

När

Constructing a Sensory Concentration Space

by

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Abstract

När: Constructing a Sensory Concentration Space presents a work that contemplates, designs, and materialises the notion of public personal space. Modern society often leaves us alienated from ourselves. This thesis is an exercise in constructing a restorative environment complementary to daily life. The fruit of this process is a personal pod I named När, derived from the word for “pomegranate” in Farsi, the symbol of vivacity and solace.

Experience is a point of departure and arrival. It is the path between the fact and abstraction, a pure product of the mind provoked by an external event. När fashions a bespoke experience for a self to arrive at a sense of inner peace. This work aspires to reproduce this trajectory and describes the process by tracing the interaction between the mind and the sensing body.

Striving to resolve the paradox of privacy and comfort in a dynamic public space, this two-part fabrication set explores the importance of the restorative niche and constructive rest. Through the juxtaposition of conventional and alternative relaxation and therapy methods, these pods provide a moment to disconnect, repose, and reflect inwardly. They become a personal space to meditate, nap, have a private conversation, or write an email, pivoting on the significance of comfort, security, and warmth.

Additionally, this thesis evolves apace with the intent to stay environmentally conscious throughout its course, materials, and manufacture. Felt and reclaimed plywood thus become the principal components of the design.

This book reconstructs the design process for När: from concept to production.

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And even to me, one who loves life, it seems that butterflies and soap bubbles and whatever is of their kind among men, know most about happiness.

To see these light, foolish, delicate, sensitive little souls fluttering--that seduces Zarathustra to tears and songs.

I would only believe in a god who knew how to dance. And when I saw my devil, there I found him earnest, thorough, deep, somber; it was the spirit of gravity -- through him all things fall.

Not by wrath does one kill, but by laughing. Up, let us kill the spirit of gravity!

*-Friedrich Nietzsche
Thus Spake Zarathustra - 1885*

Methodology

I started this thesis knowing that I wanted to place emphasis on building a final prototype. Creating something tangible that would go beyond theory was personally significant for me. “But wouldn’t it be easier just to do a design thesis?” was the most common grain of wisdom cloaked as a question I received since day one. I shrugged it off every time, because I knew it was not, not for me. I could not see myself writing a substantial written thesis. Maybe because as an immigrant who began learning English in her mid-twenties, I never felt confident expressing myself with words. That never was an issue back in Iran. I used to be a skillful writer, and now I often found myself at a loss for words, which made the struggle ghastlier. Maybe it was for the love of fabrication. After all, I considered myself a natural when it came to building things. Ideas flow through my fingers effortlessly. Or maybe I chose this path because I found my lost voice through the objects I created.

That is why this book’s structure and shape hinge on two different perspectives: the academic-forward chapters that create the foundation which this thesis is built upon, and the chapters in which I share my personal story to unearth the architectural locus of this work.

The white pages are the work of my inner scholar. In them, I seek to outline the elements and the scope of my research by exploring the major themes that run through the project. It is under the aegis of these pages that the trajectory of the process and architecture of the restorative niche manifests.

The black pages, on the other hand, is I as a storyteller. It is an autobiographical accord of this thesis as a collection of my writings, experiences, reflections, and observations. Although at times speculative, uncertain or biased, they are a depiction of my journey.

Research

I started this thesis by looking into the history of personal pods through architecture and design. Divulging into pod culture allowed me to recognize and zero-in on the crucial points that I needed to address. Breaking the essentials down into a manifesto created the boundaries for this thesis. Through a series of material studies, I began to look into different sustainable materials that would meet my design’s requirements. Sourcing re-

sponsible initial materials was imperative to designing a nurturing space while having the least amount of waste in a landfill, both during the fabrication and at the end of the object's lifespan.

In the second phase of research, I focused on the characteristics of a sensory space. The array of sensory experiences that I choose to incorporate into the design lend themselves to the research of the available technologies and therapeutic practices.

Design

Drawing and sketching has always been my primary tools for thinking. The act of drawing allowed me to focus on the indispensable contents of this work and frame broad theories in an architectural way. Reciprocally, by translating the drawings into a series of small-scale three-dimensional models, I was able to magnify the flaws and thus create a more detailed design prior to fabrication. The combination of drawing and model-making generated an open dialogue between all my senses, where I could clearly rationalise and incorporate the plethora of information in various scales. The final step was creating a three-dimensional computer model as a compass for the fabrication and to minimise the human-errors. The model was the anchor that allowed me to create a step-by-step plan for the fabrication stage by isolating and troubleshooting possible obstacles before making any cuts.

