

**Richard He**  
**Creative Portfolio**  
2018 - 2021



Architectural Design  
Graphic Design  
Visual Representation

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## Architectural

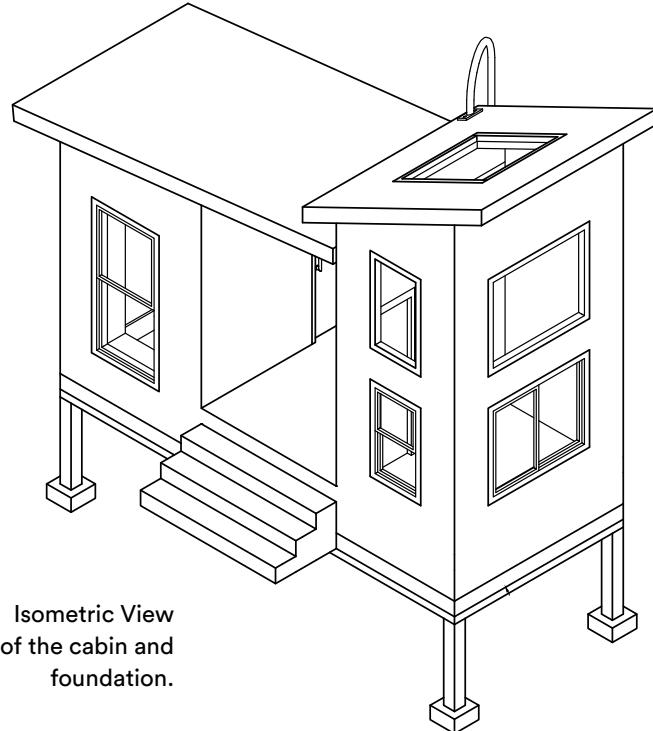
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## Graphics and Representation

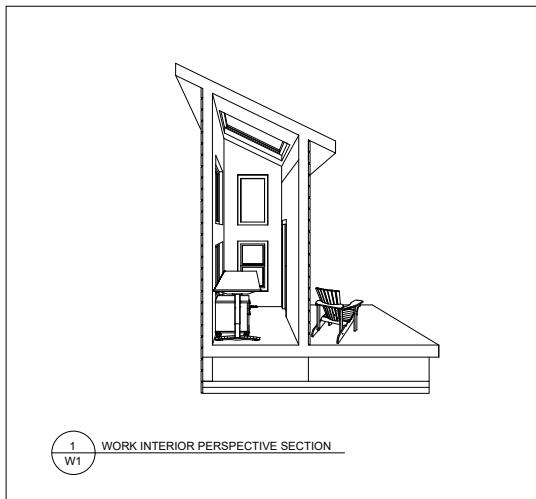
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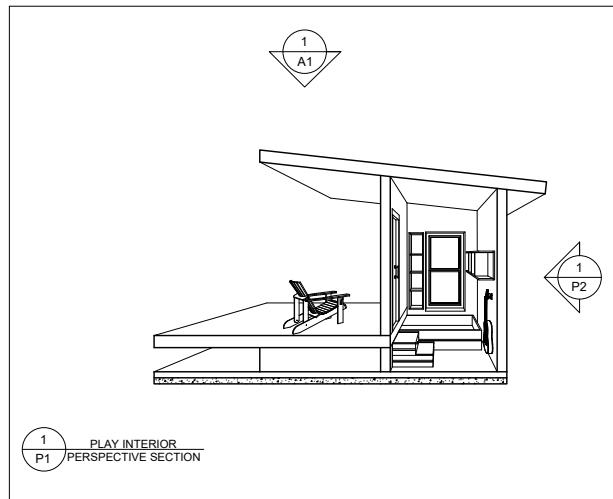
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Isometric View  
of the cabin and  
foundation.



Perspective section of the “Work” side.  
Linework by Richard He.  
Additional Detailing by Athena So.



Perspective section of the “Play” side.  
Linework by Richard He.  
Additional Detailing by Ashten Fairhall.

## North Pole Cabin (COVID Cabin)

AE100 Concepts Studio  
University of Waterloo, Fall 2020

In order to create a comfortable, productive space for Architectural Engineering students, we sought to divide our floor plan into two distinct buildings designed to allow for guilt-free relaxation and non-distracting workspaces.

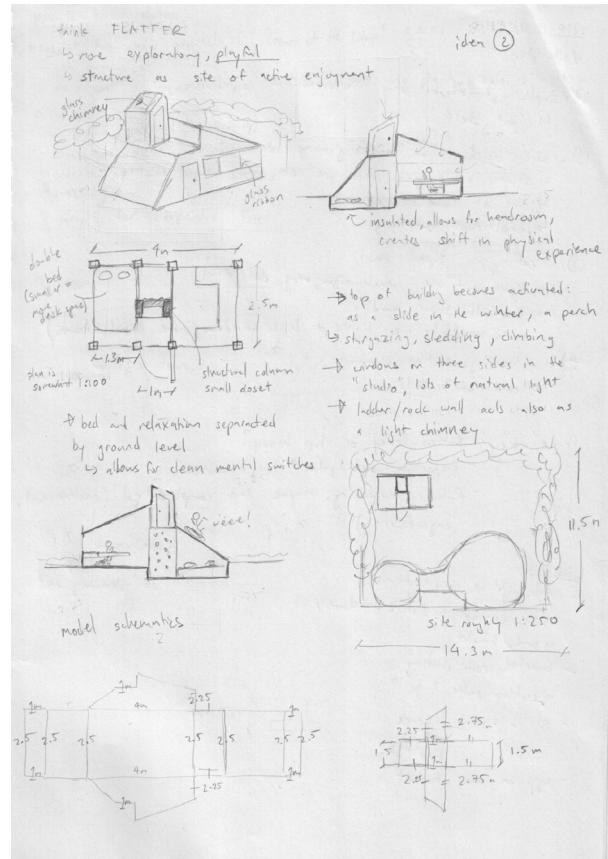
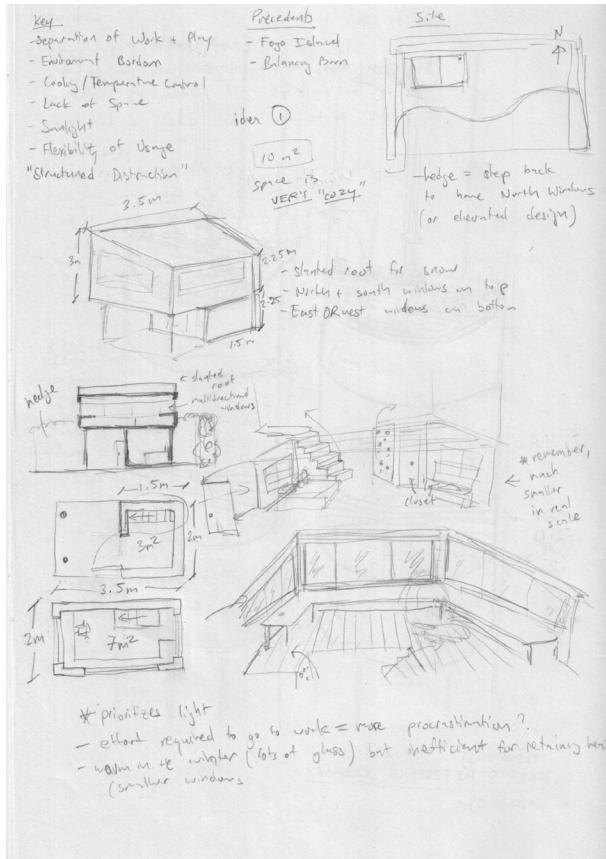
The concept of structured distraction is a key feature of the project, as the entire building itself is designed to allow for active interaction. The accessible roof, porch-like through-way and rock climbing wall are all ways for the user to use the building itself as a site for play.

*Designed with:*  
Ashten Fairhall, Athena So  
and Emily Wong



Render with Site by Emily Wong

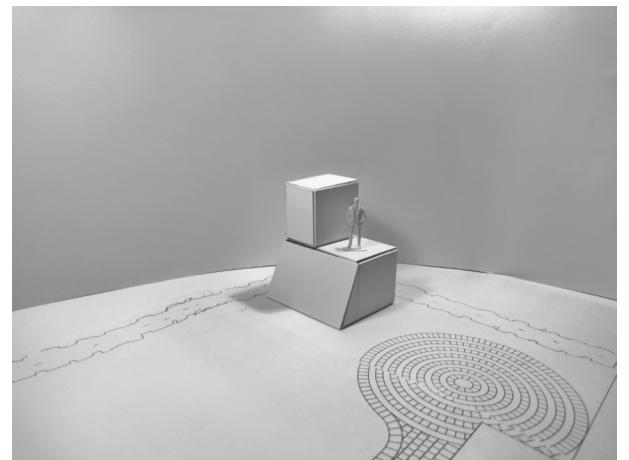
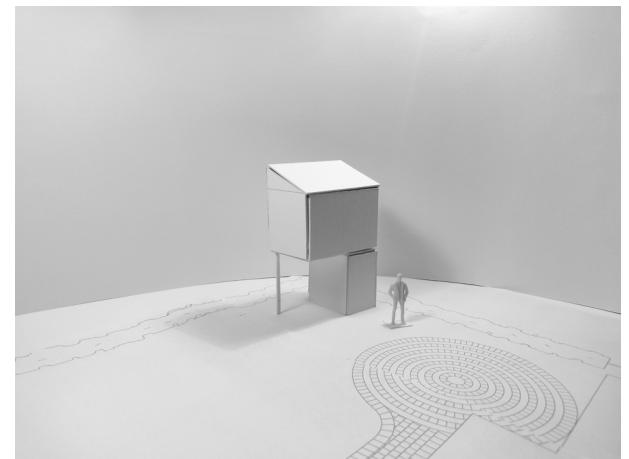
## Early concept designs and parti sketches

