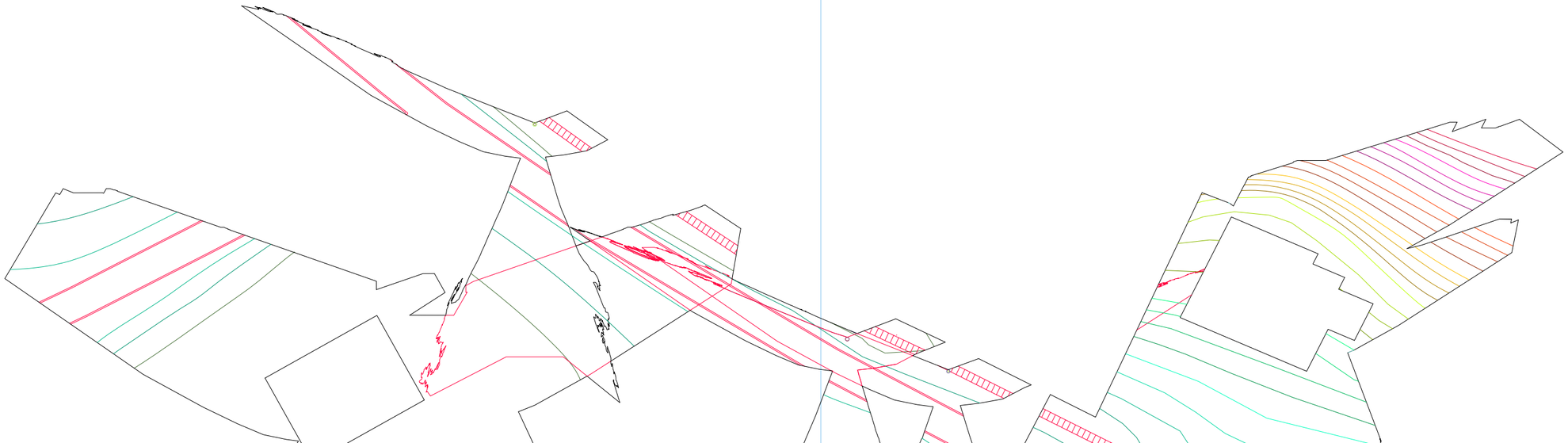
Azimuth	25 ft tall Tree. 300 inch.
51 degrees	n/a
58 degrees	2854.31 inch.
69 degrees	1411.39 inch.
80 degrees	742.53 inch.
90 degrees	499.28 inch.
102 degrees	333.18 inch.
117 degrees	260.79 inch.
137 degrees	187.46 inch.
164 degrees	152.86 inch.
195 degrees	159.51 inch.
223 degrees	194.82 inch.
242 degrees	260.79 inch.
257 degrees	345.11 inch.
269 degrees	480.10 inch.
280 degrees	742.52 inch.
292 degrees	1411.39 inch.
302 degrees	4290.20 inch.

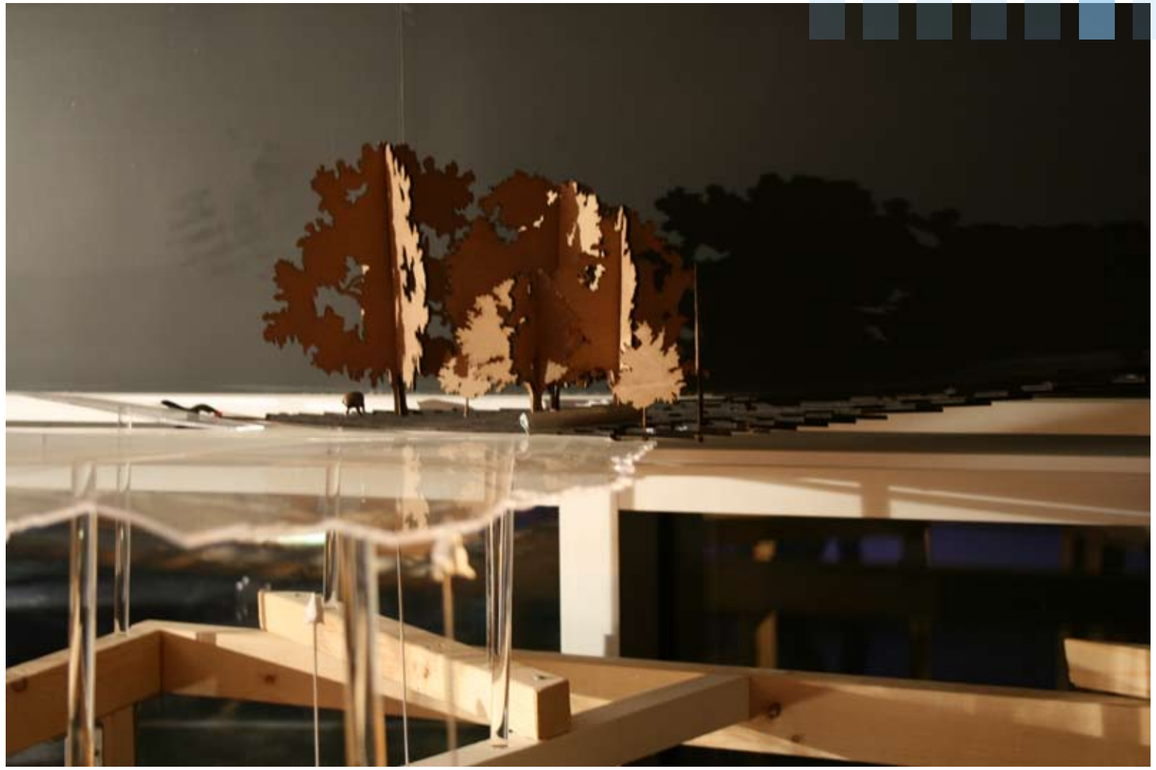
RIGHT: An American Elm tree borders the site.



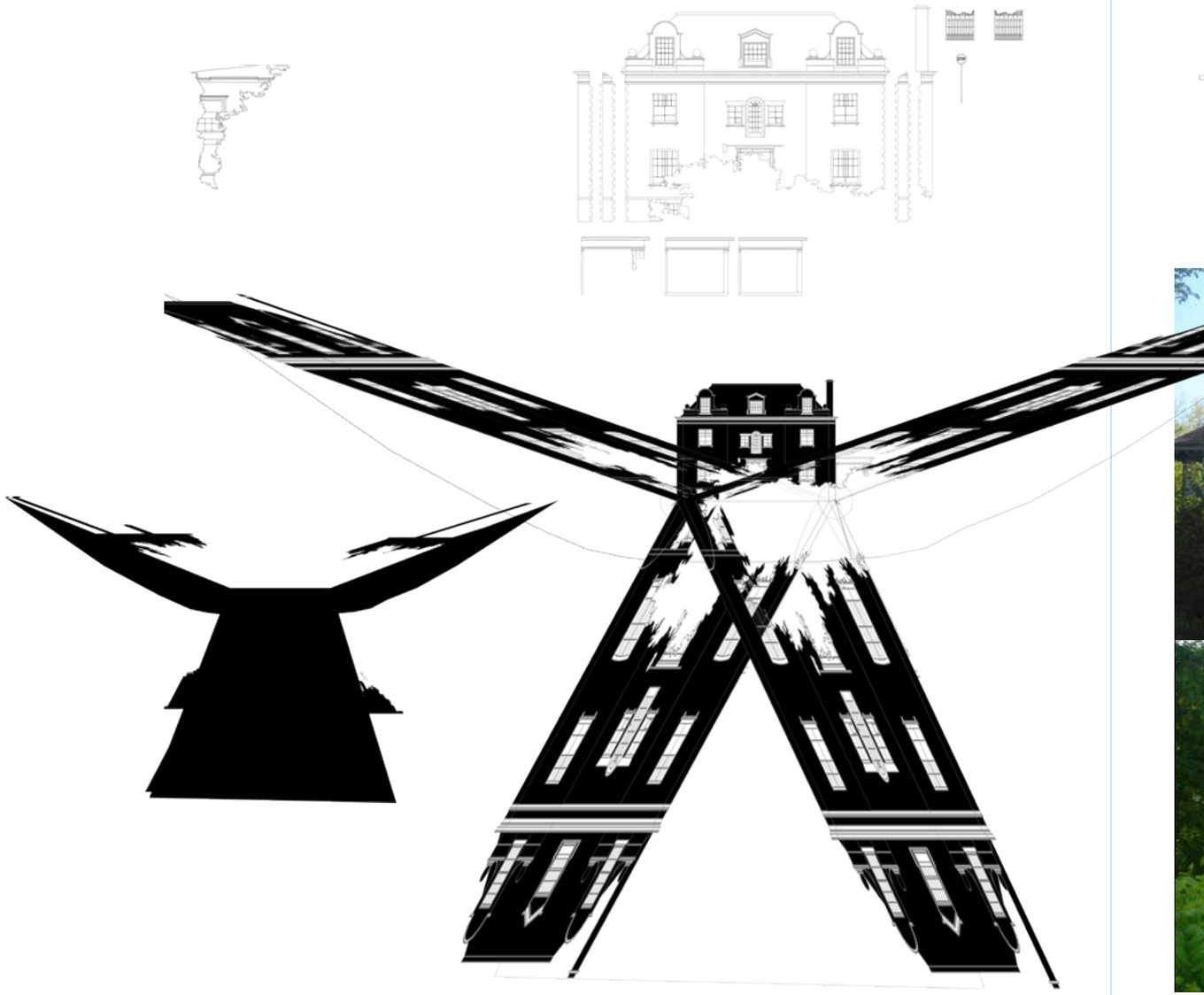
BELOW: The flat registration of land shows the annual shadowed space for the surrounding houses and trees bordering the site. Cut for the model, these pieces of land not only show shadow, but are also an implication of space, time, and annual positioning. As satellite sites, they imply a larger space.

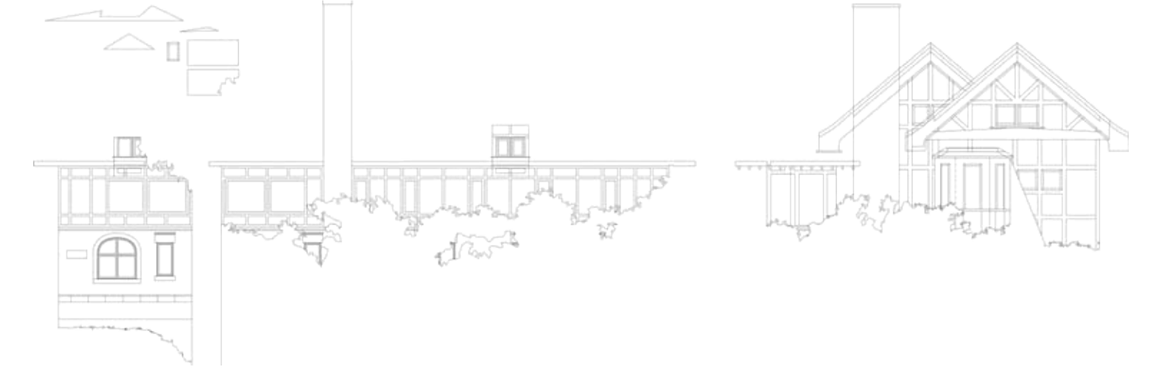


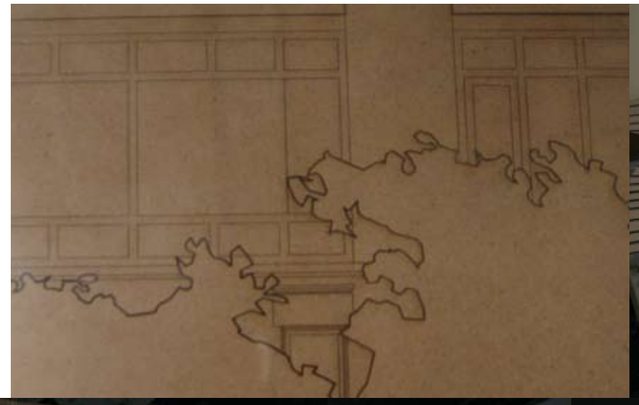


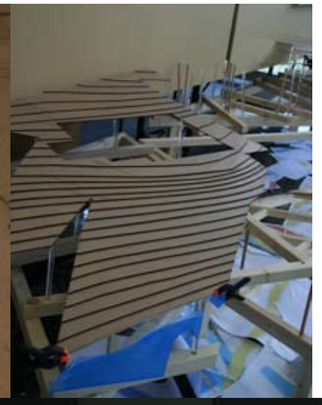


Photos depict scene across the Assinboine River.