Fabrication

Despite trying to create a comprehensive roadmap, the final build still presented a unique set of challenges. Being both the designer and the builder, I became acutely aware of how my skills as a craftsman influenced, and even at times restricted, the design. There were moments where my lack of experience or knowledge either caused an oversight or forced me to change course. For instance, I had to incorporate additional bracing in the design for När due to my overestimation of the rigidity of felt. Then there were the inevitable moments of human error. They challenged me to constantly think on my feet. At times I could remedy mistakes by taking a step back and trying to approach a problem differently, other times I had to start from scratch. Case in point, I had to learn the hard way from the rope burns on my fingers that no matter how sharp my needle was, sewing through a 26 millimeter sheet of felt was much harder than I had originally expected. To solve this problem, I decided to pre-punch a row of holes along each seam prior to assembly. Ultimately, the passion for developing new skills through the fabrication of this project was the gamble that enriched the process.

Documentation

Initially, I wanted to take photographs merely as evidentiary support of the fabrication process. But as time went on, I began to see the act of photography and documentation of the process as both research and expression. Upon later review of the photographic documentation, I could witness my process from a fresh perspective. It aided me in fine-tuning my craft. In a sense, these photos became some of the least biased pieces in this book. They are the very expressions of what I did and how I created each piece of this puzzle.

*“If you can just get your mind together
Then come on across to me
We’ll hold hands an’ then we’ll watch the sun rise
From the bottom of the sea*

*But first, are you experienced?
Ah! Have you ever been experienced?
Well, I have*

*I know, I know you’ll probably scream n’ cry
That your little world won’t let you go
But who in your measly little world
Are trying to prove that
You’re made out of gold and, eh, can’t be sold*

*So-er, are you experienced?
Ah! Have you ever been experienced?
Well, I have*

Ah, let me prove it to you

*Trumpets and violins I can hear in the distance
I think they’re calling our names
Maybe now you can’t hear them, but you will
If you just take hold of my hand*

*Ah! But are you experienced?
Have you ever been experienced?
Not necessarily stoned, but beautiful...”*

*The Jimi Hendrix Experience
Are You Experienced? - 1967*

Introduction

He who looks outside dreams. He who looks within awakens.

Carl Gustav Jung

Preface

To date, I have spent more than half of my life in schools. From Elementary school to Masters, and from Iran to Canada, it has become a world within a world, shaped by years of exposure to a diversity of unique people, scenarios, and emotions. With each encounter I had created an experience, and passing through each has altered me. Just like a magnificent piece of music, I have lived through experiences that I cannot get out of my head. The common denominator has always been the emotions each experience evoked, either negative or positive.

I discovered Jimi Hendrix's brilliant album *Are You Experienced?* years before I began to learn English. Finding the lyrics to a "foreign" song, in the pre-Google era, in a country without record shops was no easy feat. I recall spending hours rummaging through an English to Farsi dictionary, I wondered what he meant when he sang the words, "are you experienced?" Given Hendrix's lifestyle, for years I thought the song was about drugs. It

Farsi (or Persian) is my mother tongue. Spoken by of over 80% of Iranians and used officially within Iran, Afghanistan (the Dari dialect), Tajikistan (known as Tajiki since the Soviet era), Uzbekistan, as well as other Persianate societies in the cultural sphere of Greater Iran.

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was not long ago when I learned that not only he frequently rejected this suggestion, but that to him *Are you experienced?* was about being in peace with oneself. Years later, I started my own journey in search for a sense of inner peace.

Personally, I have always thought our existence should be taken more broadly, as an expression of how we as humans relate to experiences. Experience is what we use to demonstrate an abstraction. As a point of both departure and arrival, it is something completely outside of us, but also the product of our minds. It is a situation we face, but also the knowledge gained through contact. It is putting something to the test. It undeniably leaves a trace. This book attempts to reproduce this trajectory and to describe how these interactions between the body, mind and space are intrinsically linked and evolve simultaneously.

That is why I am here to tell the story of the time I stumbled upon a Turtle.