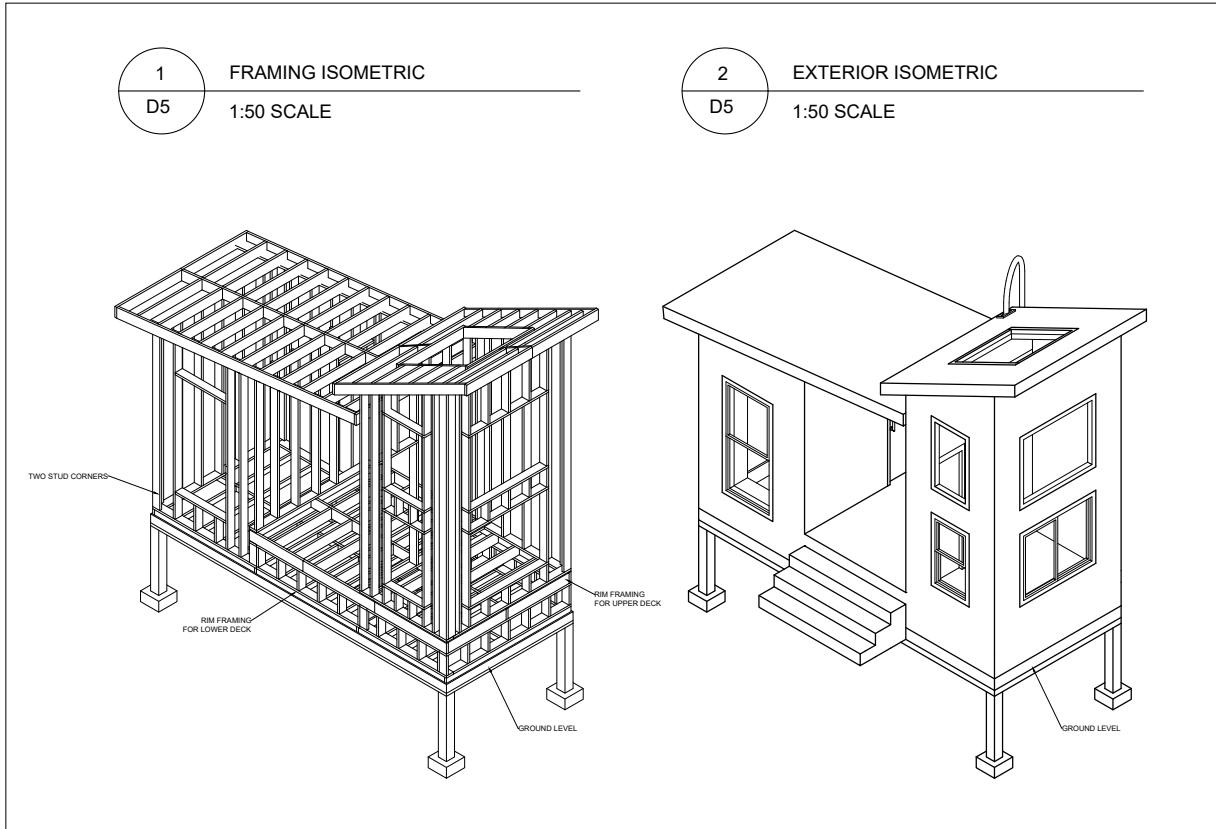


This design considered an elevated design, making use of natural light for working and focus.

This second design explored creating an accessible roof and below-grade floor plate, creating a physical distinction between work and play mindsets, in addition to an interactive building envelope.

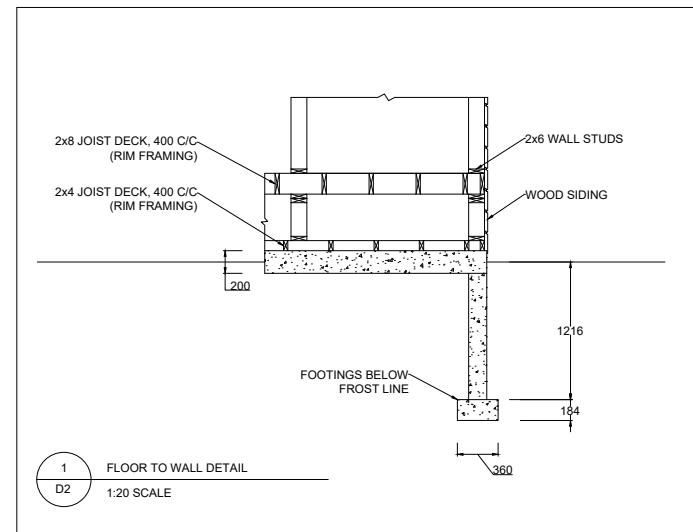
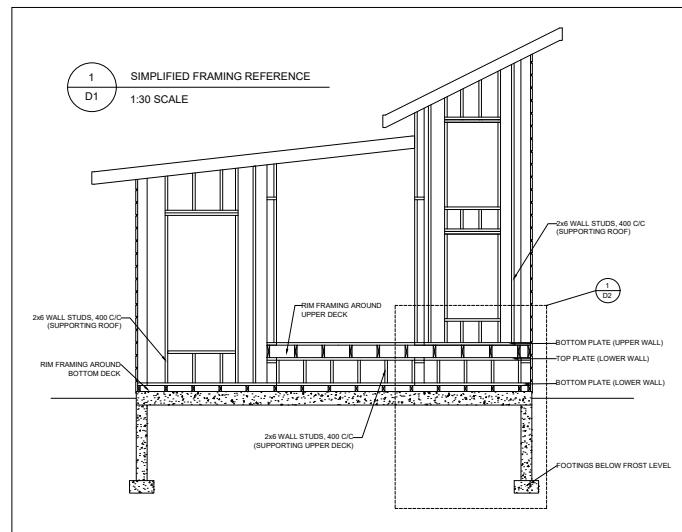
## Massing models used in ideation and brainstorming



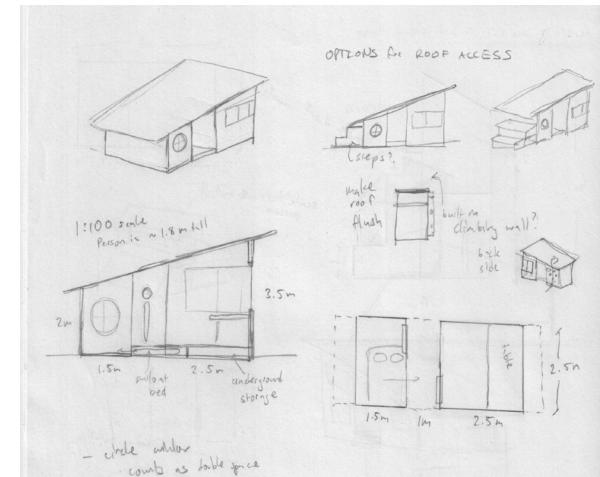


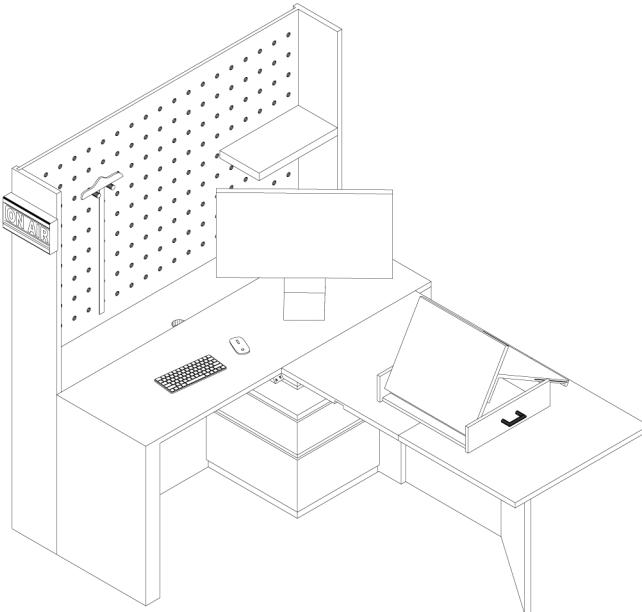
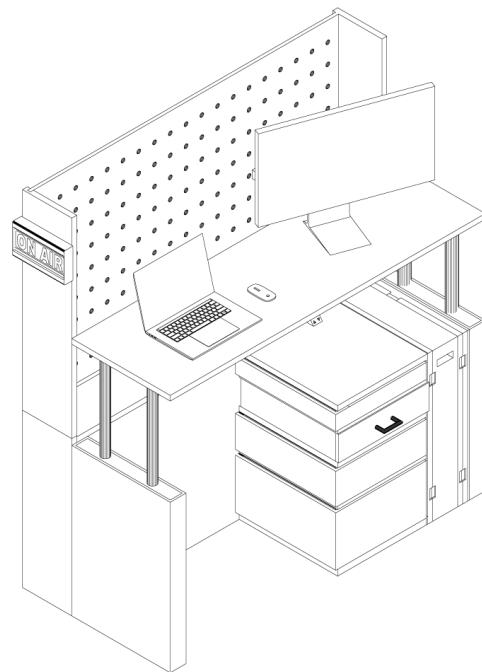
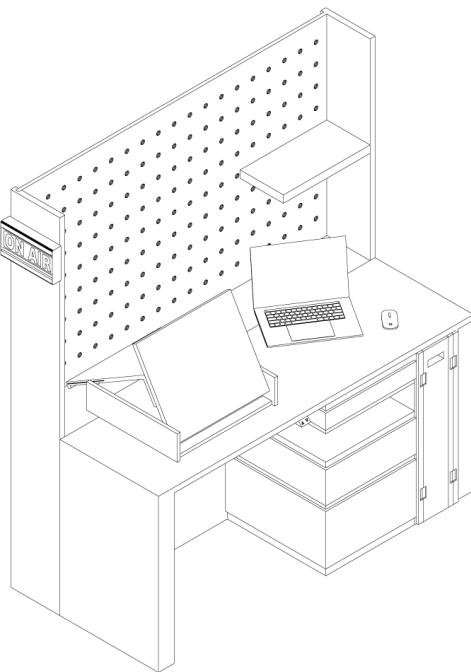
Above: Framing and reference isometric drawings.  
*These drawings were completed using a fully modeled wood frame system in Rhino, with final linework and annotations completed in AutoCAD.*

**Right:** Framing and foundation details.  
*These are based on personal research  
into Ontario Wood framing Guidelines,  
and was done prior to any substantial  
education in structural design.*



Below: Concept sketches of final design.  
*The final design consisted of two fully separated components.*





Various usage drawings.

## Teknik Desk

AE100 Concepts Studio  
University of Waterloo, Fall 2020

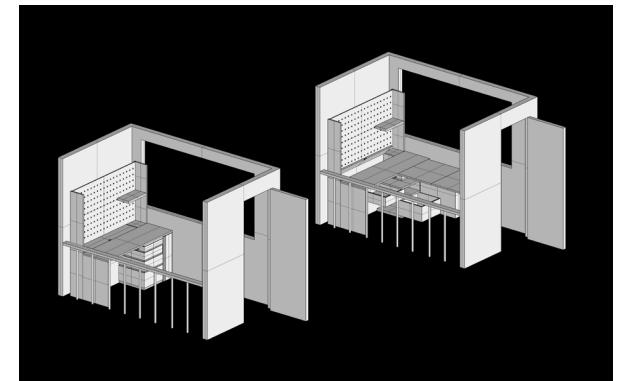
In a constantly evolving environment, architecture is challenged to be as flexible and adaptable as the people that inhabit it. This was a primary focus of *Teknik*, our workspace solution for the typical Architectural Engineering student.