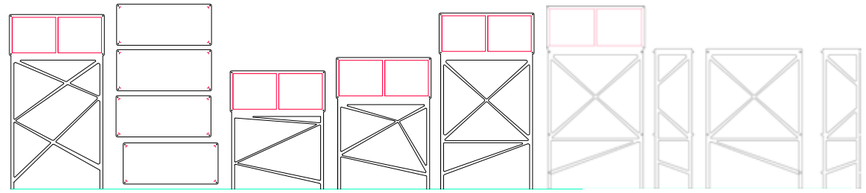


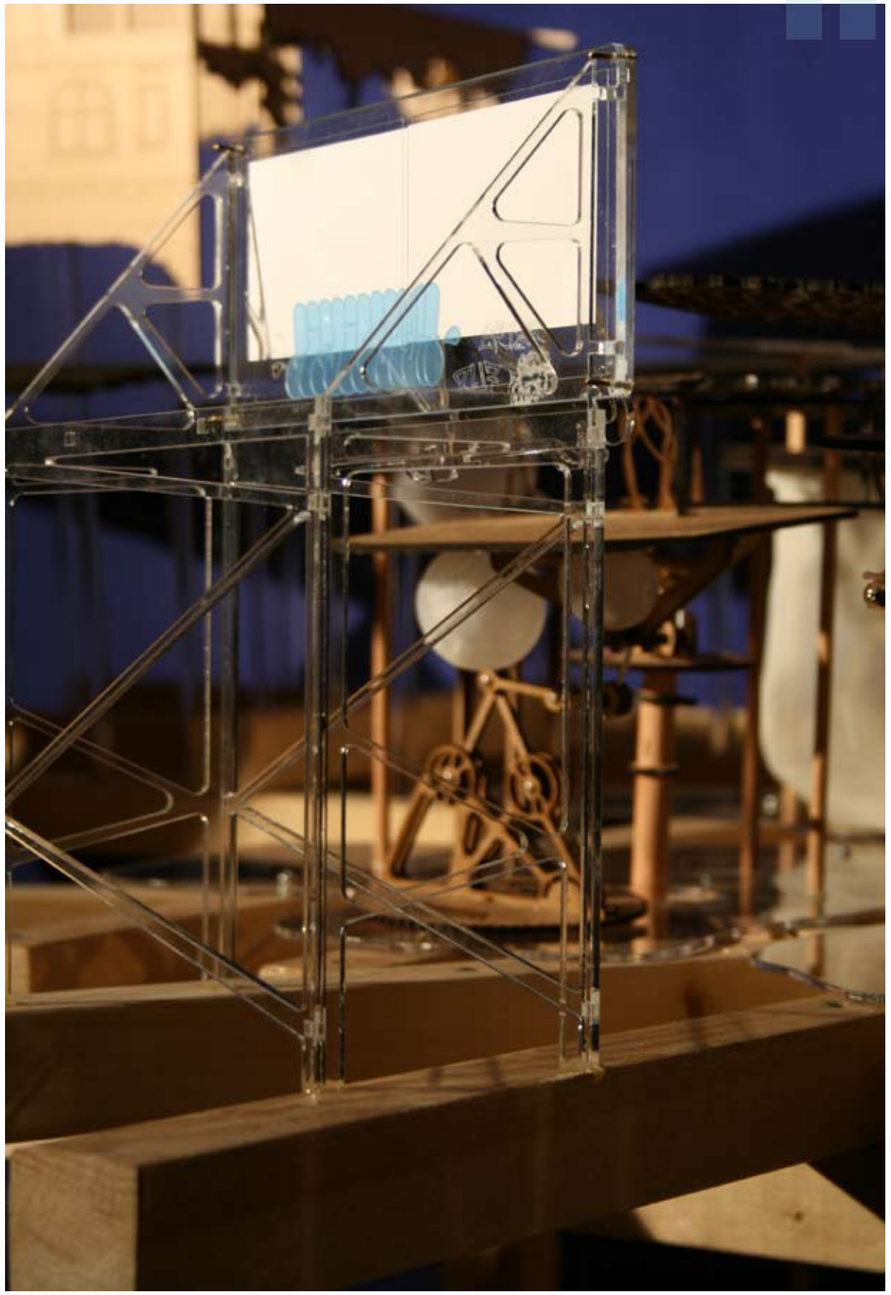




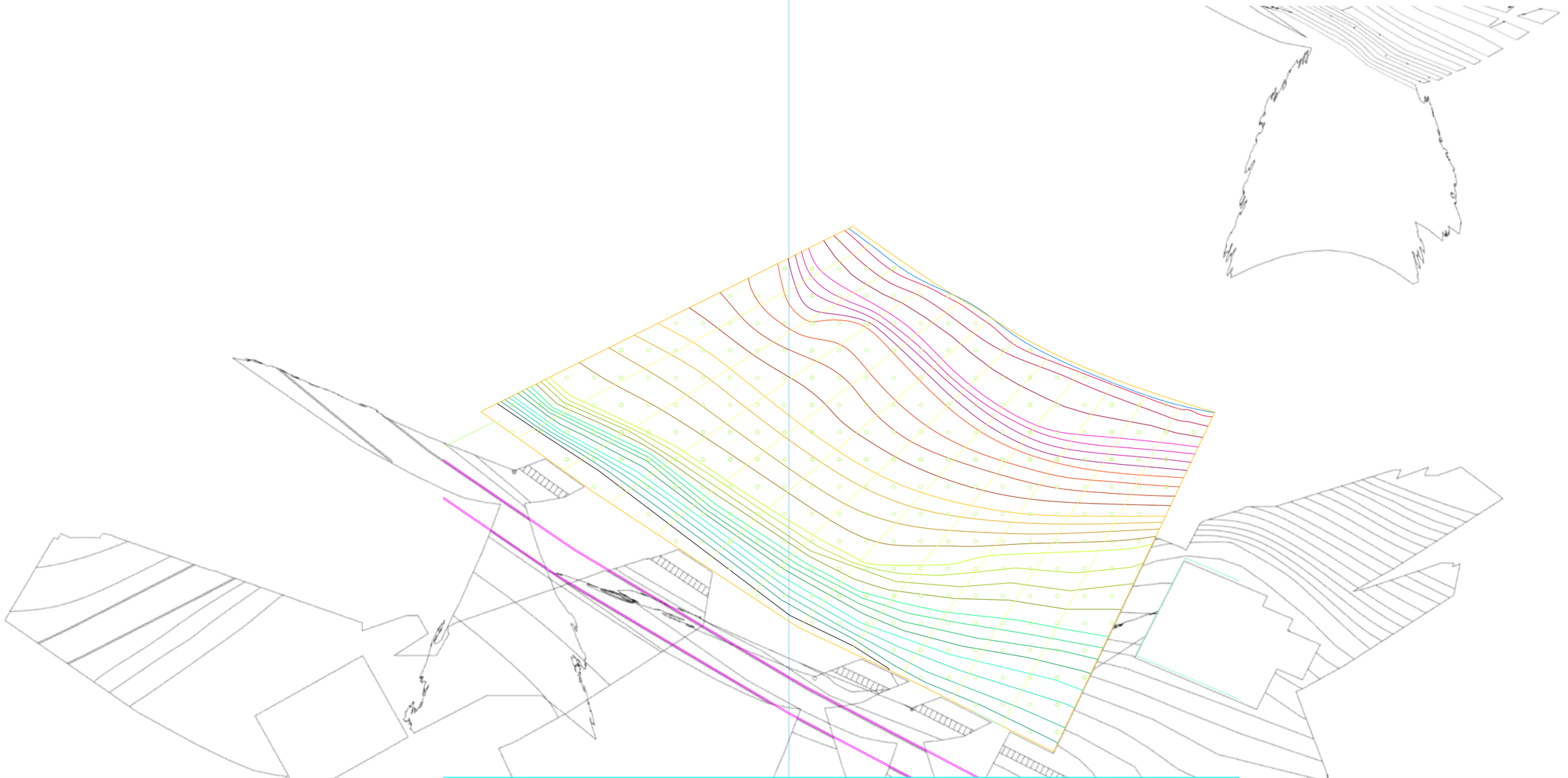


Stereoscopes were designed and raised on billboards to peak into places that could not be shown within the context model.

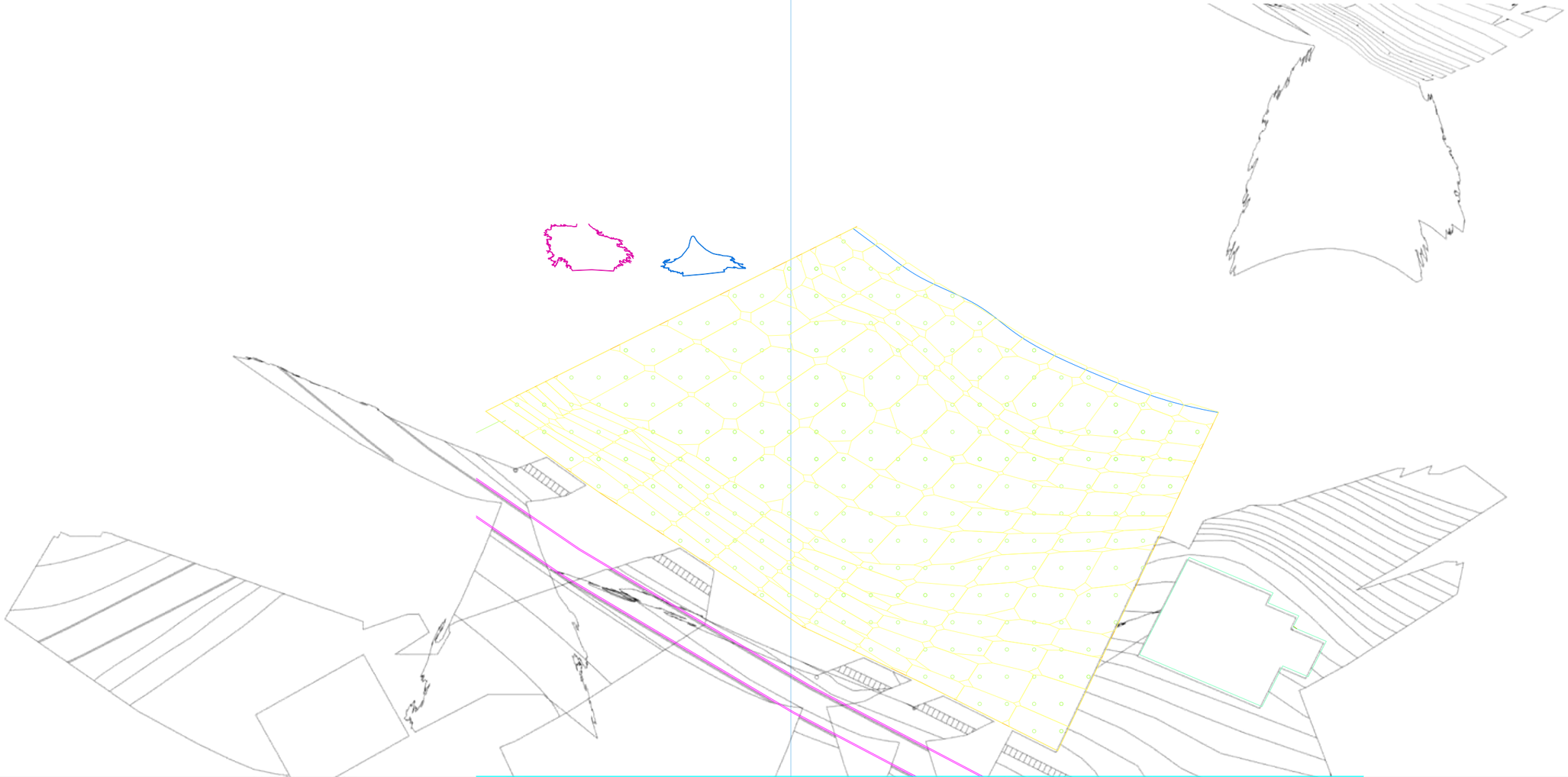


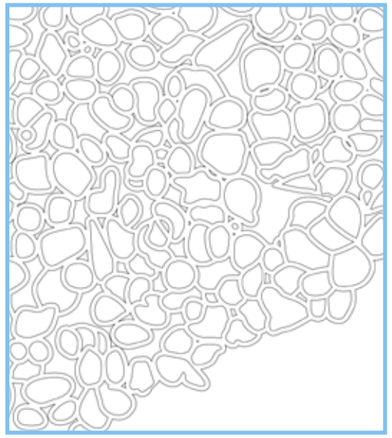


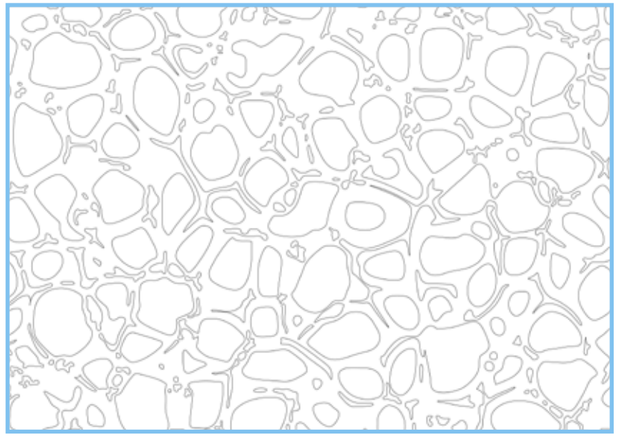
BELOW: The context I selected to develop my theories in. Located at the eastern side of Munson Park in Winnipeg. The surface is divided into a tight 5m tree planting grid.



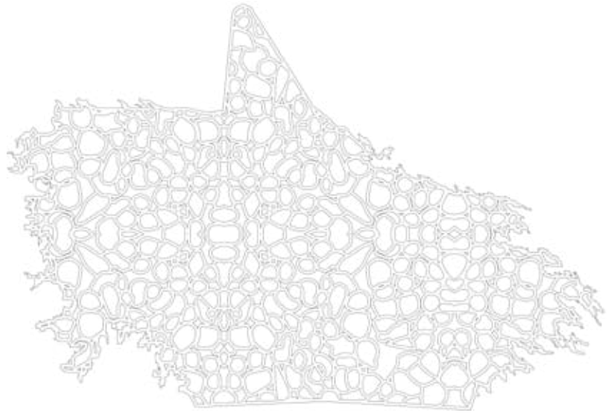
BELOW: In keeping with original contours, the site is divided into parcels structured for movement. When the Tokyo sun has set, the land in Winnipeg resets itself to its ‘original’ formation. When the Tokyo sun rises, the land begins to reach to obtain their angles.