The Unremembered

It was the winter of 2012 when a group of Andrew Levitt's students left a mysterious oversized black pod in the middle of the school's atrium. It was titled *The Turtle*. From the outside, it was a half oblate spheroid made from laser-cut and painted black hexagons, with few openings, were its head and limbs were meant to be. To enter, you would crawl through one such an orifice. The soft foam was a few inches thick and was covered with black cotton jersey knit fabric. It would hug you as you entered the belly of the beast.

The experience was nothing short of being reborn into a soft and cozy world where the earth was soft, and the sky was whimsical. The belly of the beast would hug the contours of your body, warm you up and allow you to relax, while the atrium lights would barely shine through the laser-etched dome to create dancing star-like constellations to comfort your mind.

The Turtle was a safe haven that offered the over-exposed students at the School of Architecture a moment of privacy and comfort. The Turtle grew in popularity. During the deadlines, in order to make the space more accessible to as many students as possible, a Google document was created as a sign-up sheet with 2-hour slots for anyone who was working late into the night and needed a nap or wanted to get some quiet time in there. It was al-

ways occupied. At times, while walking passed it, you may have heard snores, or even on occasions, someone having a cry. The Turtle was private enough for one to allow themselves to be vulnerable, even in the middle of the atrium, without being bothered by the wondering eyes of the people passing by. The Turtle's gift was creating a moment to pause, like being suspended in time and space. It was an experience no other location in our building could ever provide. For me, it was the point of both departure and arrival that left a trace. It was the space and the experience I caught myself longing for over and over again through the years. It was the experience I chose to focus on, to dissect and analyze, to deconstruct and reassemble, to reanimate.



from top to bottom:

Figure 0.1 *Islahiye Syrian refugee camp, Gaziantep -Turkey*

Figure 0.2 *Suruç Syrian refugee camp, Şanlıurfa -Turkey*

The Spark

This may be a common theme amongst my peers, but I struggled for a while until I settled on the topic for my thesis. Upon completing my undergraduate degree, I traveled to Turkey with a group of Canadian journalists. We visited the country's two largest Syrian refugee camps, Suruç and Islahiye tent camps. While there, we were following the news on Calgary wildfires. The gravity of hundreds of Canadians getting displaced became more palpable when we heard that the parents of our group's photographer were among those individuals. He broke down and cried when he found out his childhood home was gone, while thousands of tents occupied by Syrian refugees surrounded us. The striking need for shelter planted a seed in my mind to design and build a prefabricated post-disaster tiny-house, a safe and humane space which could grow organically with increasing population.

The more I began to look into it, the more intimidated I felt. I began to second-guess myself as I grappled with the feasibility of the topic while coping with a recently diagnosed chronic condition. How was I supposed to do justice to this bold project despite my limitations? As my health declined, I wondered if building a prefabricated post-disaster tiny-house was something that I was passionate enough to invest my finances, time, and energy on.

One late evening sitting in my office, as I was trying to force-fit one-too-many items into the project's budget, I received a call from my now-husband. He called as per every-other-night to remind me to eat something and take my medications. A few others were watching a Netflix comedy spe-

Yalda Night (Shab-e Yalda) or Shab-e Chelleh ("Night of Forty") is the Iranian winter solstice celebration, held annually on December 21st, to pass the longest and darkest night of the year among loved ones. Iranians gather to eat (pomegranates, watermelons and dried nuts are a must), drink (red wine and strong tea are popular), read poetry (especially poetry by Hafez) and tell stories to pass the night together as they keep a flame burning till the next sunrise to aid Ahura Mazda's victory of light over darkness.

Introduction



from top to bottom:

Figure 0.3 *Deadlines at the School of Architecture, University of Waterloo*

Figure 0.4 *Canceled flights, Father and child sleeping at the airport, Detroit Metropolitan airport*

Figure 0.5 *Doctors sleeping at work, Honolulu*

cial on the other side of the studio. Flustered by the noise, I began walking down the corridors to find a decent spot to talk. I told him how short my budget was and that it would not even cover half of my raw materials. I told him about the stress, and how burnt-out I felt. I no longer felt passionate about my thesis topic and all I wanted was to crawl into bed and sleep for days. His response was “go home, turn off your alarm, and go to bed. When you wake up, eat an actual meal, maybe watch a movie or take another nap.” I could hear him smiling as he continued, “you know, your passion for naps are unsurpassed.”