Designed to allow for maximum comfort and productivity under multiple configurations,

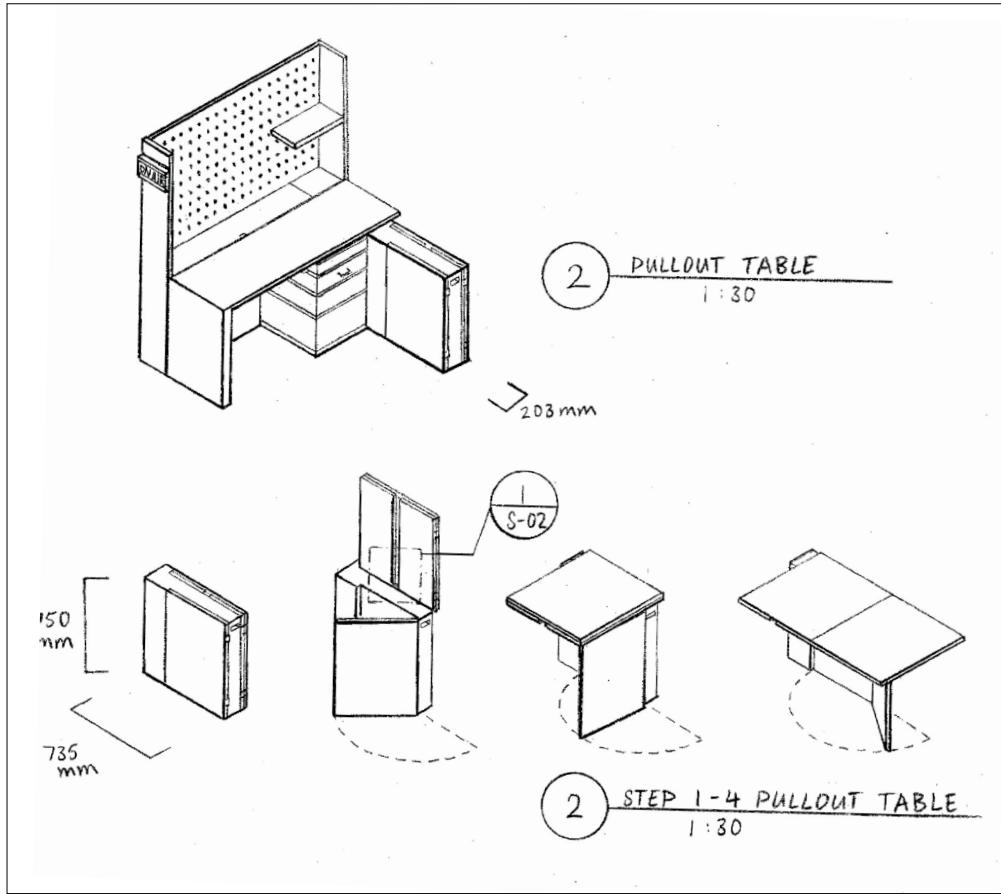
*Teknik* features an extendable desk, for additional workspace, a portable drafting box that can be stored as a drawer, and additional elements like an “On Air” sign, customizable pegboard shelving and a two-way drawer.

### *Designed with:*

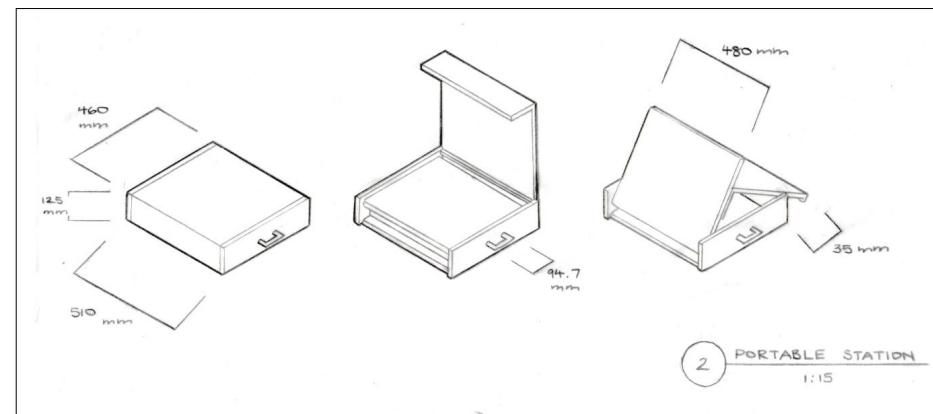
Ashten Fairhall, Athena So  
and Emily Wong



Rhino model screenshots, with site

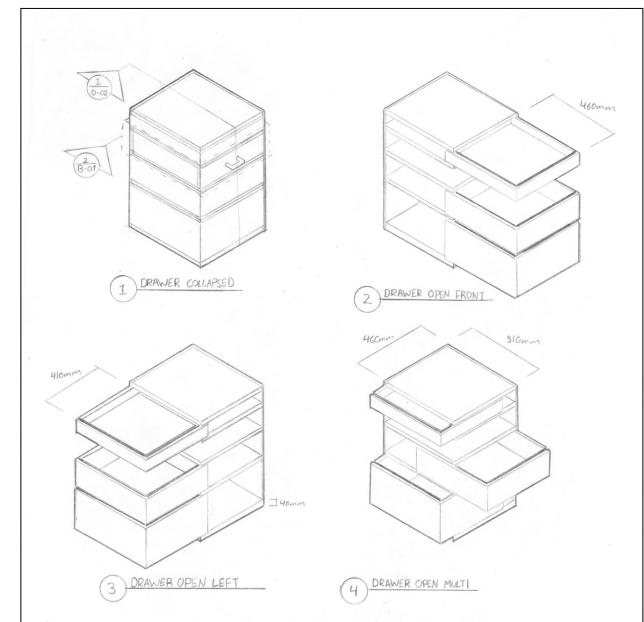


**Pullout Table Detail.**  
*Layout and  
linework prepared  
by Richard He.  
Drawings finalized  
and annotated by  
Athena So.*



**Portable Drafting Station  
Detail.**  
*Layout and linework  
prepared by Richard He.  
Drawings finalized and  
annotated by Ashton  
Fairhall.*

**Below: Multi-directional Drawer Usage Detail**  
*Layout and linework prepared by Richard He. Drawings  
finalized and annotated by Emily Wong.*

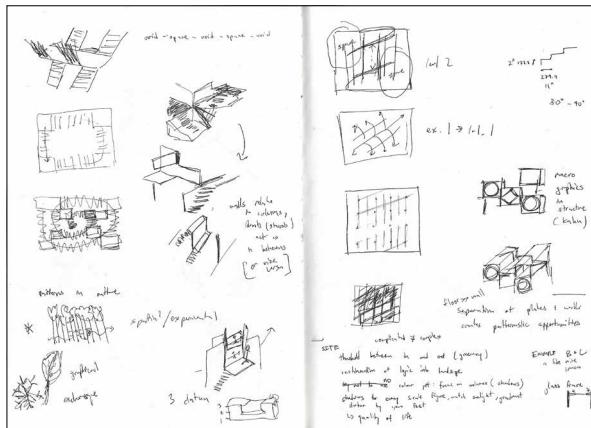
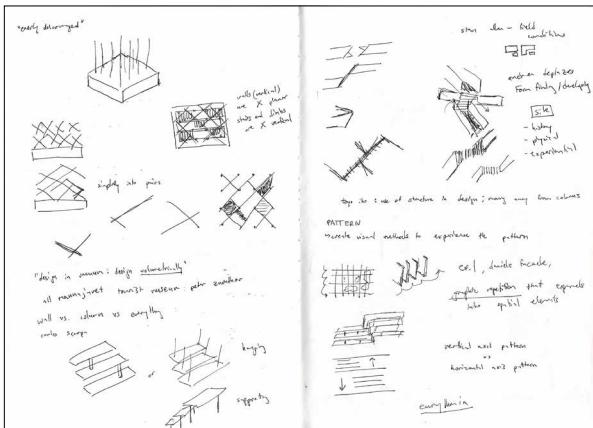


## 16 Column Grid

ARC201 How to Design Almost Nothing  
University of Toronto, Fall 2019

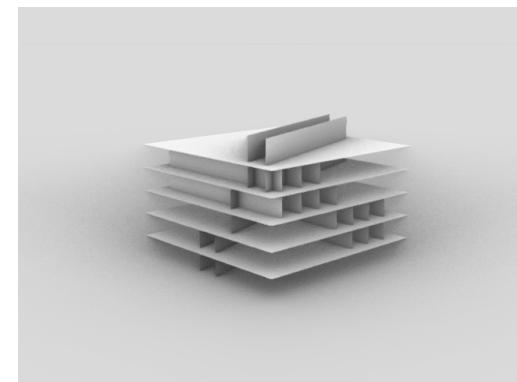
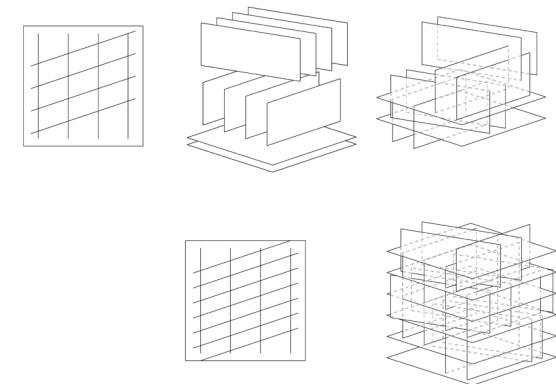


Render of final design completed using Rhino and Lumion.



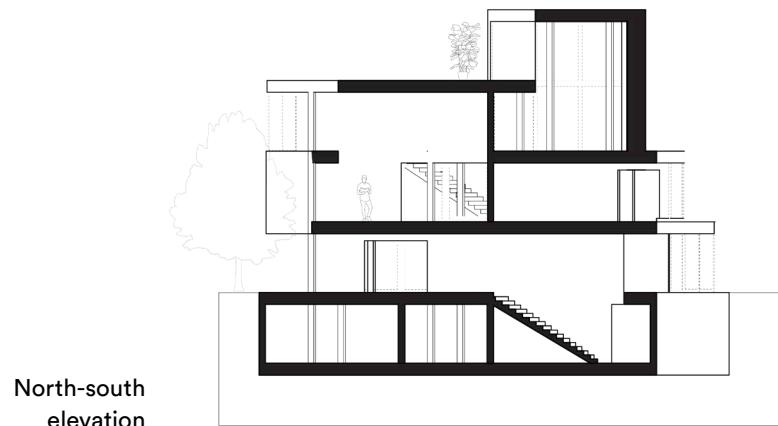
Early design iterations and concept sketches

This semester long project explored various responses to the traditional 4x4 column grid question, culminating with a proposal for a study space on a given site within the University of Toronto St. George Campus. This approach in particular examines the way forms are revealed through the interference of two unique pattern systems.