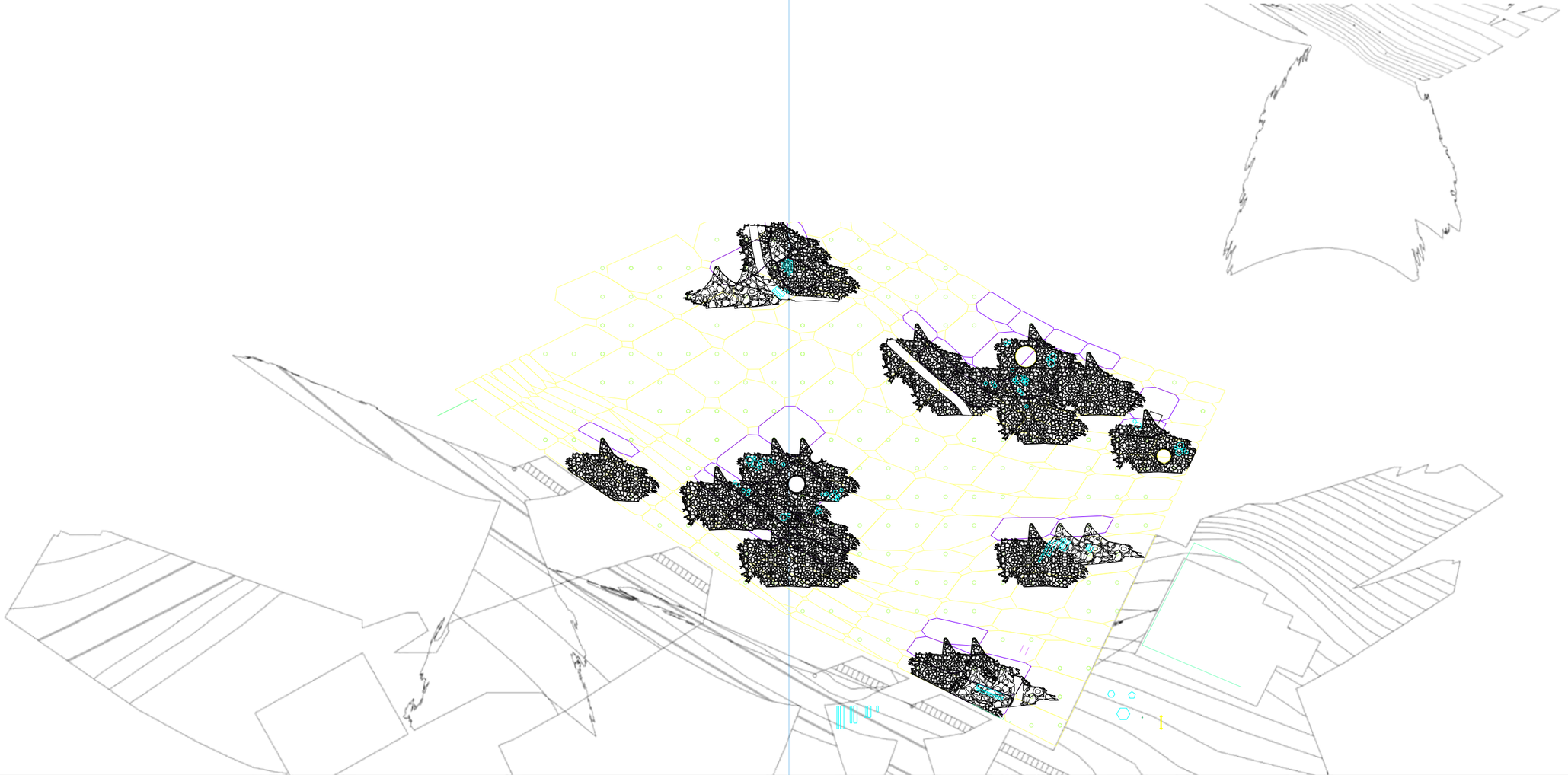




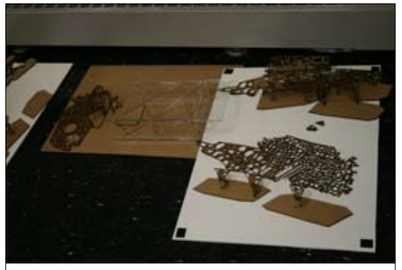


ABOVE LEFT: Pattern derived from genetically modified stem cells. ABOVE RIGHT: Pattern developed based off of normal human skin cells. Normal cell patterns are used to describe anchored pieces of land on site. These parcels contain re-planted American Elm trees and are described through their subsequent shadows for the longest day of the year. Genetically modified cells explain the parcels of land which fluctuate towards Japanese solar angles. The size of its shadows are determined by Japanese Cheery Trees Bloom for the Spring Equinox.





Gears were built for three specific types of movements. ‘Anchor’ gears adjst the land network from falling and touching other gears. ‘Body’ gears allow the land parcels to be manuvered up, down and tilted and rotated. ‘Arm’ geers allow for lateral travel and lift. Worm geers would be used to control the movement of the structure.



CLOCKWISE FROM TOP LEFT: Ribcadges built to hold silicone tanks; Flat [Winnipeg] registration tank stands; 14 degree [Tokyo latitude difference] tilted tank stands. White marks on the grid below, register the tilt in latitude; Beginning to assemble geers into spatial context.

Dissembled displacements

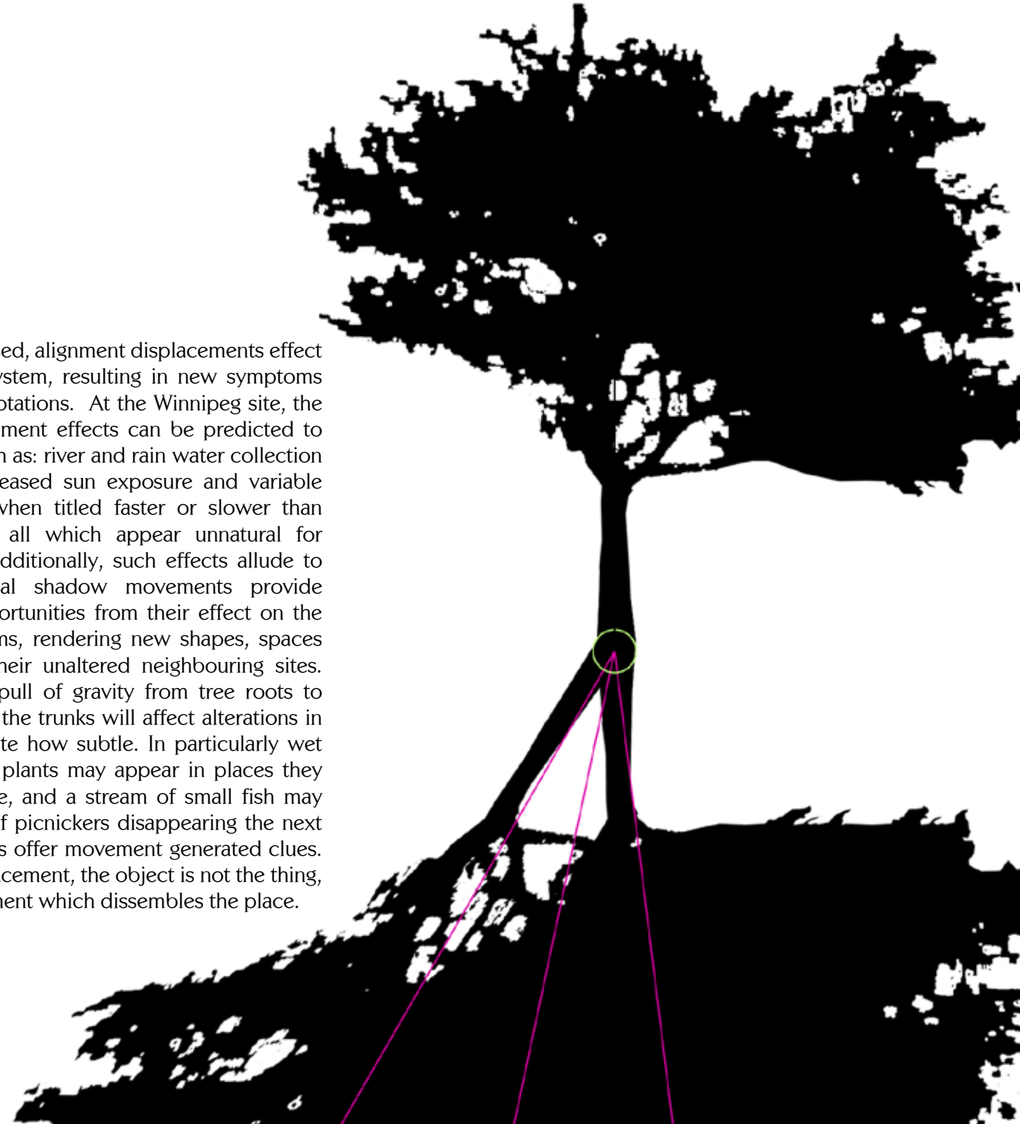
Fractured Atmospheres

As I discuss the action of displacement [displacing events from Tokyo to Winnipeg and those vice versa], it is important for me to clarify that a literal recognition of that specific place [Tokyo] is not the goal, for this is not an attempt at replication. The focus becomes the act of displacement rather than simulation [or the idea of Tokyo the city], for these transfers do not strive to be manifest as reproductions. Ignoring time zones and natural alignment, they graft themselves onto the earth's global plane, self-generating a new type of environmental dimension.

Displacement can be viewed in several different ways that I will refer to as orders in this discussion. In my design, each displacement is set out to take over the place, position, or role of an object or event associated with the local conventions and/or commonalities. Directly, these are things that we are conditioned to believe through our own lived experience. In so many instances we are disconnected from spatial verification of the universe we live in, and trust in the convincing arguments made to us by the scientific community. Logical arguments can be convincingly made for various theories. The fact that the sun revolves around the earth or the planets, can be easily shifted with the introduction of a new theory allows for the new spaces in my work to be designed through the displacement and or the absence of something familiar.

The first order relates to the geographical story of the global displacement [studied earlier in the solar alignment]. Whereas latitude can be viewed as a shift in place, longitude reveals itself as a shift in time. In this time-shift we can observe that at a certain time, both cities were once in the same position [Winnipeg and Tokyo]. While an observant visitor to the Winnipeg site may not identify that they are in the same position that Japan was 'x' hours ago, through my design moves they will be able to distinguish that they are in a place that is acting to a foreign set of regulations. These actions of physical displacement invite the viewer to experience a self-awareness of how to place themselves in this world with the aim to help them realize that they are being affected by systemic occurrences from multiple [two] places at one time.

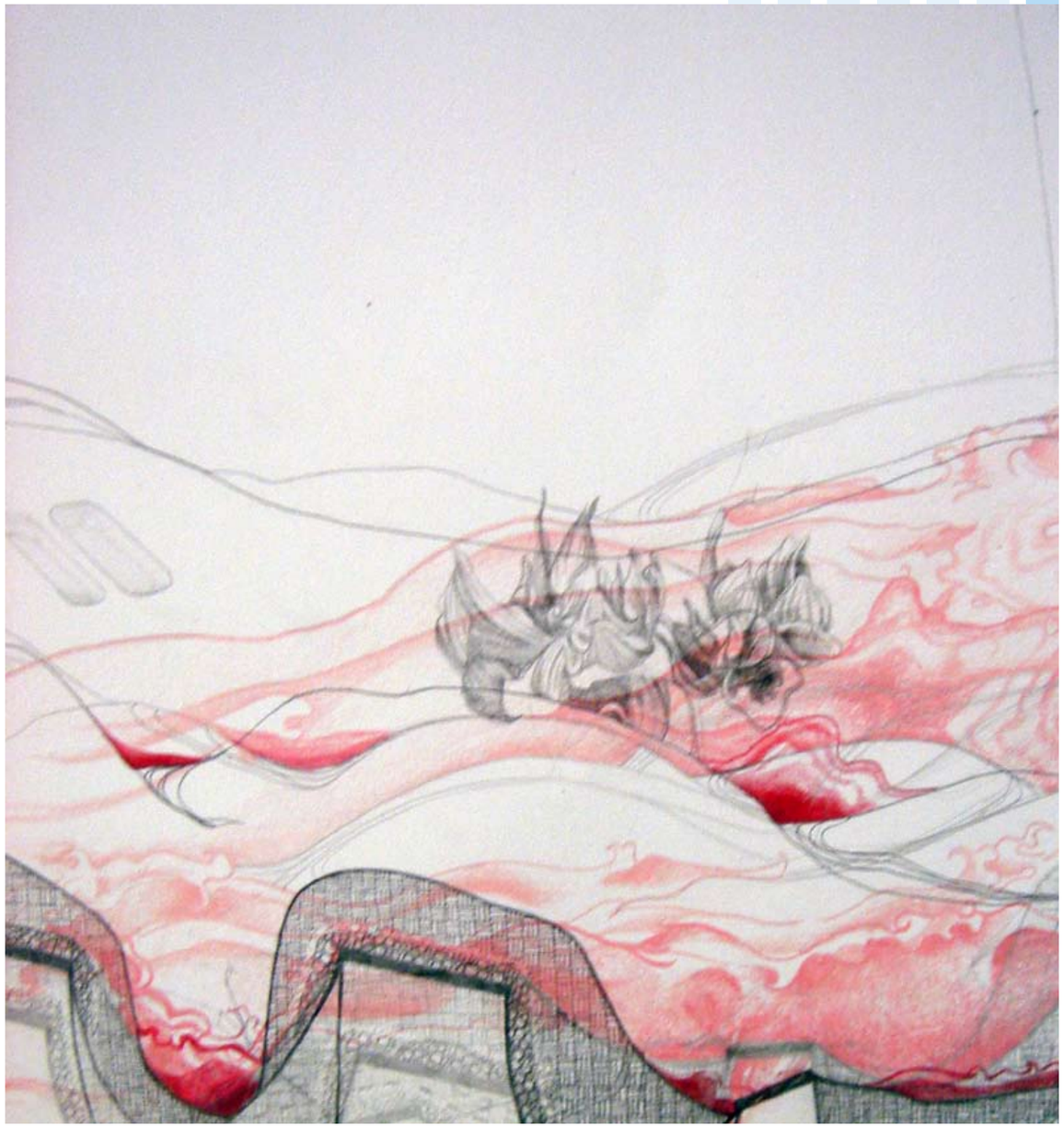
As previously discussed, alignment displacements effect the environmental system, resulting in new symptoms and time-lapsed adaptations. At the Winnipeg site, the geophysical displacement effects can be predicted to cause symptoms such as: river and rain water collection and movement, increased sun exposure and variable gravitational pulls [when titled faster or slower than natural movements] all which appear unnatural for their local setting. Additionally, such effects allude to others. Consequential shadow movements provide different spatial opportunities from their effect on the environmental systems, rendering new shapes, spaces and volumes than their unaltered neighbouring sites. Shifting the natural pull of gravity from tree roots to perhaps the sides of the trunks will affect alterations in plant growth - despite how subtle. In particularly wet or dry times certain plants may appear in places they normally wouldn't be, and a stream of small fish may swim past a group of picnickers disappearing the next moment. Such effects offer movement generated clues. In this order of displacement, the object is not the thing, rather it is the movement which dissembles the place.