It was in that very moment when it hit me. Nothing ever made me happier than to find a quiet and cozy place to just be, or to curl up in a ball to nap! As if the floodgates of memory were opened, the buried past came rushing back. How could I forget about how crawling into the Turtle made me feel? Or the time I tried to persuade my group-mate to build a giant onion-esque chair that one could sit inside of, as oppose to on it. I needed a place to hide in plain sight and I knew how much she liked Shrek! Much to my surprise, she had her heart set on the Wizard of Oz and a chair with visual illusions. I was reminded of all those moments I scrambled to find a somewhat private and quiet corner to pause and ground myself, to return to my true self.

Scene one: I am sitting in the lecture hall, surrounded by fifty-something other classmates. My laptop is open in front of me as I am taking notes, a notepad application is open on the corner of the screen, now and then I add an item to my to-do list, then immediately hide it beneath the open word document. I turn around and look behind me, speculating if anyone cares to take a peek. Meanwhile, my phone buzzes, and a private message pops up on the screen. Simultaneously, the person sitting next to me leans in to make a snarky comment about the guest lecturer. I can't help but feel exposed.

Scene Two: They delay the flight for another three hours. It is snowing heavily, and the wind is getting stronger. In a futile attempt, I stare at the runway searching for the promised aircraft. I can hardly see anything. Exhausted and cold, I desperately try to get comfortable in my metal seat. I glance up at the woman sitting across me, as she rocks her newborn. She seems younger than me and traveling alone. She looks spent from hours of trying to calm her baby. She glances at her phone and then looks around in search of a charging station. As she tries to stand up, the baby coos. The outlet on the opposite

wall is too far to travel while holding her barely asleep newborn. She sighs as she sits back down. I offer her my power bank.

Scene Three: It has been a long week; I am still trying to recover from the total computer malfunction I had a few days ago. The deadlines are fast approaching. The hard drive failed, and I lost a good chunk of my work. I should be able to bounce back, but I feel exhausted. I do not recall when I last had a proper meal, or more than a few hours of sleep. I know I cannot drive home feeling like this. My phone rings. It is my dad asking from which website he can buy a flight ticket to Iran. His voice is unsettlingly distanced. After I walk him through it, I ask him what is going on? Reluctantly he tells me that my aunt, her husband, and their youngest son were in a car accident. All three are gone, and he needs to be there. He is scrambling; he tells me he loves me and hangs up the phone. I am still clinching to my phone. Tears run down my face, I run to the bathroom, lock myself up in the accessible stall, and collapse on the floor. I hear the door open, and someone walking in. I recognize the footsteps. While I try to quiet down and hold back the tears, I look down at my red sneakers and think to myself, will she later recognize me from my shoes?

Moments like these happen to all of us to some extent on regular basis. The question emerges from the point where overstimulation meets lack of comfort. There are days which we feel exposed to too many visual and auditory stimulants, too much technology or too many people. Our social life throws our mental state off-balance, and we need that balance to function. This thesis is an attempt to provide a solution for the needs of the introvert in each of us: a break maybe, or a moment apart.

This thesis focuses on designing and building a “restorative niche,” which provides the users with a personally-tailored experience as an alternative approach to the design of personal pods. In essence, it is a sensory concentration space designed to be placed in dynamic public spaces in order to provide a moment to disconnect from the daily chaos.

It is a private personal space

to disconnect,

to meditate,

to nap,

to take a private phone call,

to write an email,

or even to have a cry.

Restorative niche is a term coined by Dr. Brian R. Little and describes the place you go when you want to return to your true self. Restorative niche can be either a temporal or a physical place.

There is no such thing as a pure introvert or extrovert. Such a person would be in the lunatic asylum. Carl Gustav Jung