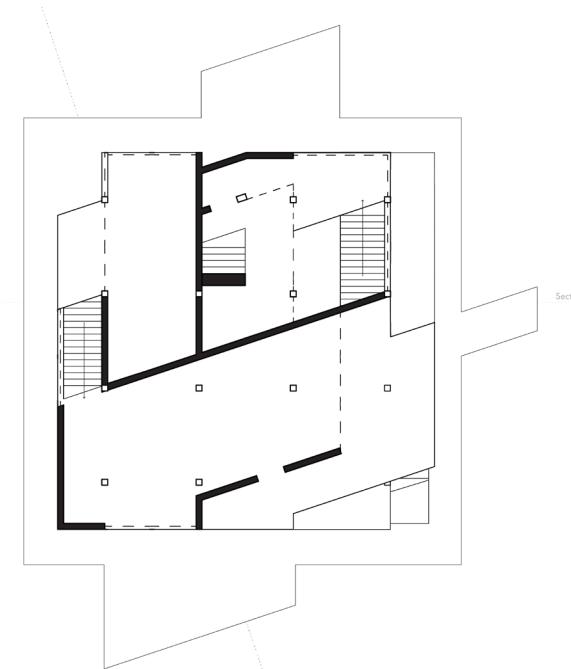


Early parti drawings and concept modeling

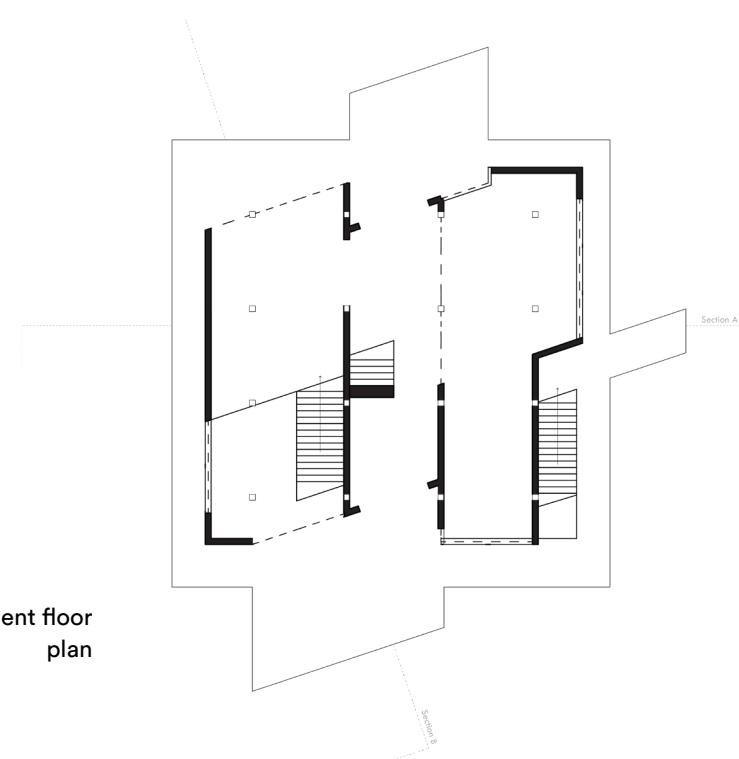
## Finalized Plans and Sections



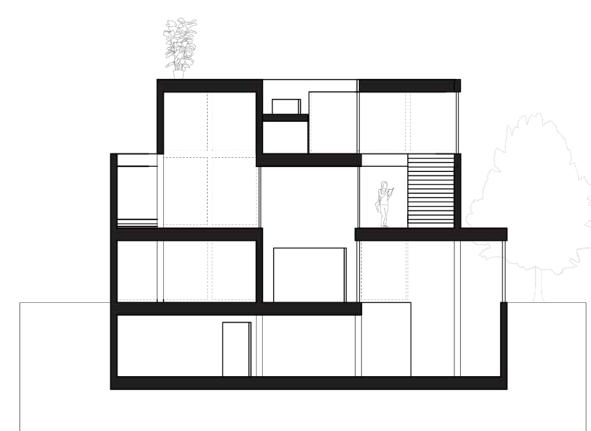
North-south  
elevation  
section



Upper floor plan



Basement floor  
plan



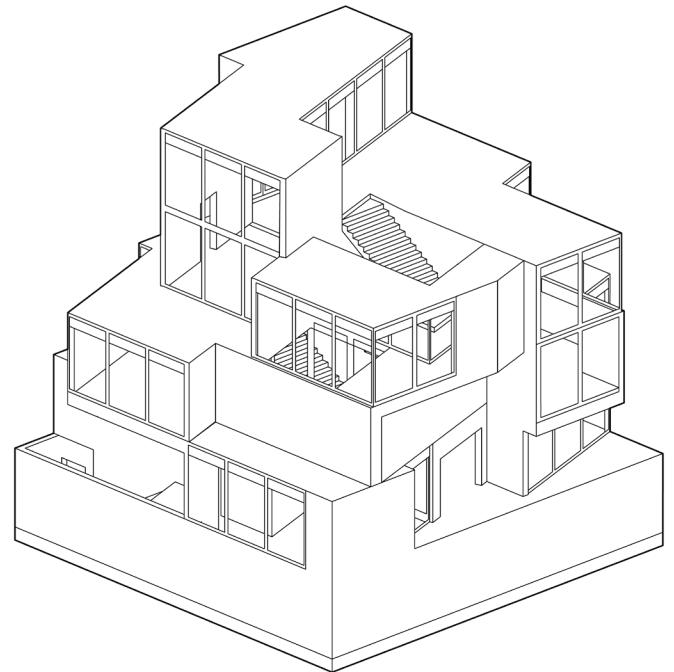
East-west  
elevation  
section



Perspective Section

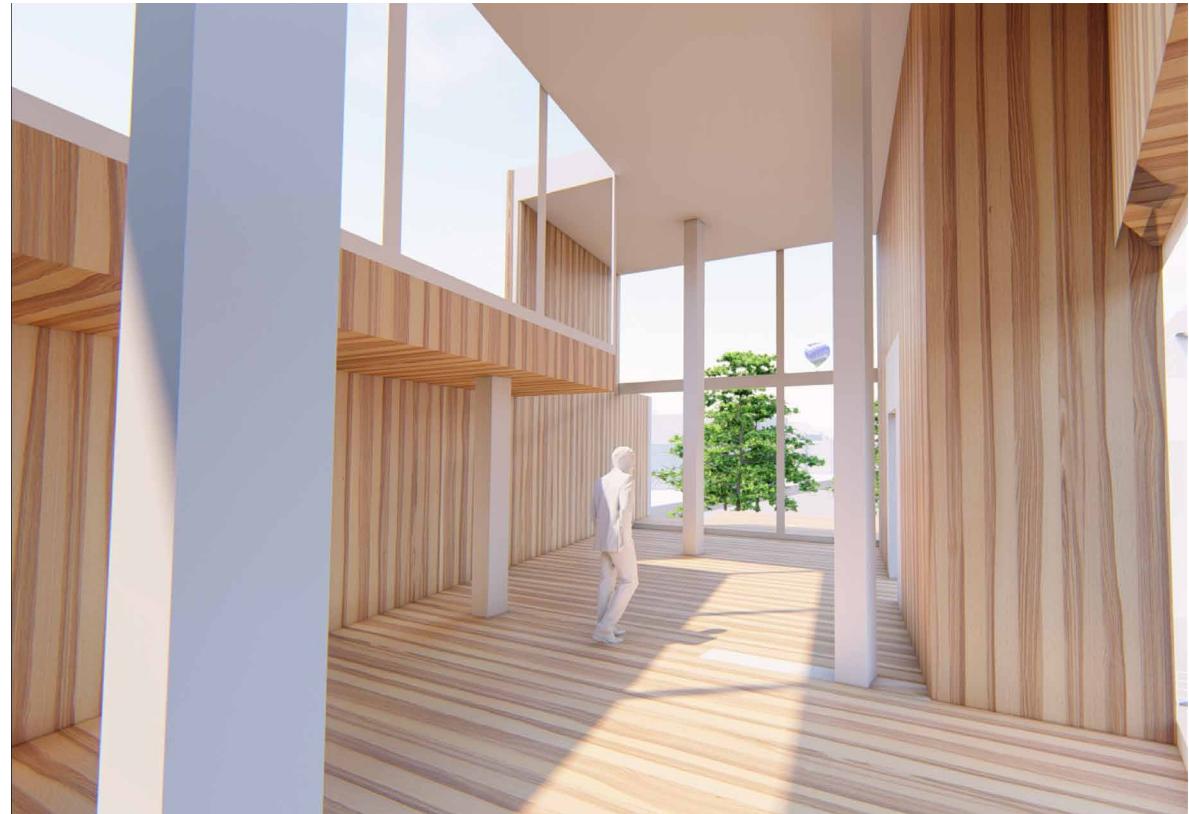


Nolli Map with Building Plan



Isometric Drawing

Interior Renders, made using Lumion



Second floor reading room, facing east



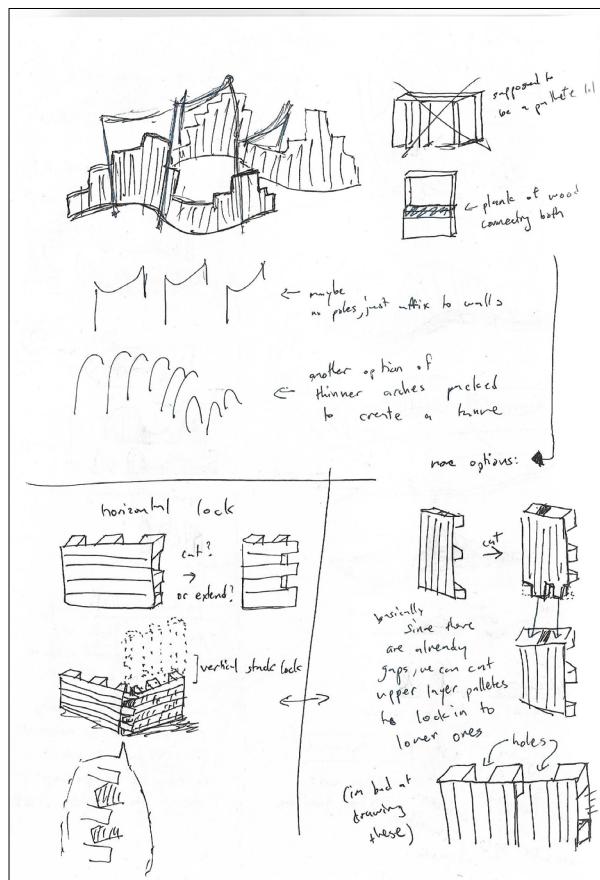
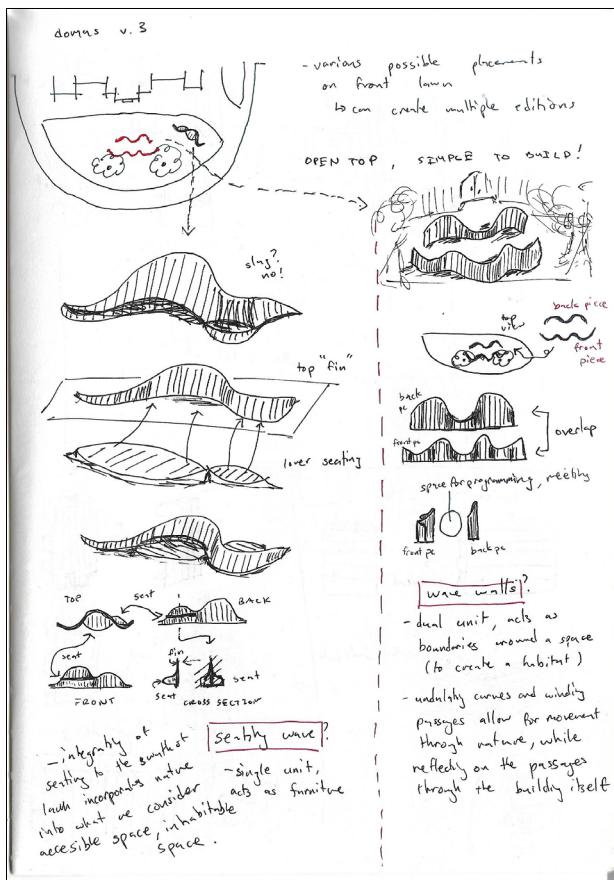
Third floor reading room, facing south