The second order of displacements, can be achieved by playing with cultural understandings. This form of displacement is manifested through the details of the project. Like looking at a new world through another's set of eyes, this order works to expand our minds beyond an acceptance of the way we perceive the world altering how things really are. What happens in Tokyo at one moment has a different spatial volume [and atmosphere] to those events occurring in Winnipeg. In detail, cultural displacements refer to the differences of personal space, anthropomorphic dimensions, and 'tended' environments. In my design windows may lead to unexpected depths, and doors may lead to nowhere much of the time. Beyond ethnic diversity, humans as a species have certain beliefs of the order on the earth. For most people, there is a disconnect to the sub-surface we live on. We may think that the ground is very deep and fertilely infinite, when we really live on a very thin layer that will sustain our life. In my design, I try to capitalize on these 'beliefs' and design them into spatial elements that allude themselves in an uncanny fashion.

It is about having to look harder for insight, questioning dimensions.

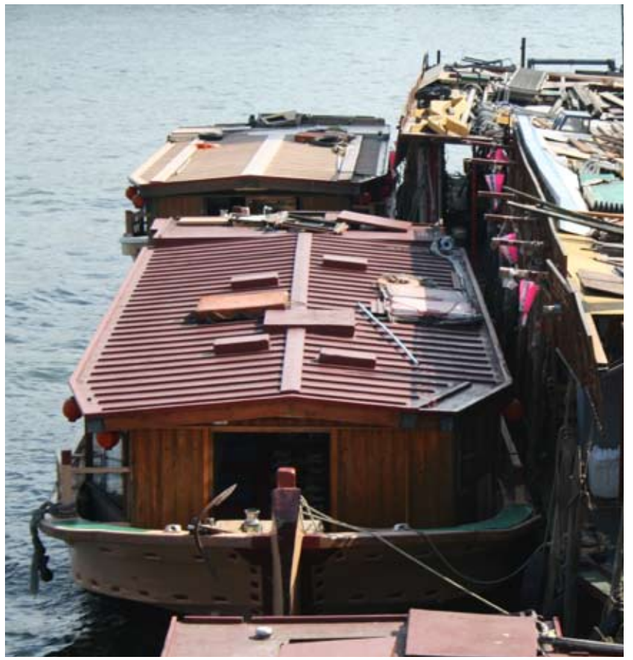
TOP: 'Blood Scarf' by mixed-media artist, Laura Splan.

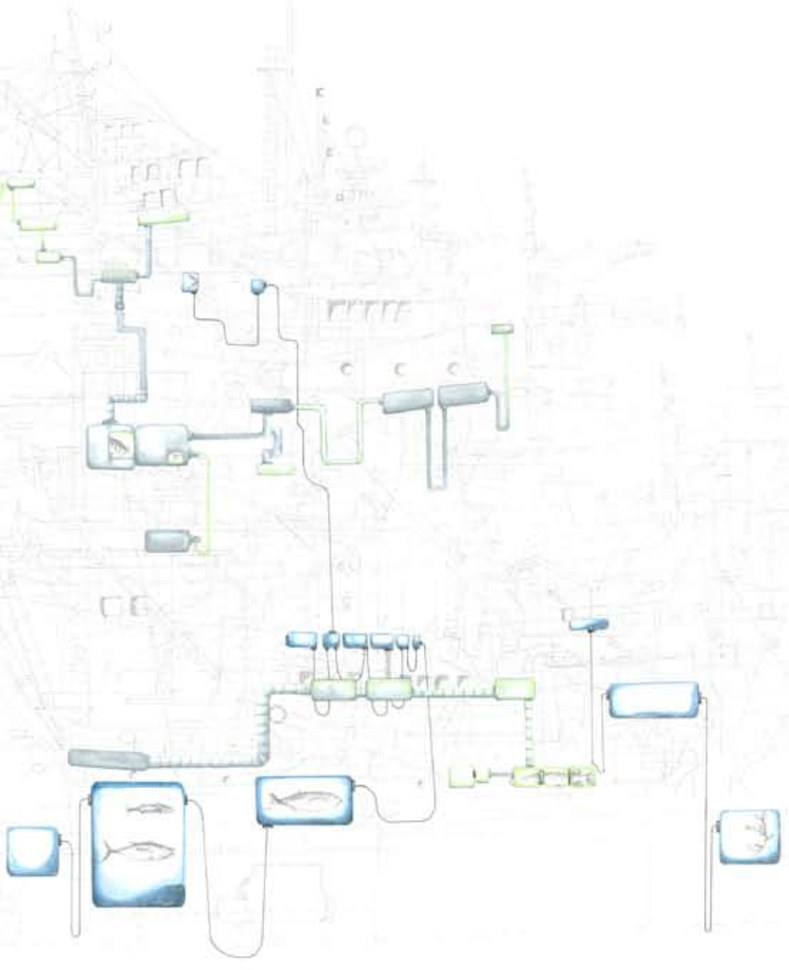


At first glance, the space does not resolve itself or our position in space. Attempting to interfere with our acceptance of present day theoretical rationalizations, the place is only dissembled through a collective abstract understanding of its elements. The space gives away a lot, but it's allusiveness asks for second looks, prompting questions floating from the entry points it has offered your imagination. A visitor to this place may never recognize the exactness of the where, but through exploration and experience, will discover that this place is different, and is somehow an abrasion between places.

LEFT: Panda [displaced] at the National Museum of Emerging Technologies in Tokyo, Japan.

In the global system, luminal places are among the most active environments. Flooded forests, tidal seas and wet/dry caverns produce temporal opportunities for of provisional activities, and are generated by specific fluctuations in the earth's systems. In my design of the Winnipeg site, a new environment is created. The land fragments, which are in constant flux generate similar opportunities for the movement and adaptation of organisms. In the final stages of my project, I created a working model to physically facilitate opportunities for living organisms to survive and adapt within the site.





I pursued the development of my design by studying the relationships between a selection of the occupied species at both sites. This manifested itself in aquatic species, and I took an interest in the relationships that exist between the fresh water and oceanic fishing industries. I studied the commercial fishing vessels used in inland and oceanic industries, and compared the size of the desired catch species to the size of the functions of the various vessels. The adjacent drawing was created to explore my comprehension of the size difference, and it acted as a way for me to physically connect the geophysical boundaries.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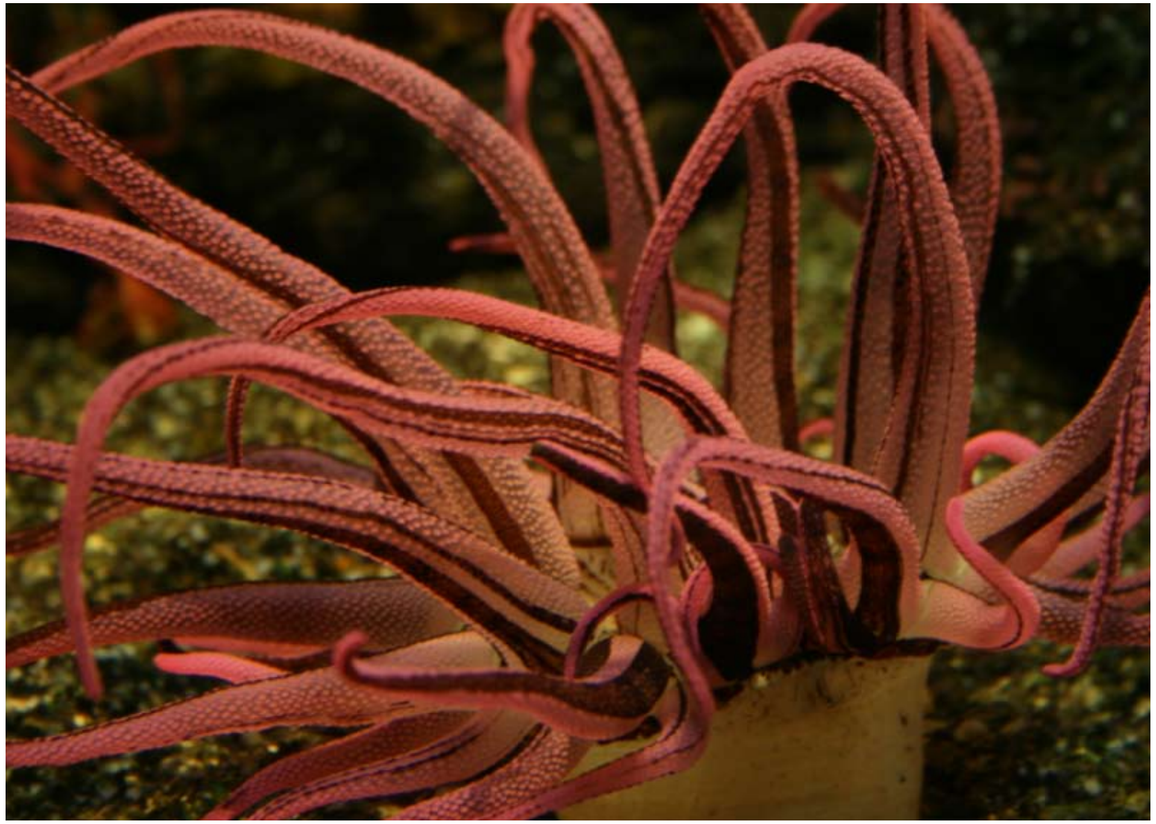
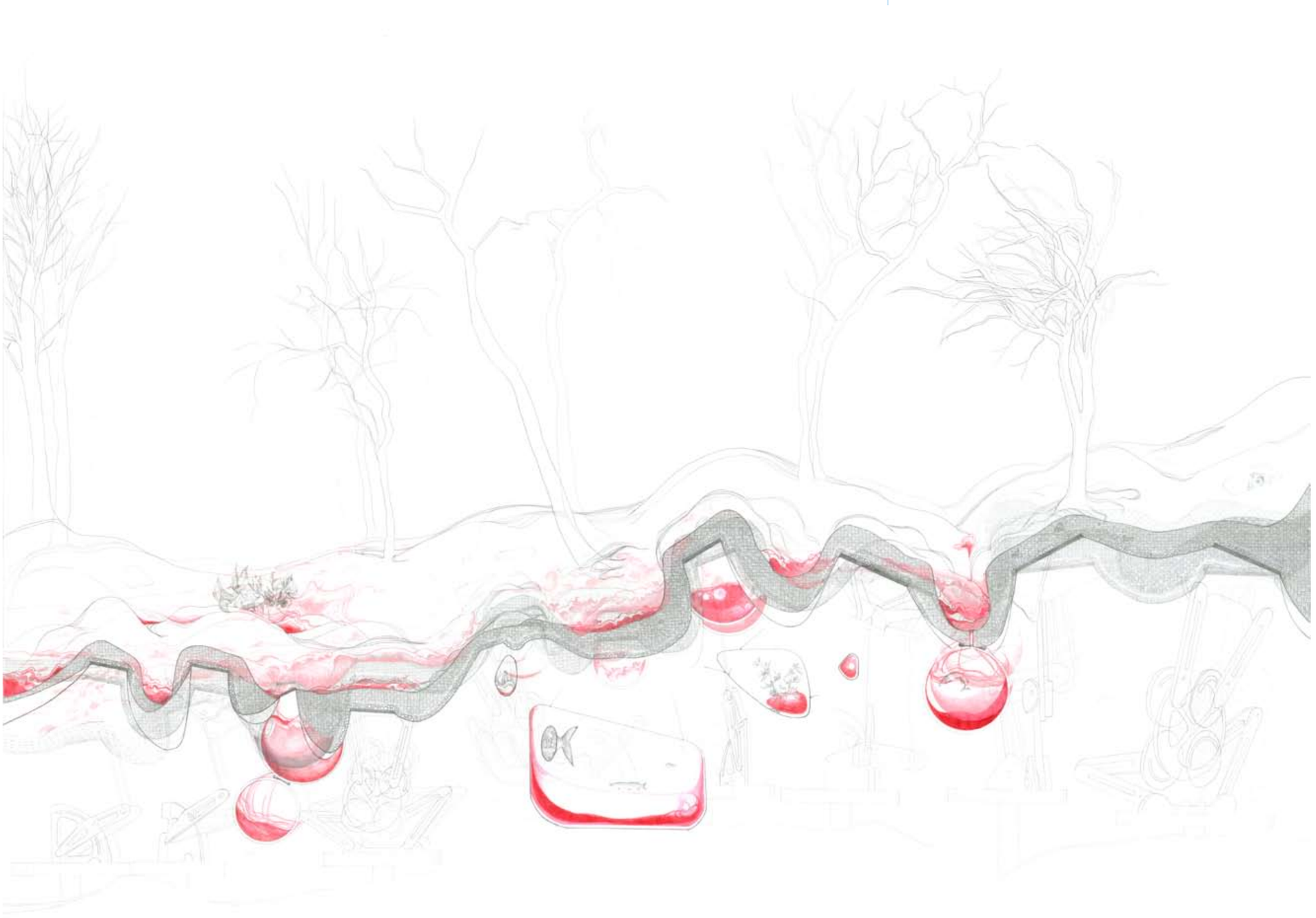


PREVIOUS: Aquarium Aquatic Species at the Sunshine City Aquarium in Tokyo, Japan. RIGHT: Chinese Sun Fish at Sunshine City Aquarium.