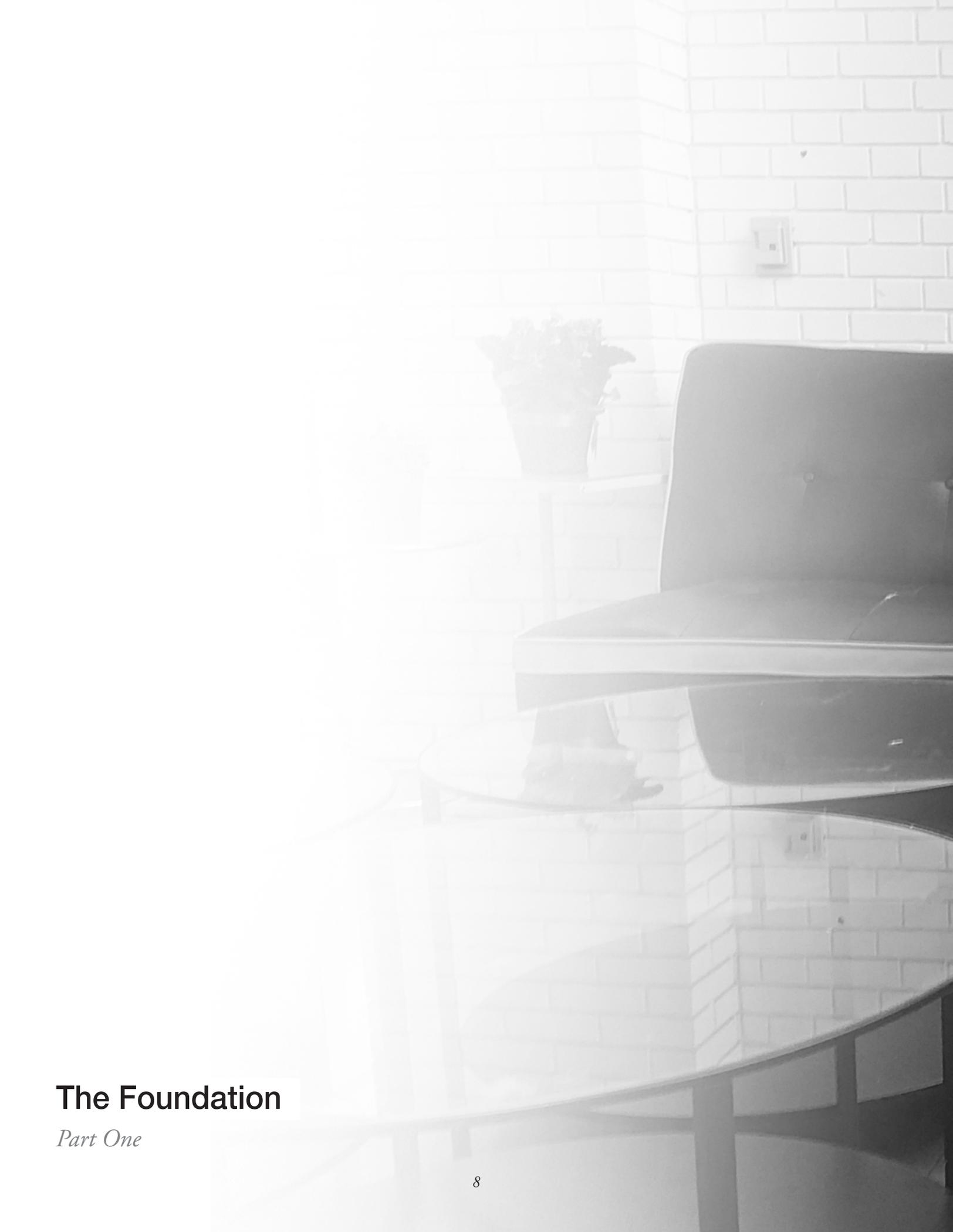
Figure 0.6 *Yalda spread without pomegranates is incomplete, Persian handmade felt rugs in the background*

The name Nār refers to the Persian word for pomegranate. This fruit has long played an important role not only in the Persian cuisine, but also in our literature, culture, and history. Pomegranate, which in Persian is called ‘Anār/انار’ or more literary ‘Nār/نار,’ is native to the central Iranian plateau. It was the fruit I grew up picking every autumn in my grandparents’ backyard. It was the ever-present fruit of Persian ceremonies, poems, and mythology.

It is regarded as a magical fruit in Persian myths. The divine warrior of ancient Iran, Esfandiyar ate a pomegranate and became invincible as mentioned in the world’s longest epic poem book, the *Shahnameh*. In Zoroastrianism, the ancient monotheist religion of Iran, pomegranate is still in the centre of each life-altering ritual, including marriage ceremonies and funerals. Among Muslims, it is a sacred fruit as it has been mentioned three times in the Quran. Nār is mysterious, tantalizing and womb-like. It echoes a sense of security, warmth, and comfort.

Shahnameh “The Book of Kings,” written by Ferdowsi, between c. 977 and 1010 CE. It is the longest single poem written by one person and it documents Iranian history (both mythological and cultural) from the creation of the world until the Islamic conquest of Persia in the 7th century. It is generally agreed to be one of the most seminal pieces of Persian literature. Every Iranian grows up with stories from the *Shahnameh*. The preservation of the Persian language and identity is greatly attributed to this piece of writing due to its avoidance of Arabic at a time when pressures were high to conform to Arab culture and language.