# DOMUS

Daniels Art Directive  
Summer 2019

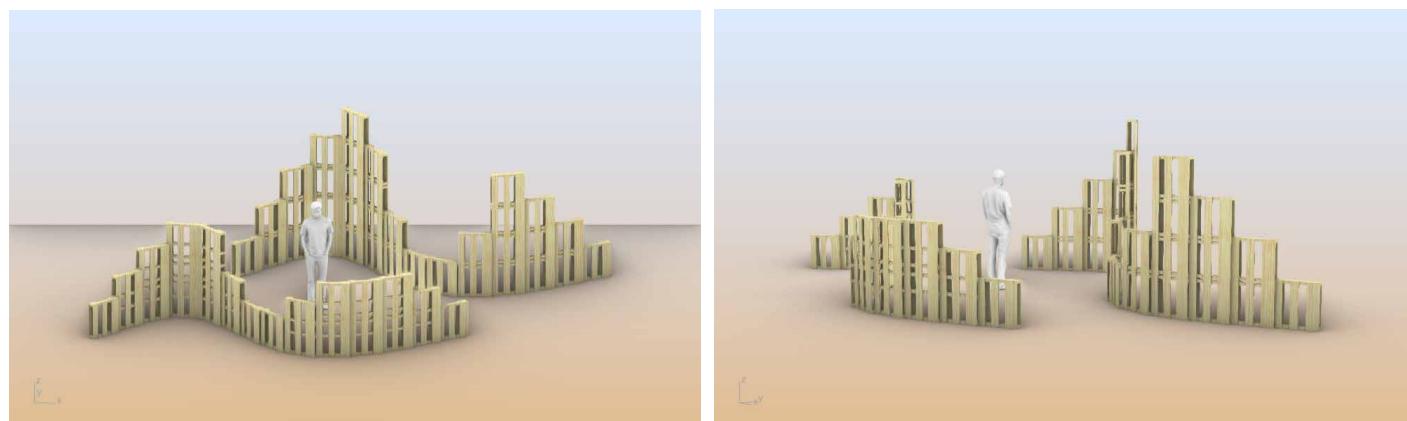
The DOMUS project was the inaugural summer installation proposal for the Daniels Building designed by Daniels Art Directive, an undergraduate design and fabrication art installation group.

Working with many other student designers, I worked on early design iterations and wrote copy for the proposal, as well as helping fabricate the project after it was accepted by the faculty.



Early Sketches

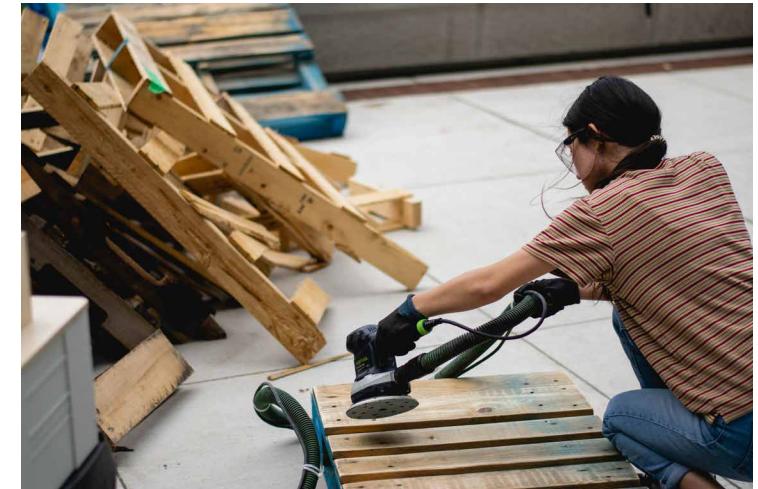
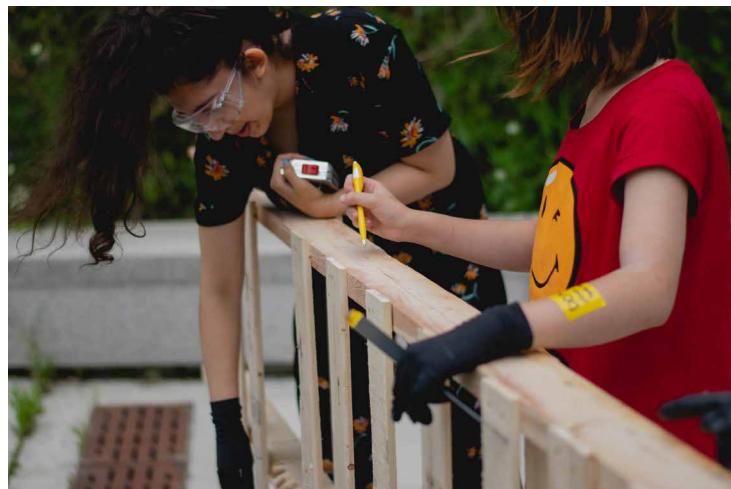
Quick Rhino Renders, using a model generated in Grasshopper



DOMUS, close to completion



Fabrication process



Ultimately, the DOMUS project was an exercise in sustainable design, revitalizing used wooden pallets into the basis of the small structure. In addition to fabrication, I also played a role in documenting the process with DSLR photography.

Greenery detail of the final installation

## Hybrid perspective render, within site



## Site measurements and notes on Selected Artist and Brainstorming

## **Bellevue Square Pavilion**

JAV101 How to Design Almost Anything  
University of Toronto, Winter 2019

Designed as a theoretical art exhibit in Bellevue Square Park, Toronto, this project focused on the traversal nature of museums, incorporating it into the walkable nature of the surrounding community of Kensington Market.

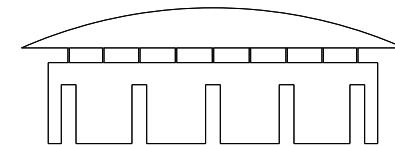
In particular, this pavilion was designed to house the work of Wang Fu Chun, a Chinese photographer who has been documenting the lives of train passengers for decades, telling the stories of people in the midst of transit through both time and space.



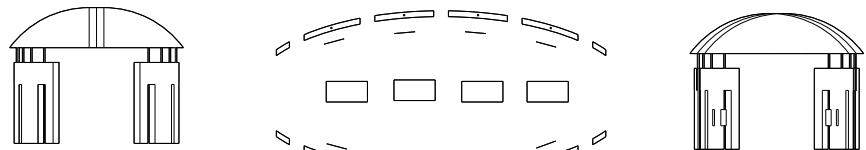
## Rhino Render



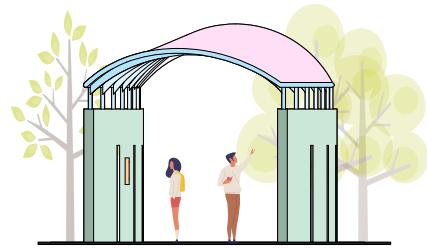
Nollie Map  
CAD, Illustrator



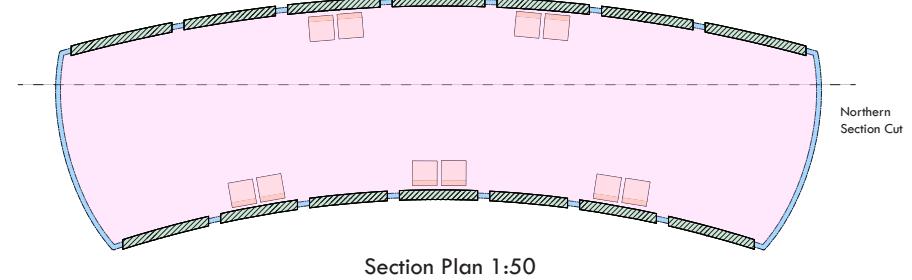
Initial Drawings  
AutoCAD



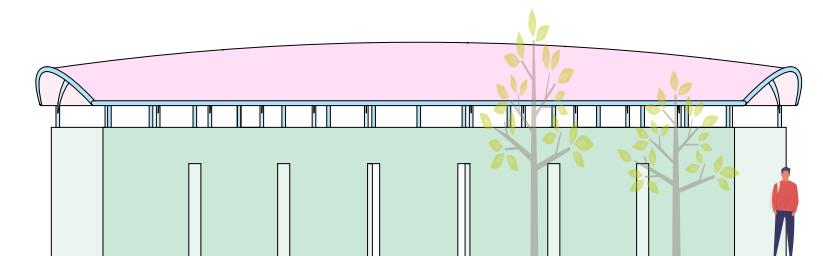
Final Drawings, completed using AutoCAD and Illustrator