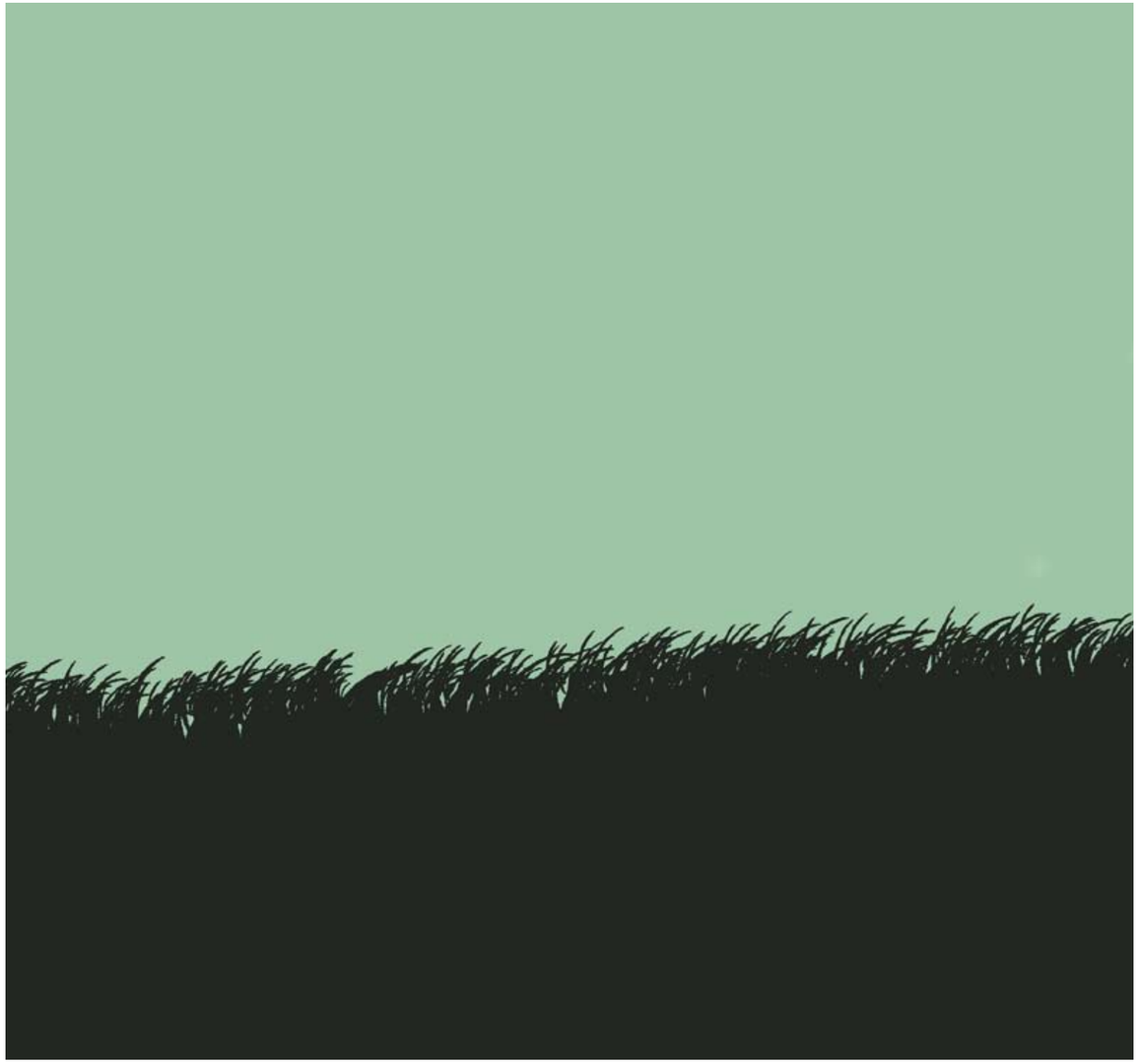
Catfish and Drum Bass caught from the Red River, North of Winnipeg, Manitoba, Canada.

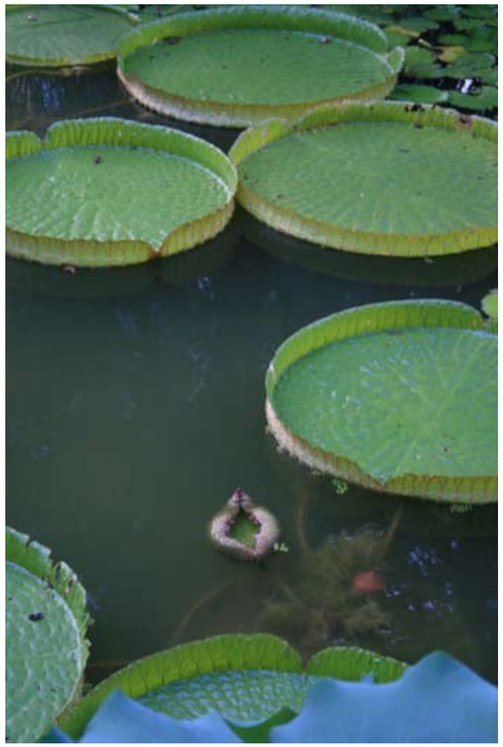


The inclusion of the aquatic species additionally led me to understand the habitat variances in the quality of waters. Altering habitat, would allow me to alter the species which were available to live inland. Unbeknownst to most Winnipeggers, Winnipeg sits seventy-six meters atop an inland salt-water sea. Likely marooned earlier than the most recent glaciation[5], this saline aquifer strengthened my ideas of connecting these subterranean worlds.

I imagined exploring these relationships at subterranean levels where I could control and design the shifting environment. The bladders, or underbelly of the land are designed to sustain aquatic organisms through a labyrinth of various environments. Different tanks would hold different balances of saline, water and oxygen. The survival of the starter species would be immediately sustained; those introduced through filtration of the surrounding environment, [soil and water organisms] would survive based on their ability to adapt. Behaving like a cavern, this unassuming underground world isolates species as they venture deeper into the system. From the surface, magnified windows and temperamental doors hint at the world below ground.

Tanks and tubes in the context of the working model.

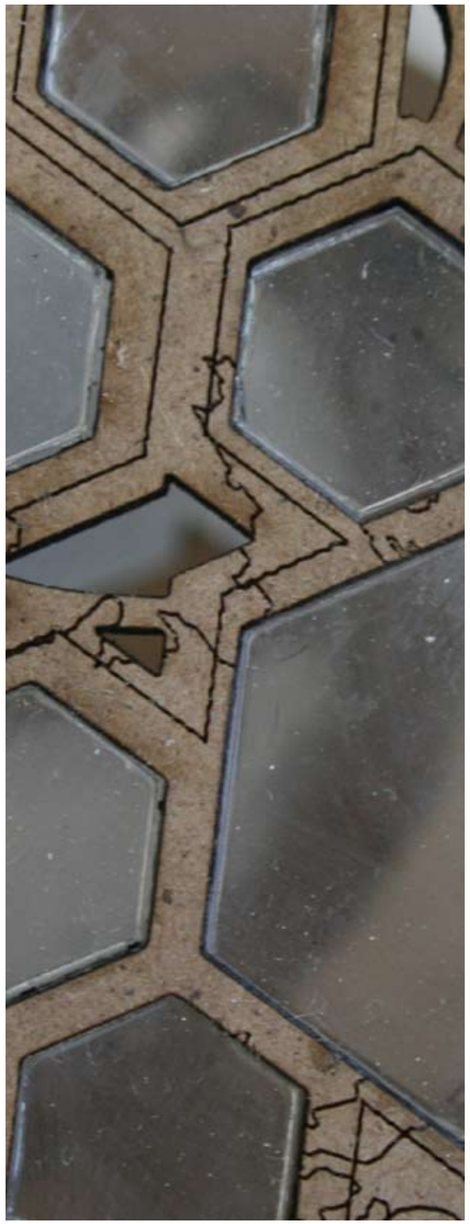


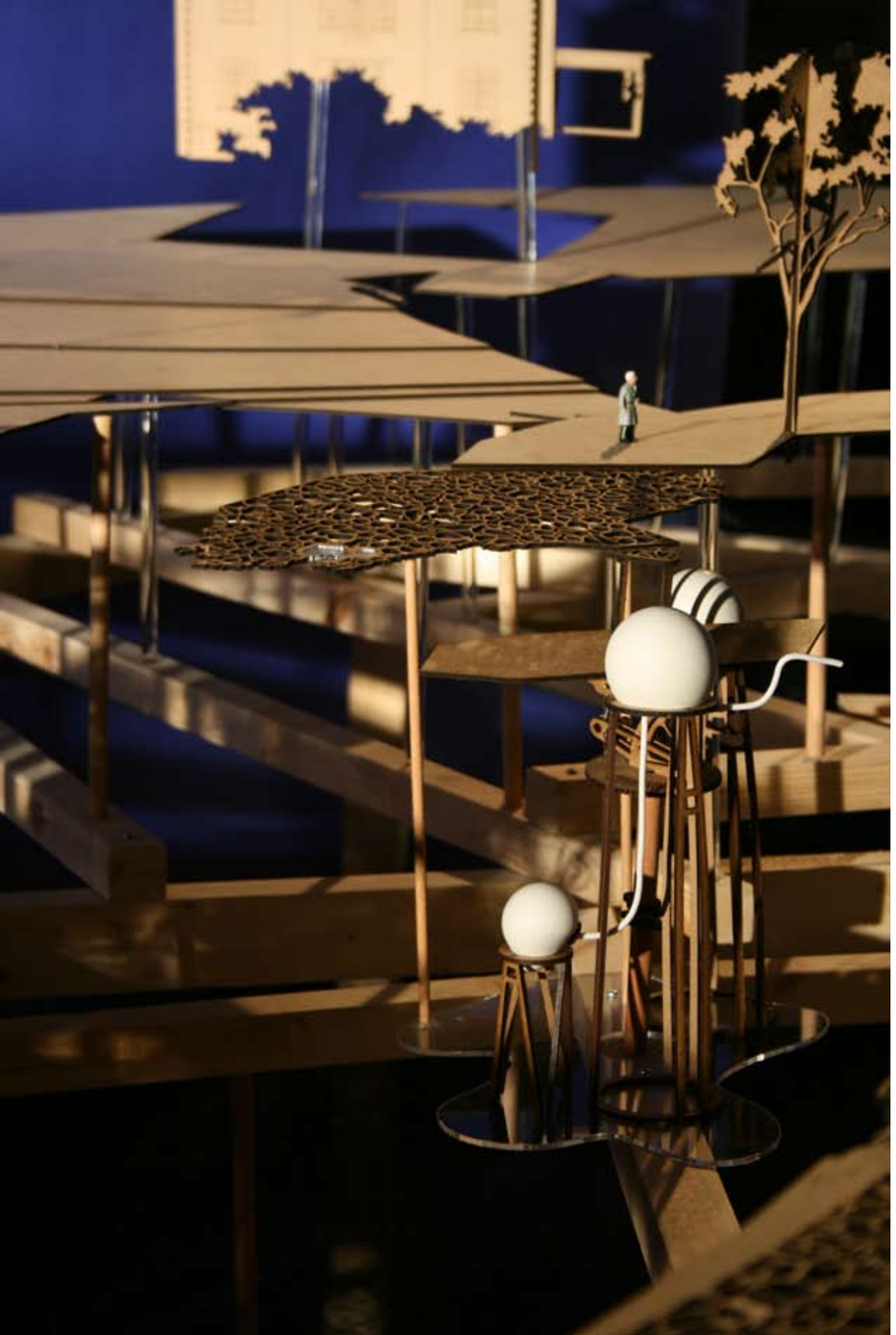


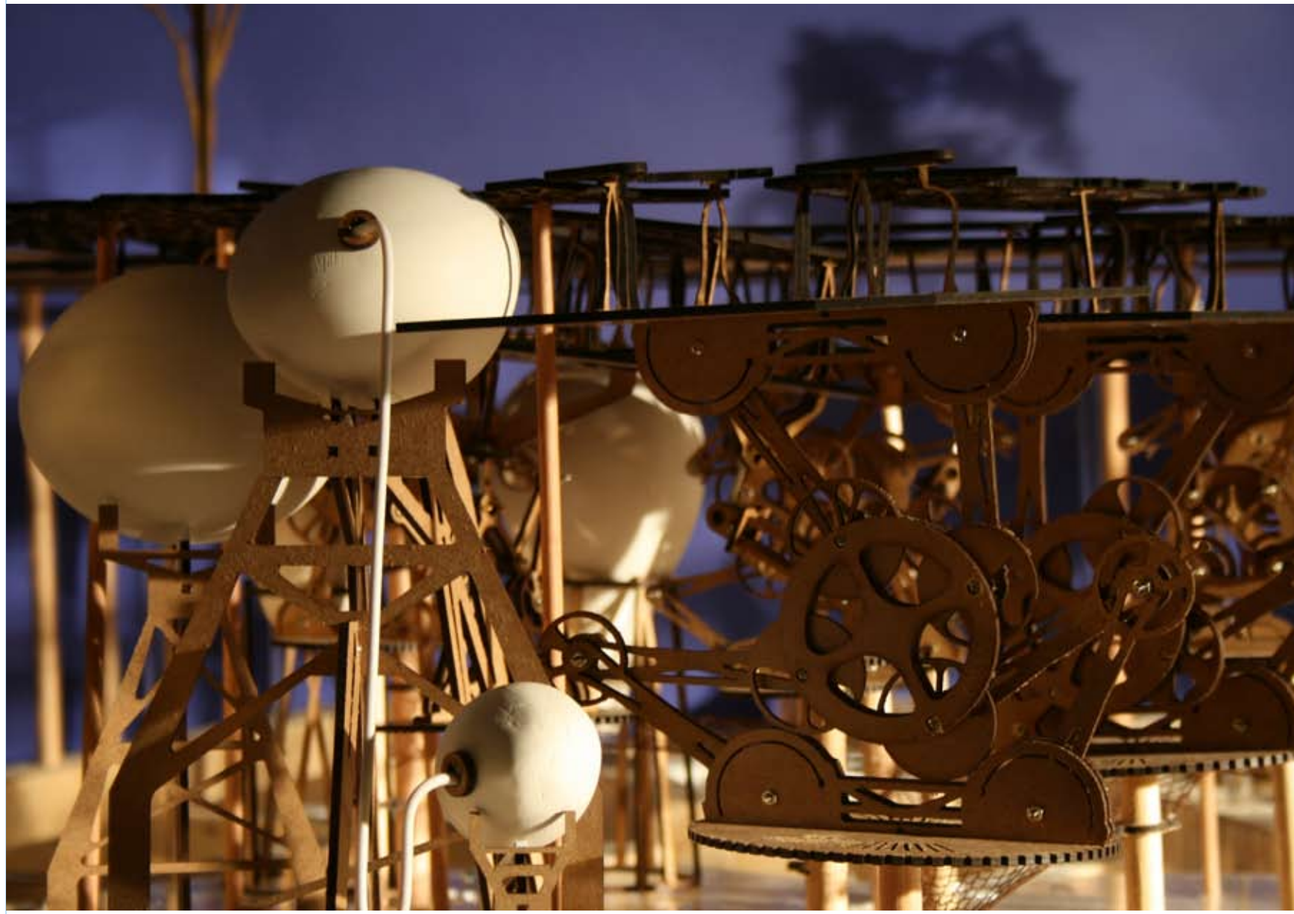
Some of the starter species chosen for the project.