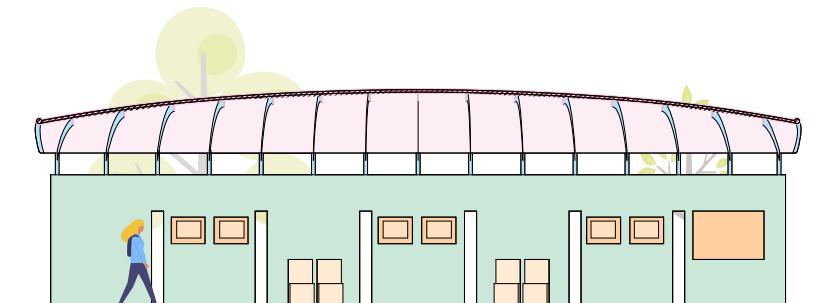
Western Elevation 1:50



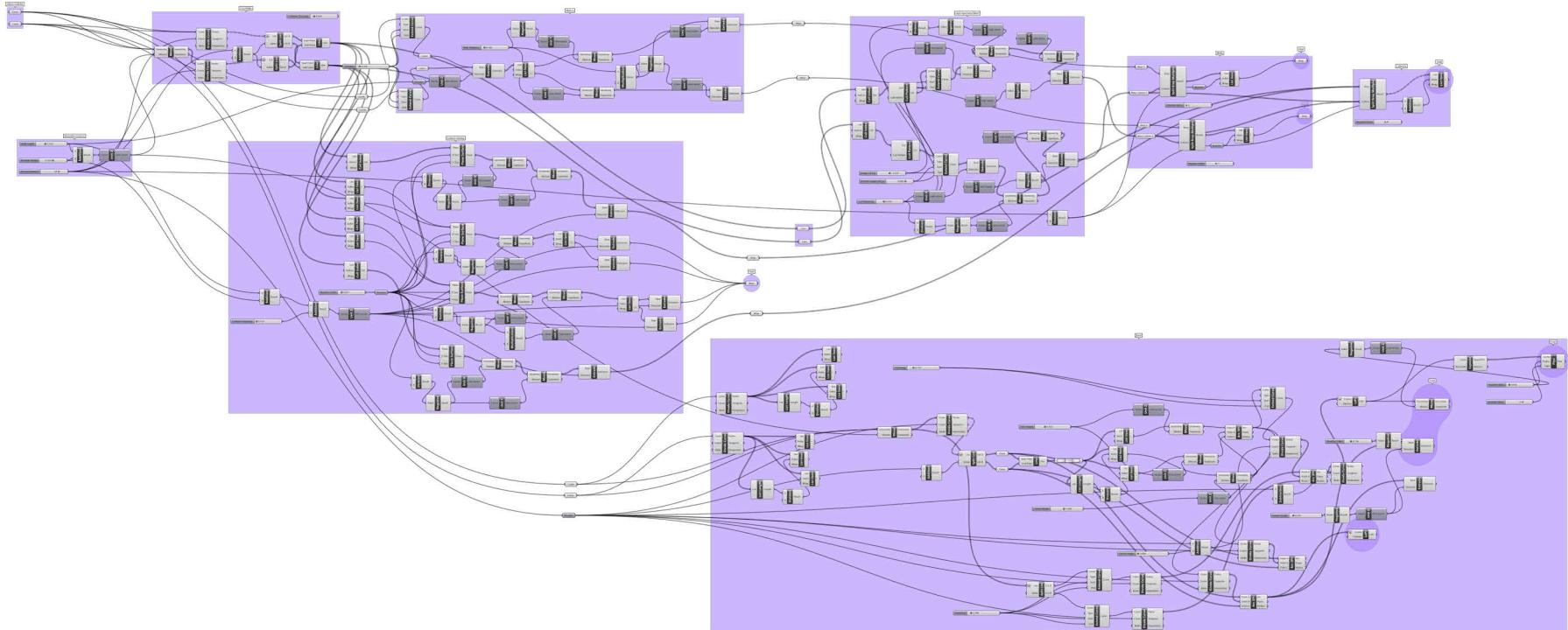
Section Plan 1:50



Northern Elevation 1:50



Northern Section 1:50



Grasshopper Script Used to Generate Entire Model  
(Not required for assignment)

## ABOUT US

Founded in 1995, the University of Toronto Blue Sky Solar Racing team is a student-led design team that has designed, built and raced solar powered vehicles for over 25 years. Now a team of over 50 diverse, talented students, Blue Sky Solar Racing continues to help push the limits of sustainable vehicle design, while also providing valuable learning and technical training opportunities in the process.

Designed to maximize efficiency, each car is a precise balance between many factors like material weight, solar cell chemistry and telemetry systems. As a result, the process is long and challenging, with each vehicle undergoing two years of rigorous research, drafting, simulations and testing before its finally ready to drive and race. The end result is well worth it - a finely-tuned, high-performance machine, weighing less than 1/3 the average F1 car and often capable of reaching top speeds of over 100 kph, running entirely on solar energy.

But the technical achievements of Blue Sky Solar Racing is just the beginning. Our work revolves around three pillars of excellence; goals that guide our every decision throughout the cycle.



### INNOVATION

We aim to drive innovation in the field of renewable energy and vehicular design.



### OUTREACH

We seek to extend our passion and work in technology and science to the greater community.



### EDUCATION

We strive to inspire and train students with real, applicable skills to help them excel in the workplace.



© BLUE SKY SOLAR RACING

## ABOUT THE CAR

Blue Sky Solar Racing's latest vehicle, Viridian, most recently competed in the World Solar Challenge 2019, marking the end of the 2017-2019 design cycle. The bullet-style aerobody and electrical system developed and installed completely in-house are just some of our most advanced and promising design features yet.

### VIRIDIAN SPECS

**110.5 kph / TOP SPEED**      **90 kph / AVERAGE SPEED**      **750W / MAX POWER INTAKE**



BLUE SKY SOLAR RACING | 5

## Business Development Design

### Blue Sky Solar Racing

#### Winter 2020 - present

Blue Sky Solar Racing is a student-run design team at the University of Toronto that builds solar-powered race cars. As a graphic designer, I helped create appealing marketing and business development materials using InDesign and Illustrator that were well-received both by potential sponsors and University of Toronto Advancement advisors.

One of the first documents I designed for Blue Sky was a general sponsorship package, aimed at prospective sponsors, that had the dual purpose of introducing them to the concept of solar car racing, in addition to highlighting the achievements of the team over the years.

## THE DEVELOPMENT CYCLE

Every one of our cars are typically designed within a two year long cycle, beginning and ending with our participation in the World Solar Challenge, a biennial 3,022 km race spanning the entirety of the Australian continent.

First established in 1987, the World Solar Challenge is designed to push the capabilities of each solar car and its crew to their absolute limits in the outback, driving a route from Darwin to Adelaide over the course of 5-6 long days. Often considered the world's most influential and prestigious solar car challenge, it attracts competitors and news coverage from all over the world, with university teams from over 20 different countries.



DARWIN  
ADELAIDE

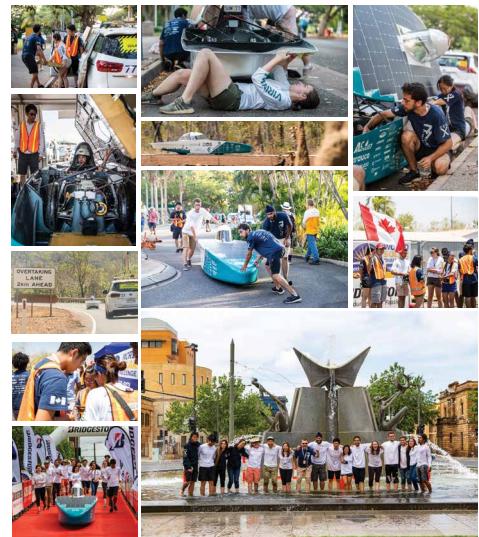
OUR PERFORMANCE 2019  
11TH PLACE OVERALL  
3RD IN NORTH AMERICA



© BLUE SKY SOLAR RACING

## BLUE SKY AT THE WORLD SOLAR CHALLENGE 2019

### 6 DAYS, 3022 KM, 1 SOLAR CAR



Select pages and spreads from the 2020 Sponsorship Package



## Employee Benefits

### Opportunities for RBC employees to drive the solar car

Frequency: Twice per cycle

The team will bring cars that are in road-safe conditions to RBC offices but will restrict the driving experience in a parking lot or equivalent to reduce safety hazards.

### RBC employees come to test trips

The team conducts multiple testing trips before departing for Australia, among which the most interesting ones are on an enclosed race track lasting from one day to two. The team will include race operations as part of the test, so if someone wants to experience a mock race day without going to Australia, the team will be happy to take on some people to come together.

Since the team will not be able to take many people at a time, RBC can turn this opportunity into a prize for some competition, for example, a charitable raffle.

### RBC employees come to WSC

RBC's employees will join the team in Australia, experiencing the unique life during preparations, race and post race. They will be welcomed by the marvelous landscape in the Outback and the enthusiastic team race crew.

### Shop tours educational workshops for RBC employees kids

Frequency: Twice per cycle

The team has a lot of experience hosting workshops for the younger generation and always hopes to inspire more to explore the STEM area. Therefore we are giving RBC employees this exclusive opportunity to bring their kids to a shop tour and solar car workshop.

## Visibility Promotion and Audience Analysis

Blue Sky Solar Racing's previous visibility promotion plan allowed the team to accumulate a current audience of over 450 thousand people. This current audience was generated through four different channels: core audience, team media outreach, news media outreach, and events. This race cycle, the team plans to roll out various projects including a virtual reality simulator and a documentary through our other outreach channel to generate more engagement and build a stronger following.

The team is also open to exploring other approaches to increase our traction and further increase our audience size. These approaches will be explained in this section and an audience analysis will be presented at the end. In order to calculate the unique audience size a duplication factor of 2 was utilized for our current audience and 2.5 was utilized for our projected audience when calculating core audience, team media outreach, news media outreach, and other outreach.

### Core Audience

Our core audience is approximately 28 thousand people with the inclusion of a duplication factor of 2. This audience is primarily students and young adults between ages 18 - 25, a key market segment for RBC and its business endeavours. The majority of this channel comes from WSC's global audience of over 25 million which allows us to interact with approximately 22 thousand people.



### News Media Outreach/ Audience

Blue Sky Solar Racing's previous news media outreach plan allowed our team to reach over 130 thousand Canadians from around the country including a 2.5 duplication factor. The team makes numerous appearances on news outlets in the form of live interviews, news stories, and articles throughout the cycle. With appearances on Breakfast Television Toronto and two news articles and videos by CBC News, Blue Sky Solar Racing reached almost 125 thousand people alone. This race cycle, our team plans to continue making formal news appearances and appearances in local student news outlets. Additionally, our team hopes to connect with even more news outlets to reach an even broader scope of people. Furthermore, with the extra effort in events and marketing content, the team is confident to get more news media attention.

### Team Media Outreach - Social Media and Website

The team's previous media outreach plan has enabled us to reach over 7 thousand people including our duplication factor of 2. The majority of the traffic comes from website viewers who make up 3000 people - with 68% coming from America, 23% from Asia, 9% from Europe<sup>1</sup>. Additionally, the team's social media accounts have a combined total of over 5400 followers which continues to grow by approximately 1% per month. This race cycle, our projected team media outreach is expected to be over 16 thousand people, including a 2.5 duplication factor, because of more frequent posts, more exciting content, various initiatives, as well as collaborations with the University of Toronto.

Selected spread from the 2020 RBC Sponsorship Package. This 36-page package was customized entirely for RBC, and was designed to reflect the longer term, more professional nature of the proposal.

# Design System

## Blue Sky Solar Racing

### Summer 2020

In addition to business development, I created a design system of colours and fonts for the entire cycle, intended mainly for use in coordinating the renovation of the Blue Sky website. Using this system, I also created early mockups of potential website redesigns, elements of which would become part of the final site.

Colour scheme for Blue Sky Solar Racing, with hex codes and usage notes

					<p><b>Primary Colour :</b> Use for headers, background blocks, logo, etc. Based off of UofT Blue and Current Logo Colours.</p>
					<p><b>Secondary Colour :</b> Use for accenting, link hovers, buttons, notable pages. This is a tricky colour - ensure there's enough contrast by either darkening the background or using a different shade/colour.</p>
					<p><b>Accent Colour :</b> Use foriatrics? Might not end up using this, but is a good colour opposite the secondary colour. Can be an accent (if secondary is used as link hover)</p>
					<p><b>Standard Colour :</b> Variations for black.</p>
<p><b>Tip (From the Rotman Colour Guide):</b></p> <p>Keep usage of accent colours to a minimum, in order to maintain clarity and comprehensibility. An easy way to determine the readability of your colour usage is to use a contrast checker, and test for AODA compliance (The Accessibility for Disabled Ontarians Act).</p>					

Font scheme for Blue Sky Solar Racing, with usage notes

**SANSATION : Custom Font**  
Current font for the Blue Sky Logo. No active use.

**BLUE SKY SOLAR RACING**

**TRADEGOTHIC LT (Bold) : Custom Font**  
Current style font for U of T Advancement. Legacy font, only used as header font for old sponsorship versions. Replaced with Barlow.