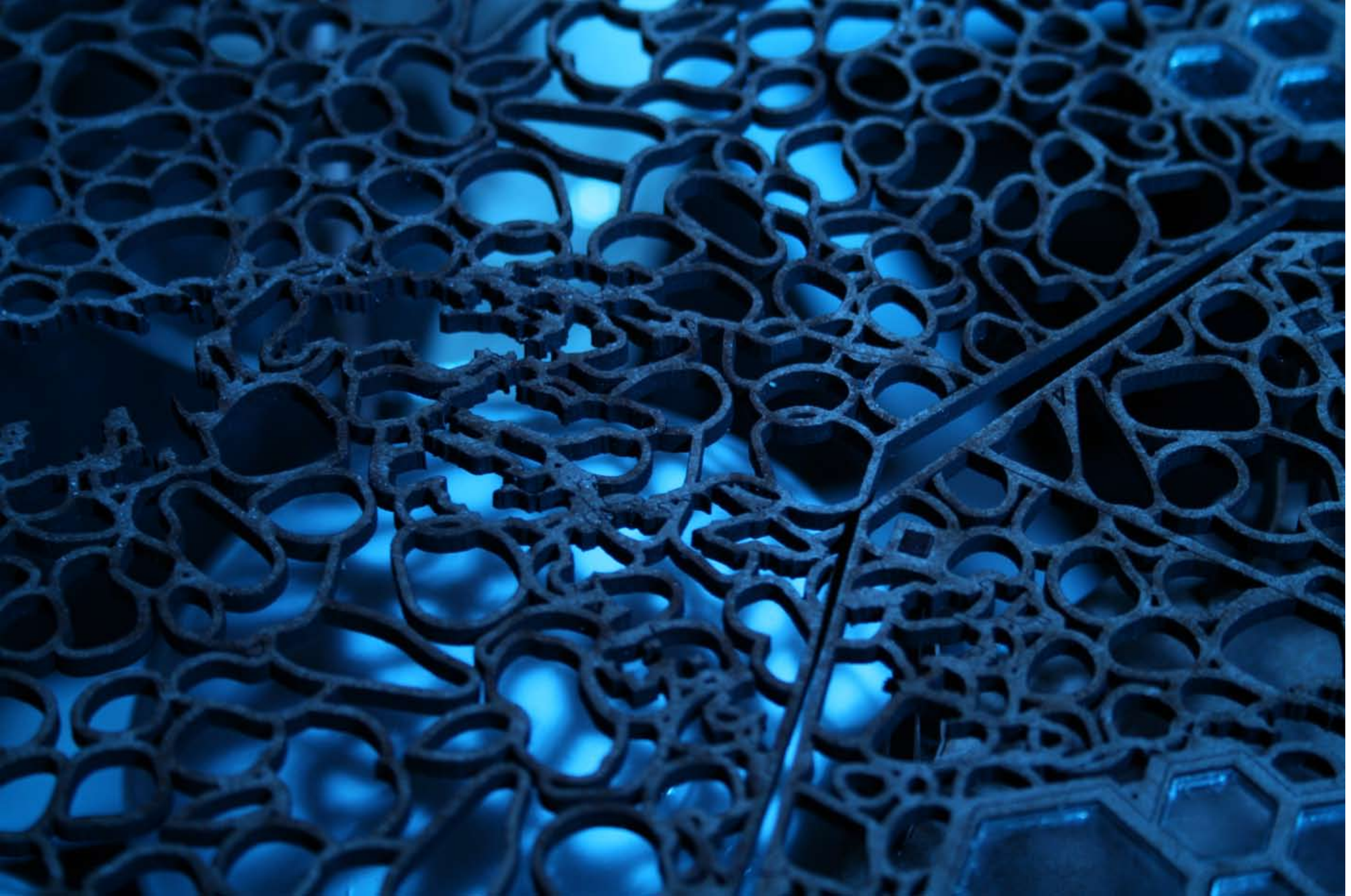
FROM TOP, CLOCKWISE: Japanese Cherry Tree, Hen & Chicks, Large Lillypads in Japanese Pond, American Elm tree foliage, and black grass.

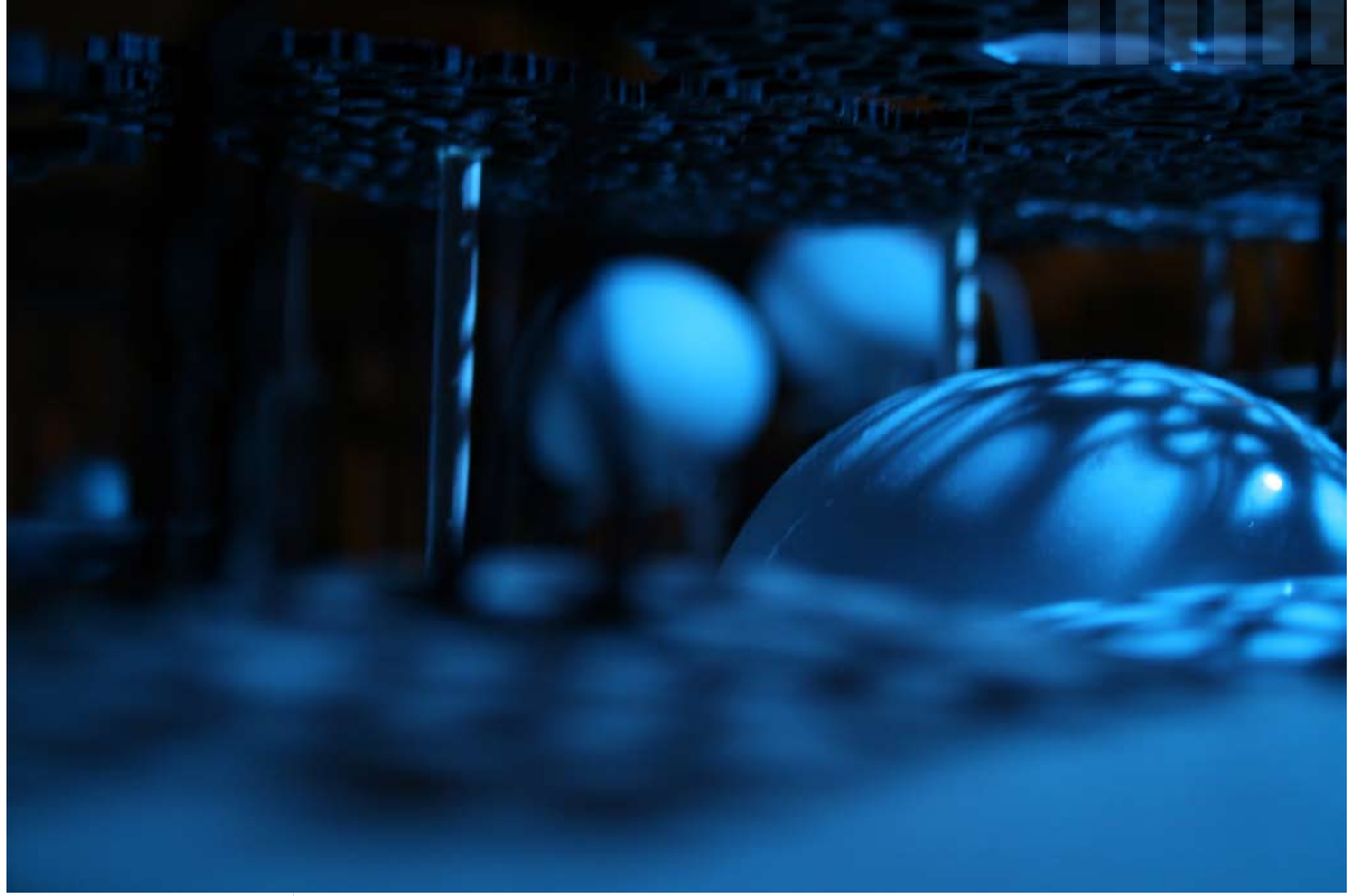
Photograph of Cheery Tree taken by Kaili Brown.