**BLUE SKY SOLAR RACING**

**BARLOW (Semi Condensed Bold) : Available on Google Fonts**  
Equivalent to TradeGothic LT Bold, used for headers.

**Founded in 1995, the University of Toronto Blue Sky Solar Racing team is a student-led design team that has designed, built and raced solar powered vehicles for over 25 years.**

**BARLOW (Medium) : Google Fonts**  
Used for emphasis for body texts, or if regular is too thin.

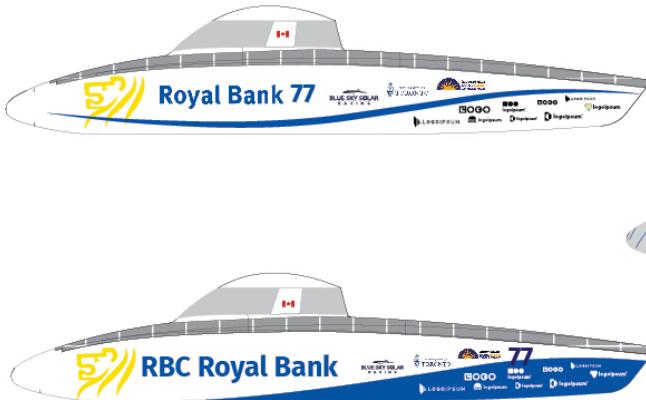
**Founded in 1995, the University of Toronto Blue Sky Solar Racing team is a student-led design team that has designed, built and raced solar powered vehicles for over 25 years.**

**BARLOW (Regular) : Google Fonts**  
Used for the majority of Blue Sky body text.

**Founded in 1995, the University of Toronto Blue Sky Solar Racing team is a student-led design team that has designed, built and raced solar powered vehicles for over 25 years.**

**BARLOW (Light) : Google Fonts**  
Better suited for publications where cases fit, but rarely good for web use.

**Founded in 1995, the University of Toronto Blue Sky Solar Racing team is a student-led design team that has designed, built and raced solar powered vehicles for over 25 years.**



2D Mockups  
2020/07/06

## Conceptual Livery Design

Blue Sky Solar Racing  
Summer 2020 - present

In addition to my typical responsibilities, I also conceptualized and designed potential liveries for certain sponsorship proposals, using Illustrator and Rhino 6 to prepare mockups and renderings of possible title sponsor designs.

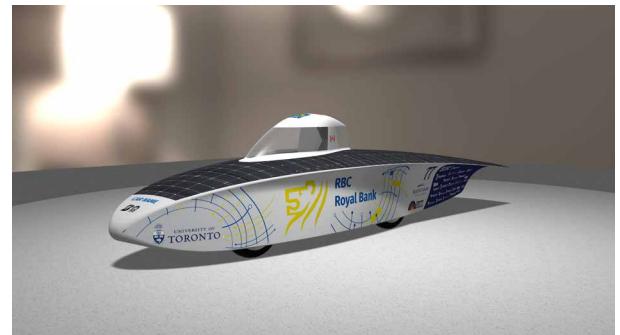
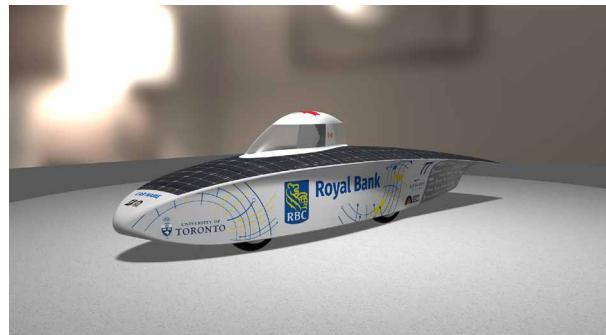
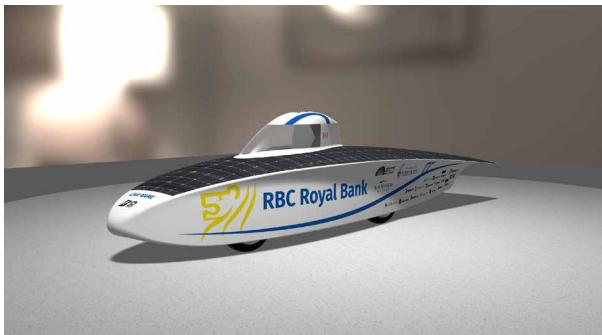
### Logo Iterations



Design mockups of livery concepts for RBC, using a lion graphic variant of the shield logo of my own design



Hybrid rendering of one of the concepts, imposed onto an Australian road



Rhino Renders of more finalized designs

Potential Title Sponsor Liveries  
Prepared for Canada Post  
1:20 Scale

Blue Sky Solar Racing  
2020.10.07



> Inspired by Canada Post  
Delivery Van liveries

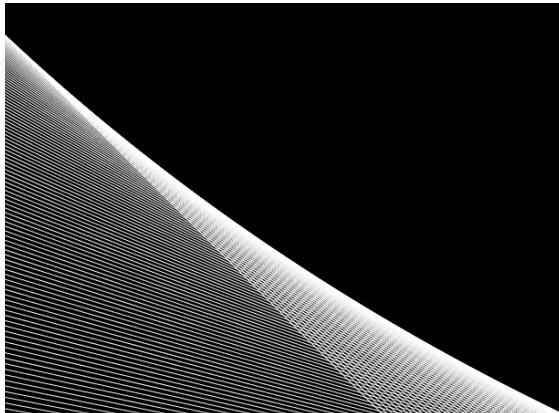


> Classic bold racing livery,  
high contrast logo

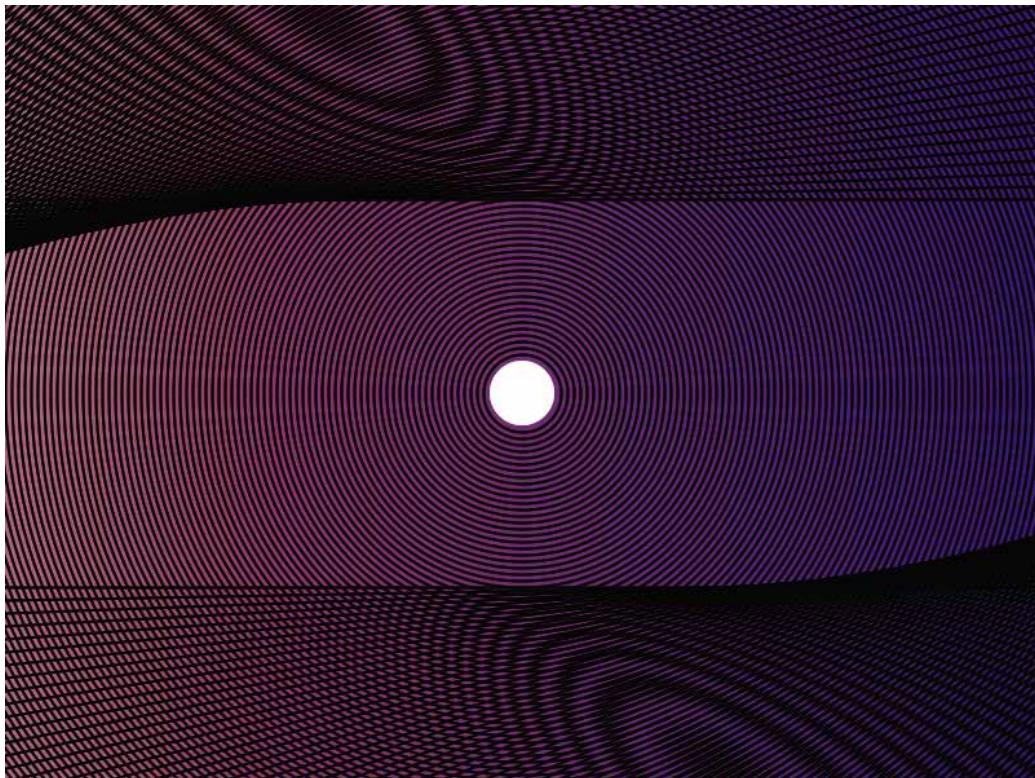


Livery concepts designed for Canada Post. The original document has been scaled to fit in this document, and is no longer to scale.

**Algorithmic Design**  
ARC180 Computation and Design  
University of Toronto, Fall 2018



Early Iteration, "Wave"  
Coded using Processing



Final Artwork, "Funktions"  
Coded entirely in Processing and randomly generated

Using the programming software Processing, this project was an exploration into algorithmic design and procedural generation in the creation of design and art.

```
size(800,600);
background (175); //adjusts brightness

/*Editable Variables*/
float redx= 3; //how much the red value changes from left to right (random(-5, 5))
float greenx= -2;
float bluex = 4;
float rgbl = 66; //starting red value (random(255))
float rgb2 = 144;
float rgb3 = 32;
float lineCo = 235; //line colour (looks better closer to 255 or 0)
float circleCo = 235; //eye radius colour (looks better is similar to lineCo)
float v = 50; //eye pupil radius

/*Bars*/
float a = 0;
float b = 0;
float c = 10;
float d = 600;

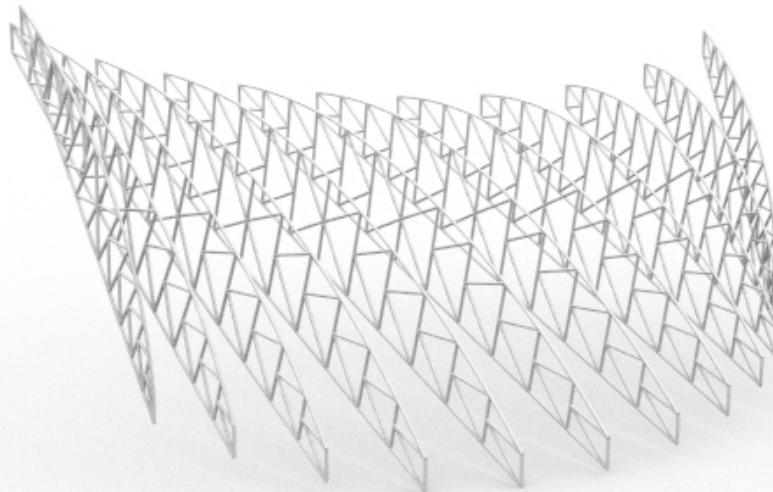
for (int i = 0; i<80; i++){
    noStroke();
    a = 0 + 10*i; //shifts the bar to the right
    fill(rgbl, rgb2, rgbl,150);
    rect(a,b, c,d);
    rgbl = rgbl + redx; //changes colour values
    rgb2 = rgb2 + greenx;
    rgbl = rgbl + bluex;
}

/*WAVE1 */
float x = 0;
float y = 450;
float x2 = 800;
float y2 = 450;

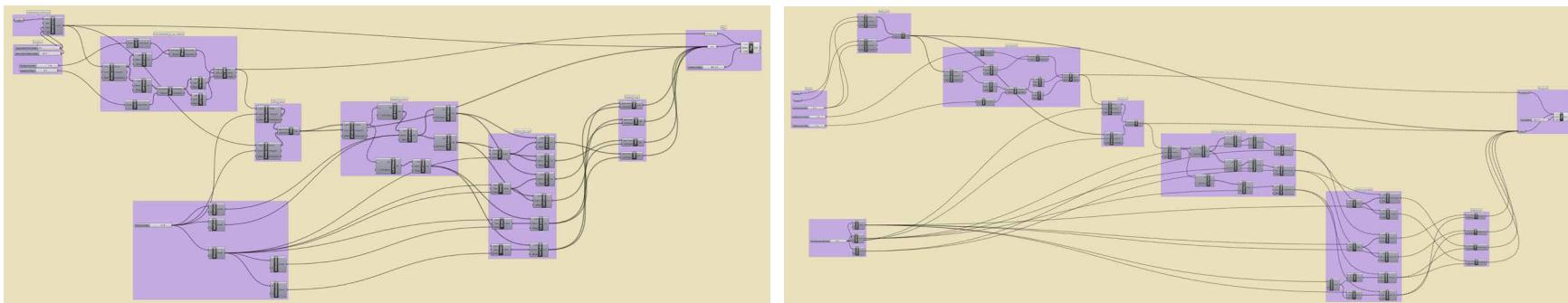
for (int i=0; i<100;i++){
    strokeWeight (2);
```

Code used to create "Funktions"

**Parametric Design**  
ARC180 Computation and Design  
University of Toronto, Fall 2018



Final parametrically-modeled render

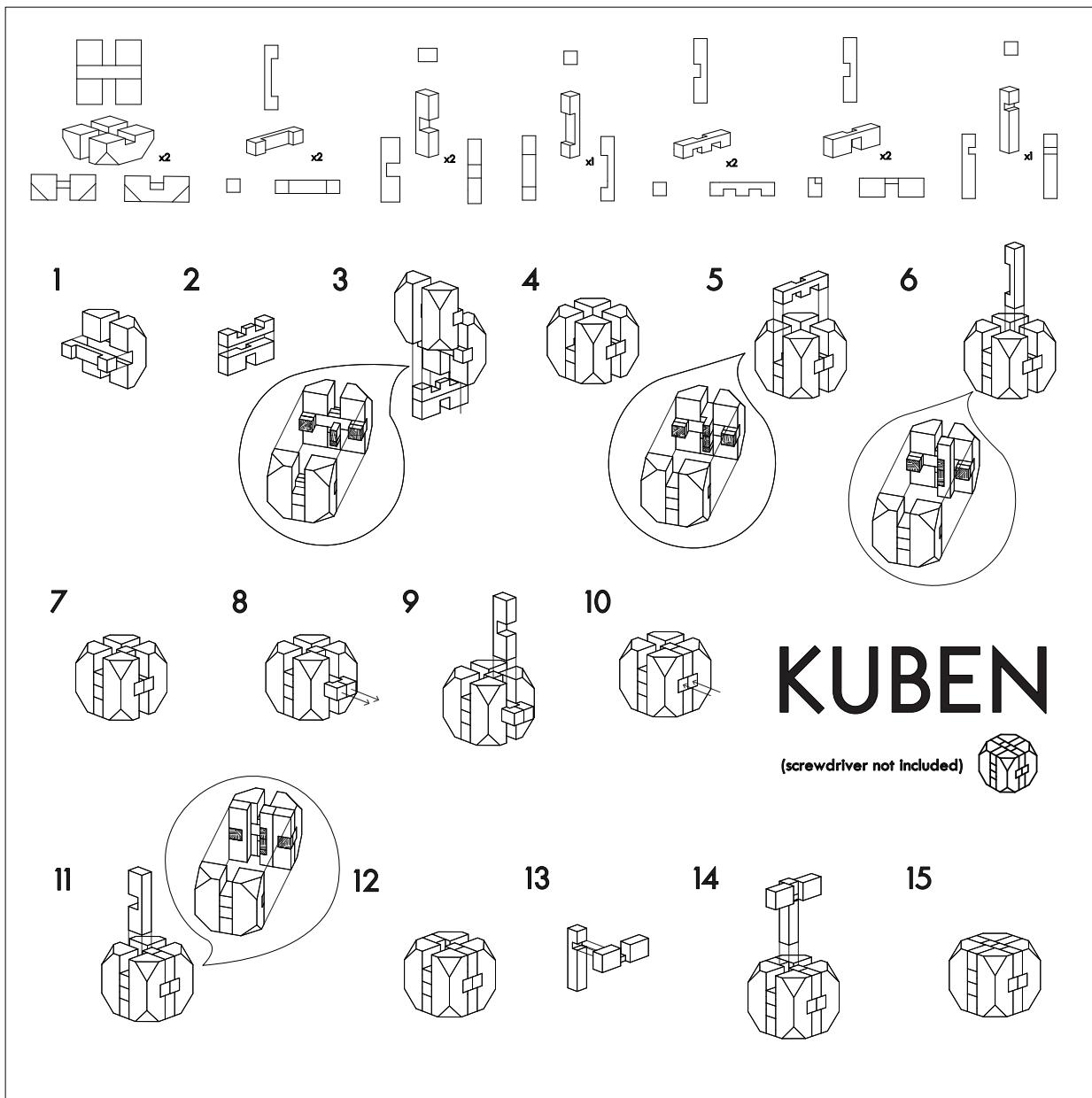


Processing code used to create final render

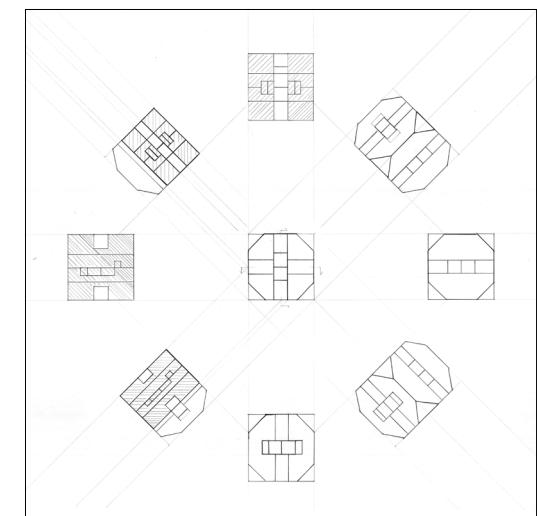
## Toy Story

ARC100 Drawing and Representation I  
University of Toronto, Fall 2018

This project was a series of assignments that challenged students to depict a wooden puzzle, using both traditional hand drafting and software like Rhinoceros 6 and AutoCAD. The final assignment also examines how the process of solving the puzzle might be presented graphically.



Final graphics set, created using AutoCAD and Illustrator



Hand drafted graphics set

## Various Film Projects

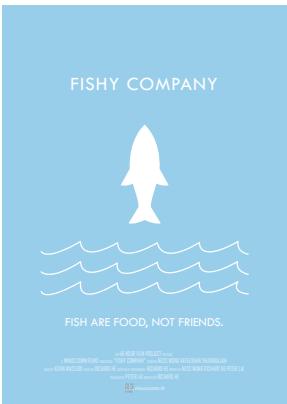
In addition to my architectural and graphic work, I enjoy working on film projects in a variety of settings, and have directed films that later won awards in local competitions. To represent my video work in the next few pages, I have only included stills from my most recent and relevant projects. A demo reel and links to full projects are available upon request.



Winning first prize at the MTAC 24 Hour Film Challenge with Minus Comm Films, a student film production group, 2017



Working behind the scenes on a Minus Comm Films project with Peter Lai (right), 2019

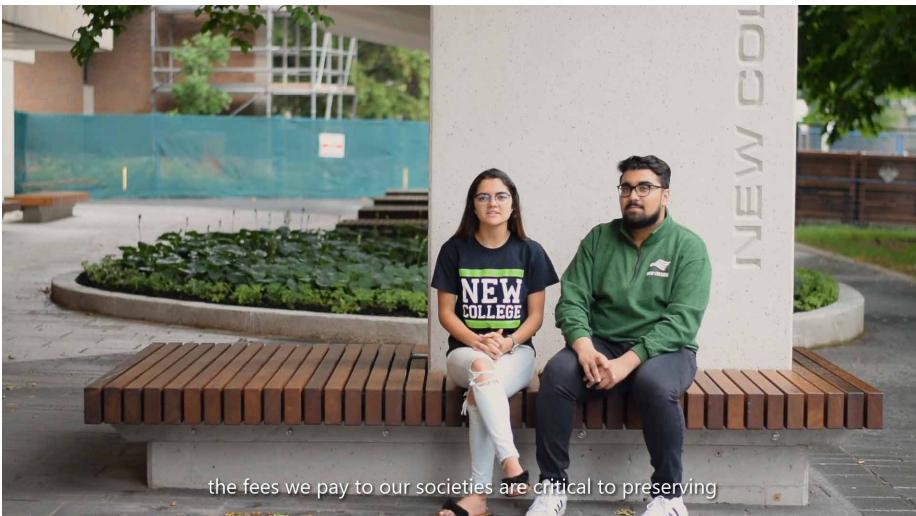


**Fishy Company**  
Minus Comm Films  
Fall 2019

The latest film produced by Minus Comm Films, “Fishy Company” is a dark comedy about impostor syndrome and French fish. I worked on this project as the lead writer, director, cinematographer and editor, together with producer Peter Lai and many other crew members. I also helped design the movie poster, with our lead actress Ness Wong. Produced as part of the Toronto 48 Hour Film Challenge, it later won Best Use of Genre and an Audience Choice award.

**Hart House**  
JAV101 How to Design Almost Anything  
University of Toronto, Winter 2019

A project produced with Leo Wang for an assignment detailing the architectural intricacies of U of T’s Hart House. We focused greatly on the liminal spaces of the building, and how the subtle architectural elements changed one’s transitional experience throughout the building. I worked on this project as a co-director, cinematographer and editor.



the fees we pay to our societies are critical to preserving



### **Choose U of T Campaign**

Freelance for the UTSU  
Summer 2019

I worked for the University of Toronto Student Union to help shoot and produce this video advertisement as a core part of their campaign to raise funds following the implementation of the Student Choice Initiative in Fall 2019. Notably, most of this project was shot at nearly two dozen unique locations across campus in a single day. I worked on this project as videographer and editor, with additional sound editing and by Dermot O'Halloran, who was the lead of the Choose U of T project.

### **How Life Unfolds**

Summer 2019

Produced with Michelle Ng and Eric Duan, this project is a documentary about local Toronto-based designer, architect and professor Car Martin. Produced for a film competition, we each had a role in videography and interviewing, and I edited the final cut.



**Thank you!**

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