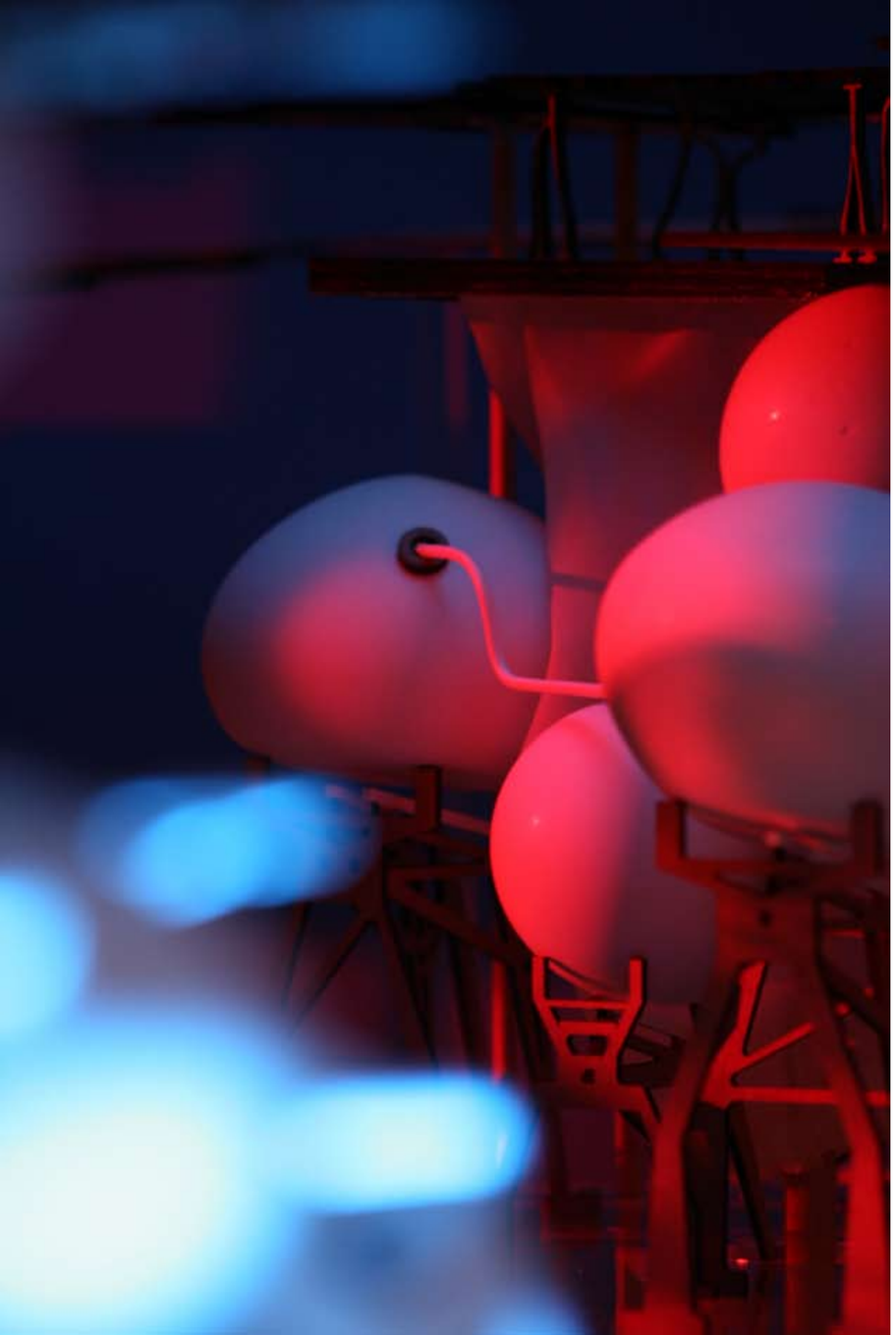


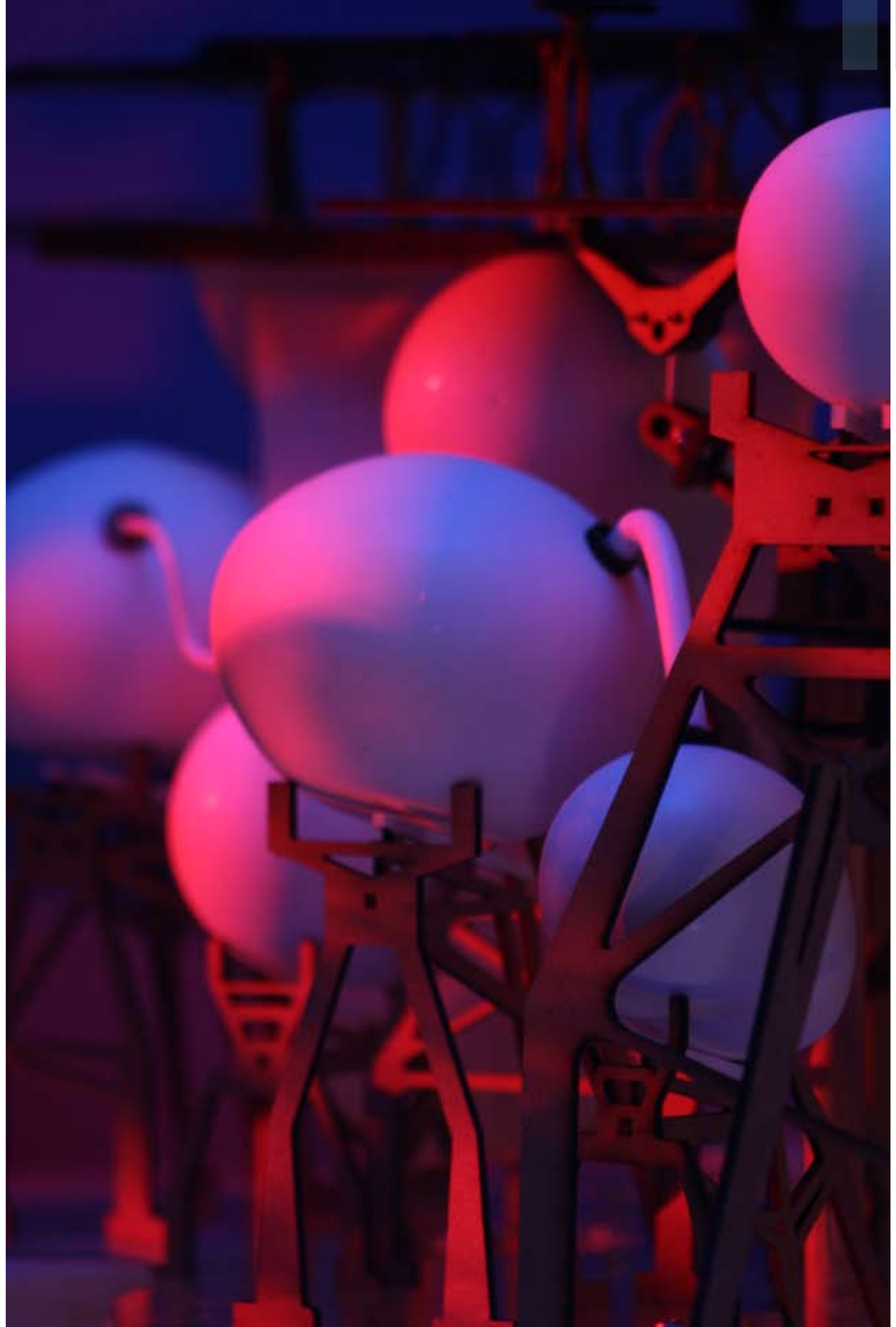




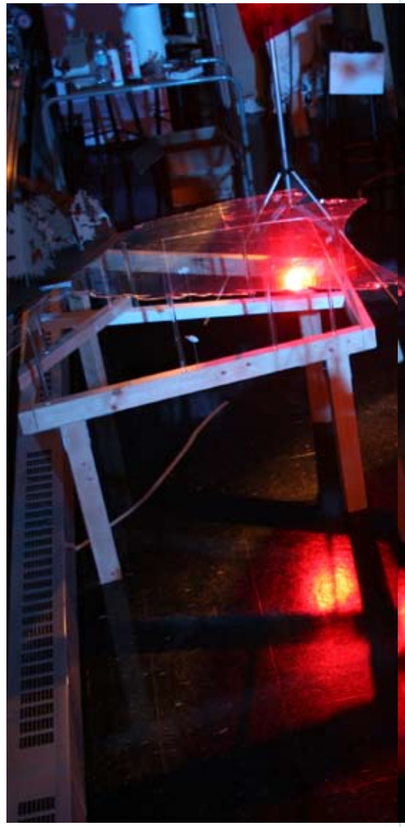


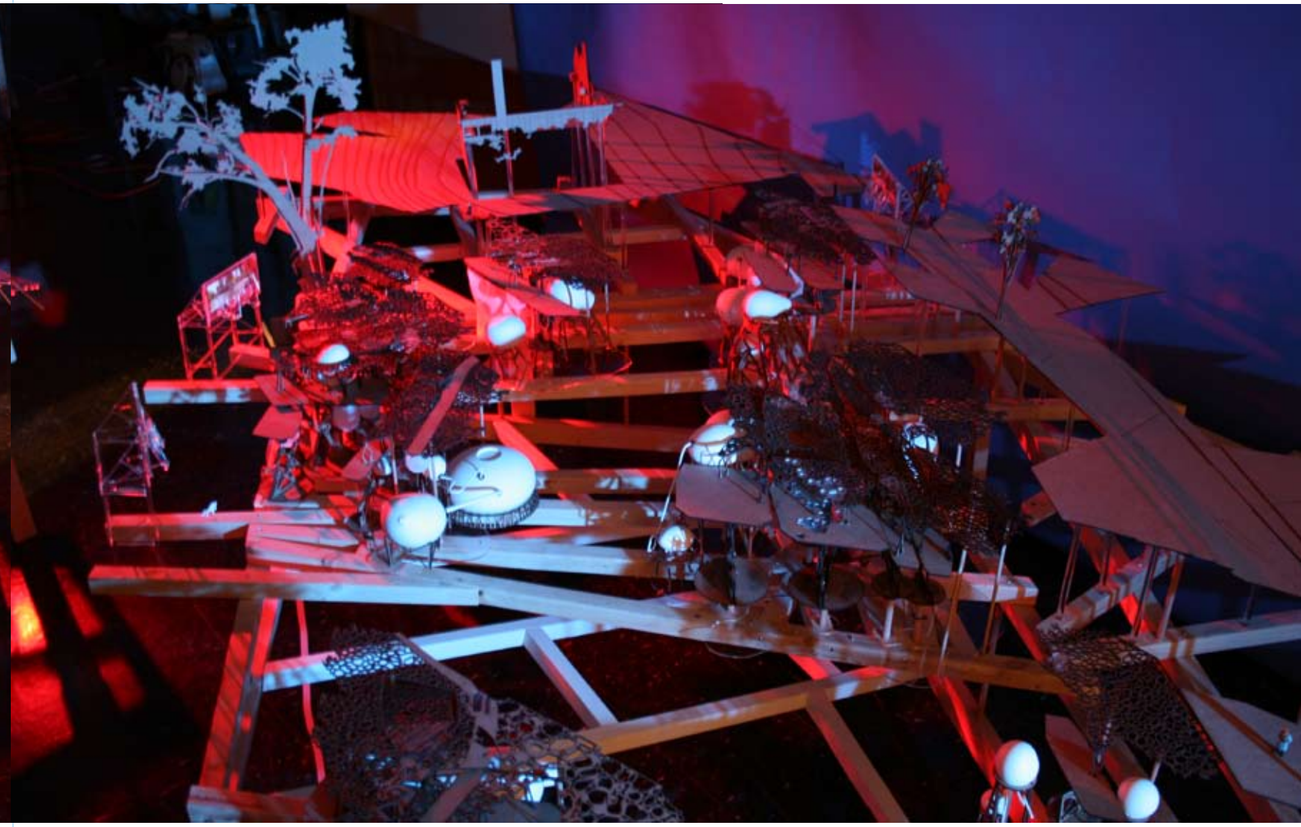


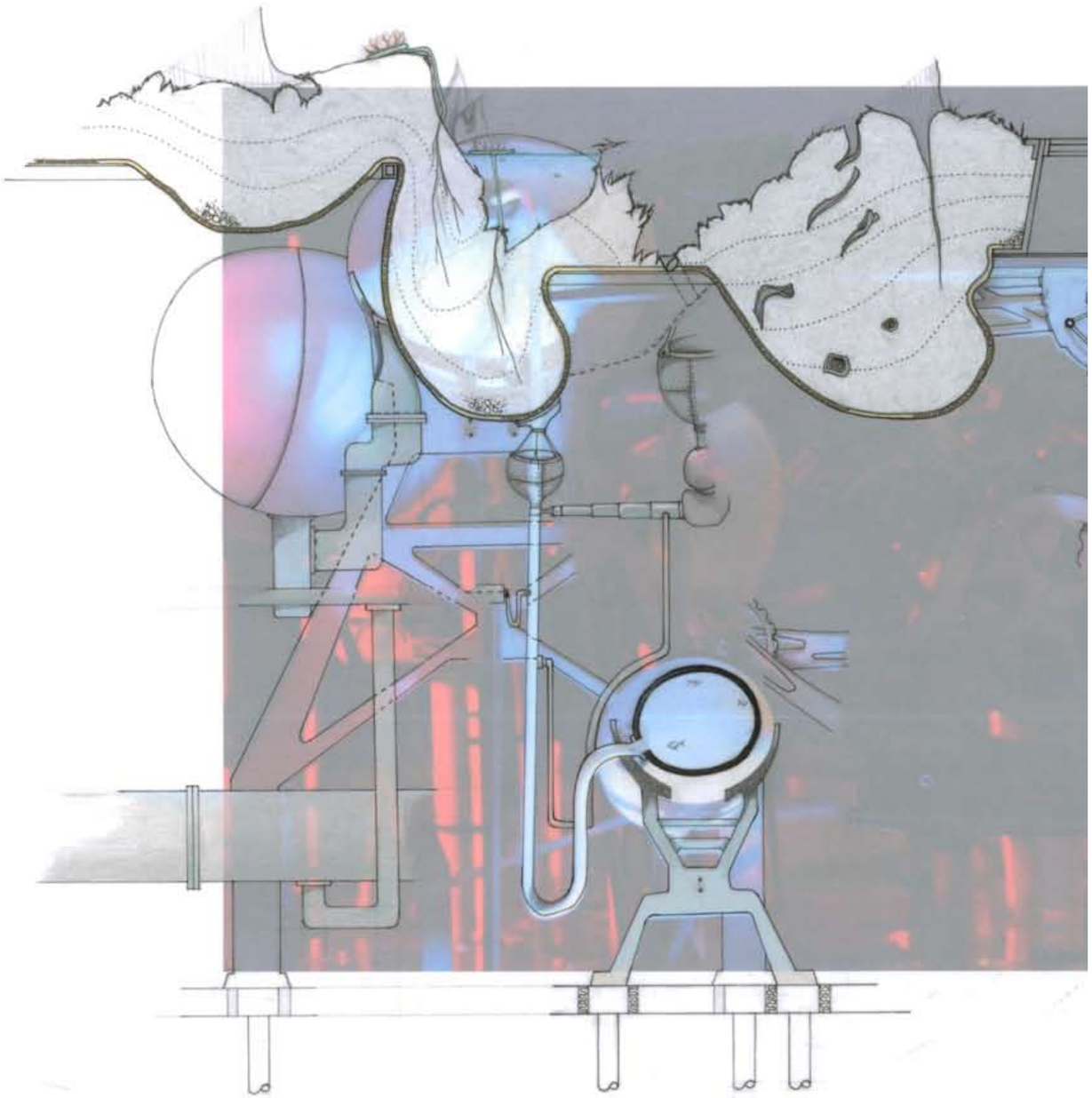


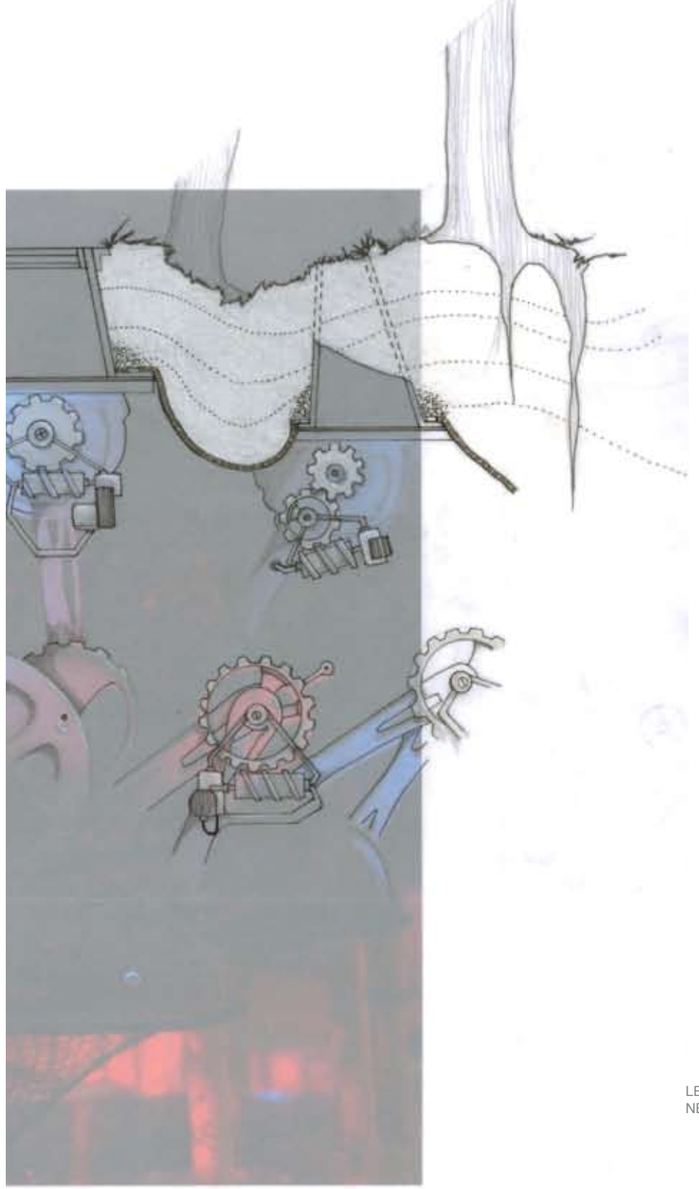


LEFT: Image of root column.

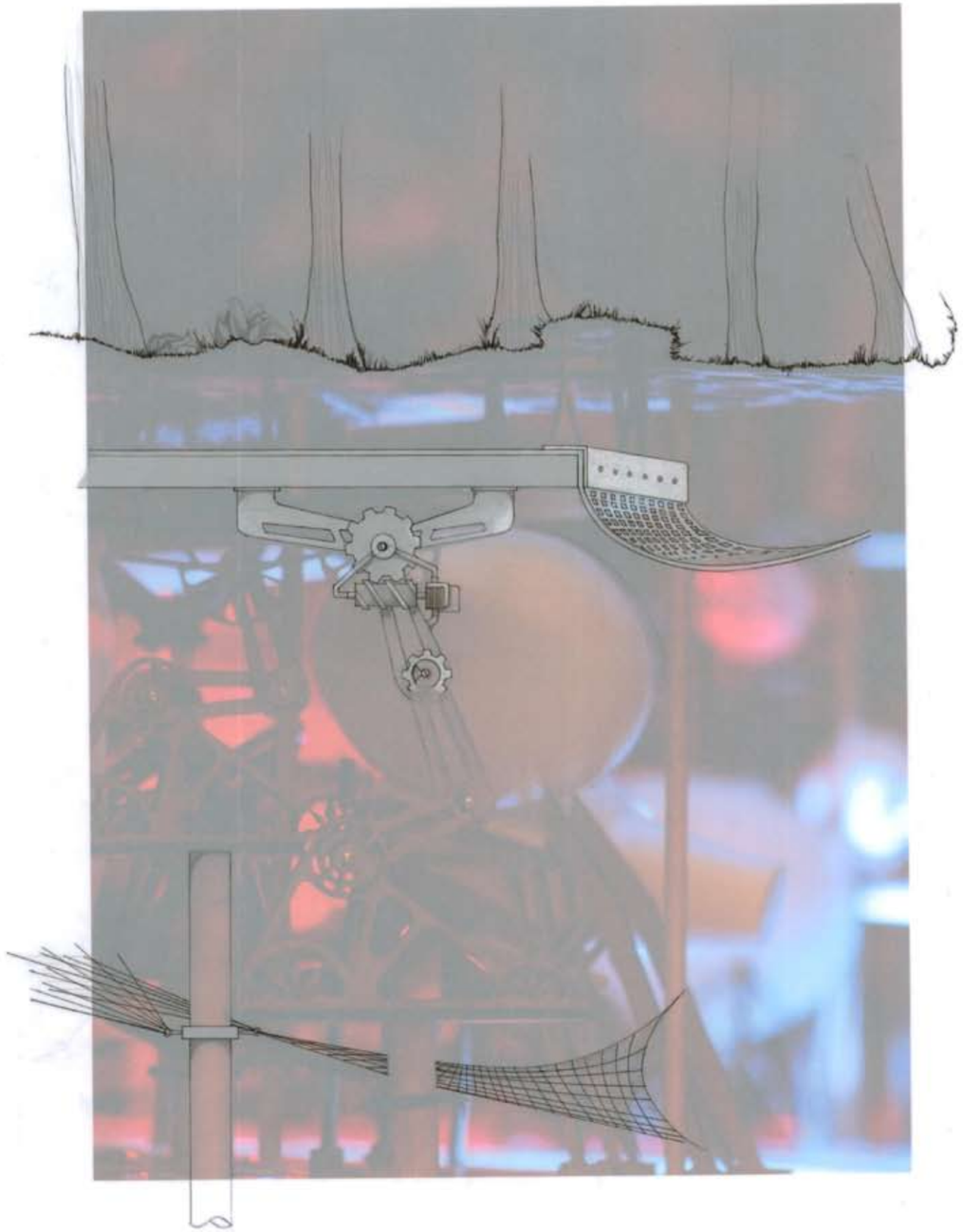






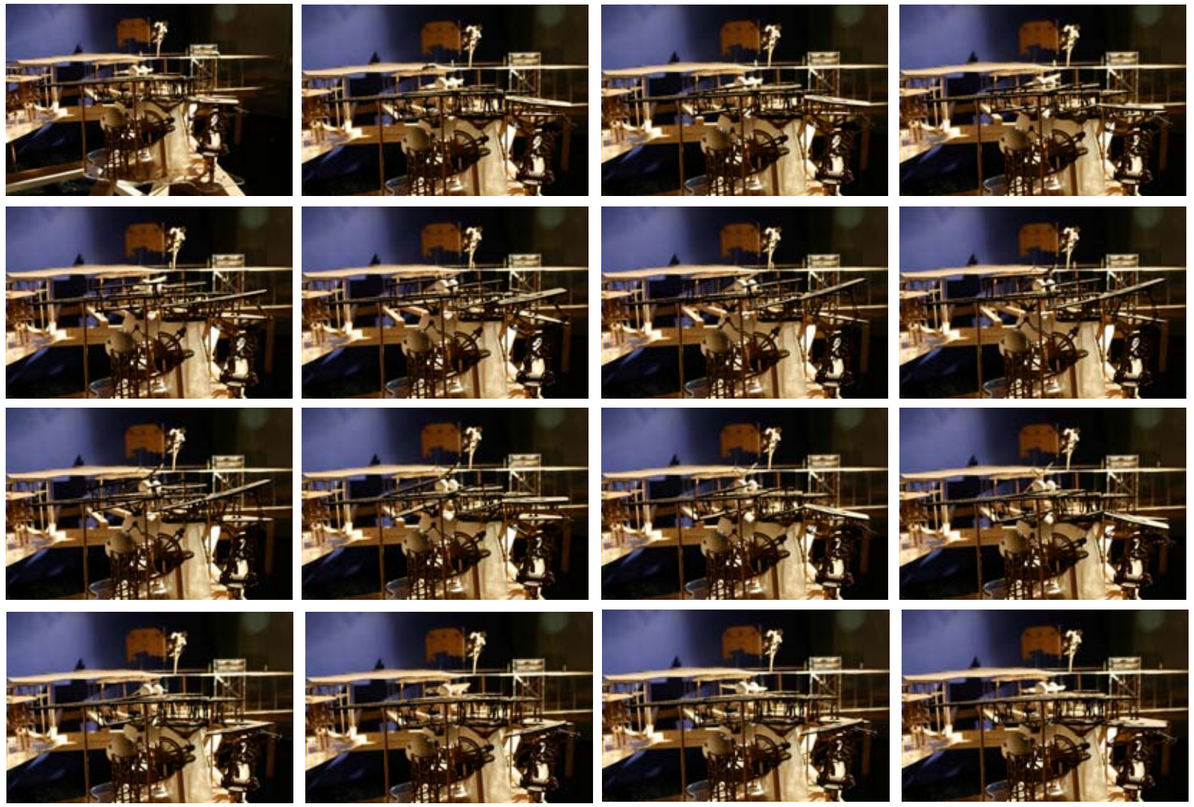


LEFT: Sectional drawing of the earths depth.
NEXT PAGE: Sectional drawing showing steel mesh support.



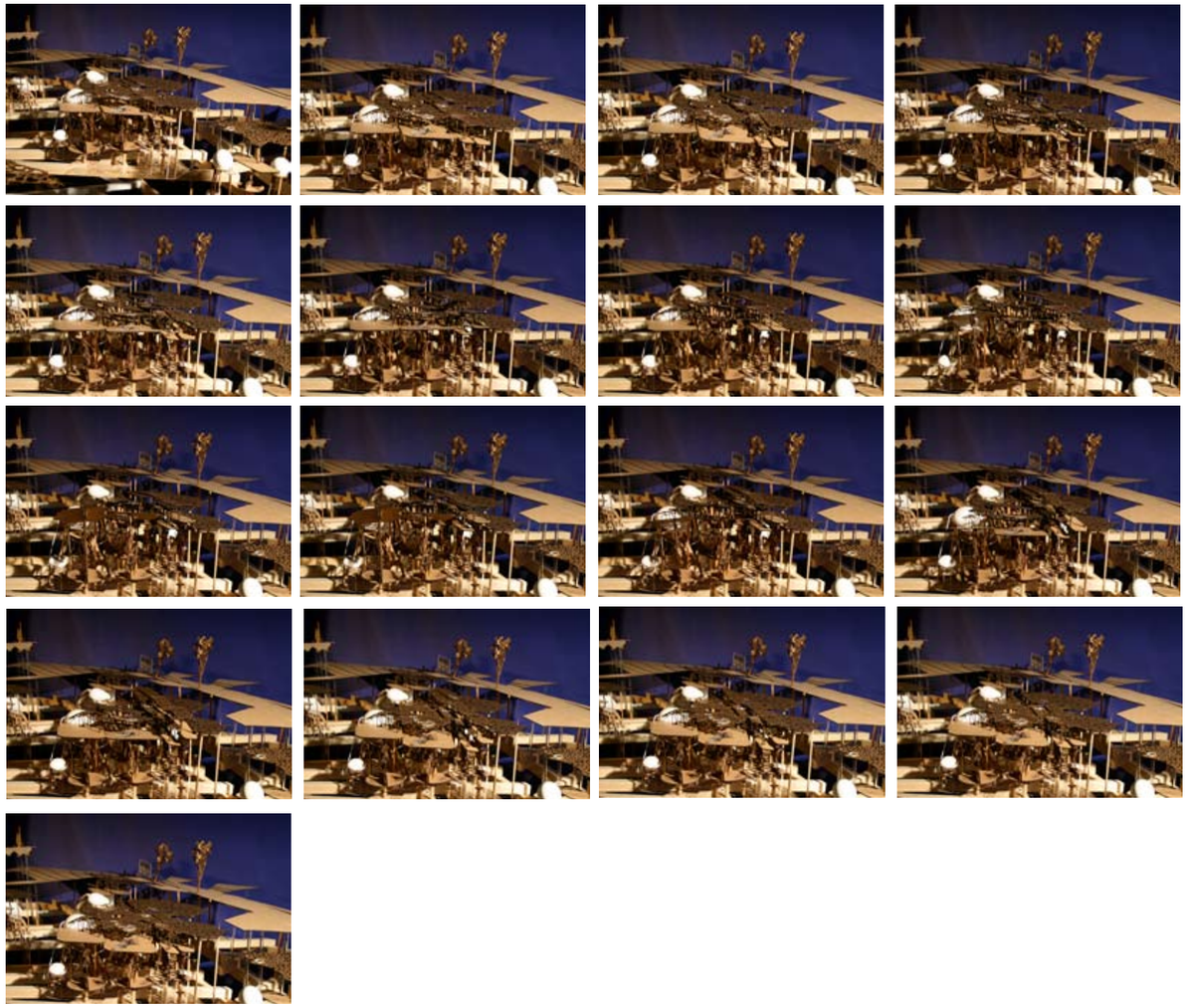
Above, the soil is a sand-based artificial composite that allows maximum filtration from the water on land, into the tanks below. To achieve the geographically displaced solar alignment that exists between Tokyo and Winnipeg, the parcels of land are programmed to be in constant competition with one another. The architecture exists not only as a vessel for activity, but it also becomes directly integrated as part of the living system. The space, not so distant from an autopoietic being, would have its own system, own agenda, and specifications for being.

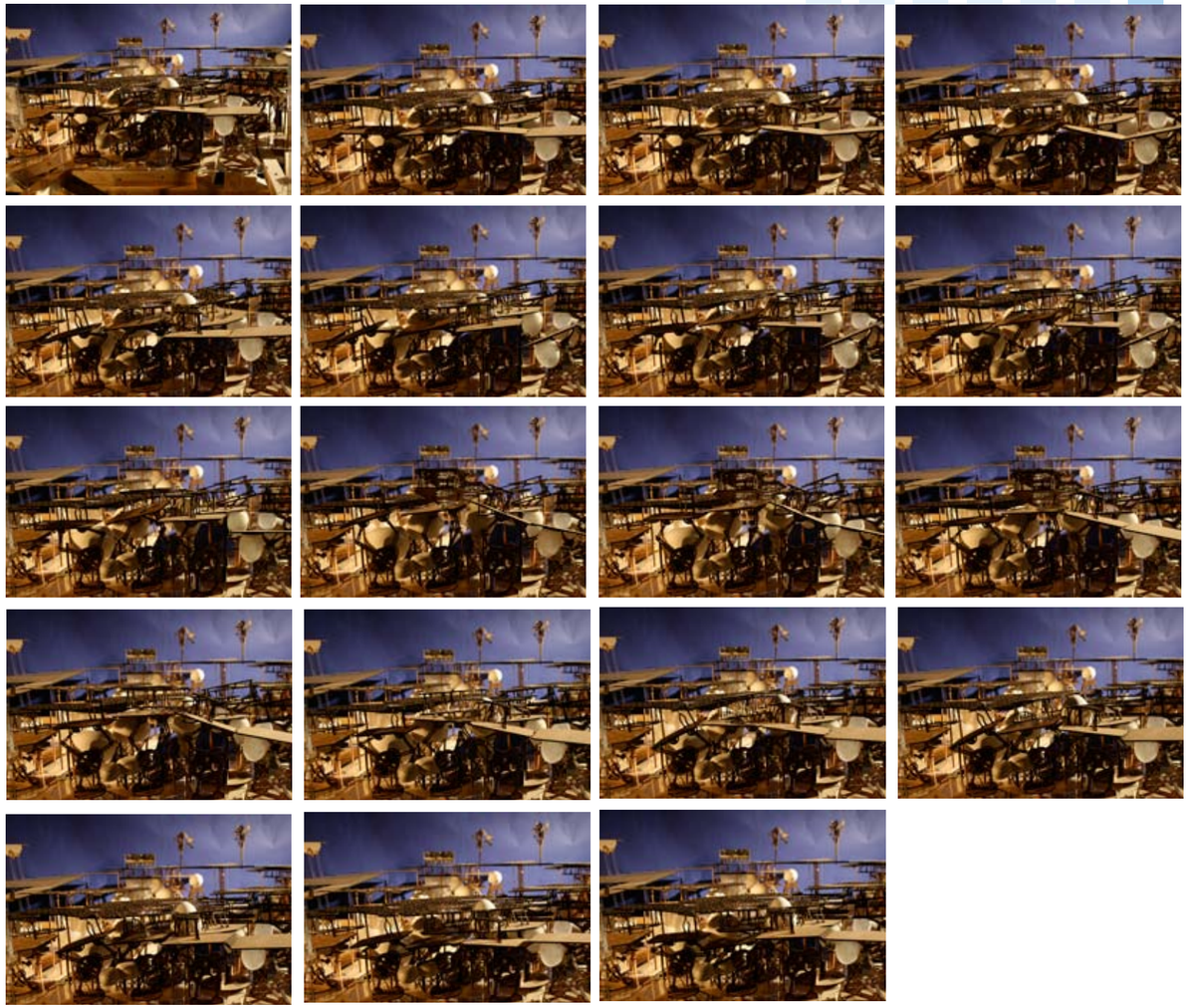
I have created a place dissembled through signs, experience, and collective abstract understandings of displaced elements in the environment. It is my intention for this space to be experienced in a different way each time we come across it, by shifting and changing ones perception of their character in the world.



Stop Motion Animations demonstrating the movement of the land parcels, which are raised to obtain the angle of the sun in Tokyo. The final animation demonstrates the movements of water across the surface and into the tanks below.

Photographs are taken with ‘real time’ solar angles. Sun number One is positioned at 7am Tokyo time, and Sun number Two is positioned at 5pm Winnipeg time.





Footnotes

[1] The soil south of the Manitoba's great lakes in the Manitoba lowlands, is the resultant formation from when it was the bottom of Glacial Lake Agassiz (Everitt, J., Stadel, C., & Welsted, J., 1996, p. 19-20).

[2] Digging a hole through the center of the earth was achieved by using the 'dig hole' tool available with the Google Earth Program.

[3] Referring to both Einstein's special and general theories of relativity.

[4] Where night occurs in both spaces simultaneously.

[5] "The saline aquifer is a beneath us partially as a result of glaciation - amoung other geomorphological forces. There have been many different boundaries, inlets and outlets for the inland seas that have covered our part of North America over the last several 100,000s of years. At times the seas have been saline, and saline aquifers have been formed in two main ways; 1. direct intrusion downward through relatively porous, saturated sea-bed material and 2. intrusion through porous tilted beds that daylight into the sea bed. These processes result in relatively horizontal aquifers and 'pockets' of saline water along the slope of the bedding planes in the second case. I believe the saline aquifer on the west side of the Red River is a result of the first process. It is not likely that it is a result of the most recent glaciation - if so, it was early in that period." (T. Krahn., personal communication, August 19, 2008).

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