Zoroastrianism or Mazdayasna is a multi-tendency faith centered on a dualistic cosmology of good and evil. It served as the state religion of the ancient Iranian empires with possible roots dating back to the second millennium BCE. Zoroastrianism is one of the world’s oldest continuously practiced religions.



The Foundation

Part One

Figure 1.1 *A student napping, School of Architecture - Cambridge*



The Foundation

All ideas, all mental images, all emotions reveal themselves physically.

Augusto Boal

Pods Through Time

The search for a solution for social overexposure has been around since cities grew into metropolitans. For many decades, architects have been attempting to solve this problem through small and/or portable structures. Personal pods caught momentum in popularity through Si-Fi movies and the golden age of comic books in early 1940s. It took another decade for architects to begin experimenting with such compact spaces to create a new typology.

For centuries, bubbles have fascinated designers, yet despite being cost effective and quick to construct, bubble structures and membranes were rarely used for buildings mostly due to lack of rigidity. The interest in bubble structures was the product of post-war science fiction genre. The advancements in pneumatic technology gave it a sci-fi credibility. Suddenly, the bubble was the ideal living condition of the post-war era. As an inexpensive, light, fast and easy way to cover sizeable areas, they became popular as exhibition enclosures. In 1956, at the *This Is Tomorrow* exhibition, James Stirling

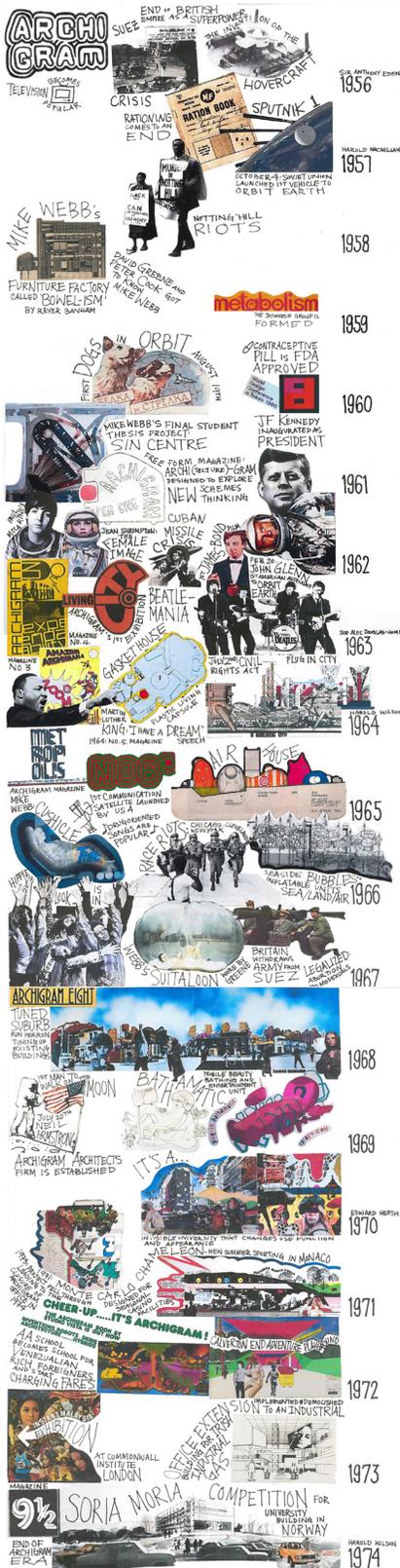


Figure 1.2 Archigram, A timeline 1956-1974
 1- Architecture without Architecture, are a series of articles that investigates the work of Archigram

exhibited a sculpture extrapolated from the form of soap bubbles and Victor Lundy's Atoms of Peace Pavilion was shaped like two conjoined bubbles. The idea around the use of bubbles in spatial design were already being explored when Archigram entered the scene.

In 1963, Archigram 3 introduced bubbles as a form of expendable architecture. In 1964, Archigram 4 explored bubbles as a facet of science fiction. Micheal Webb's Cushicle was part of Archigram's focus on mobile urbanity. An autonomous unit that could be further developed to become part of a more widespread urban system of personalized enclosures. Webb combined the 1948 idea of the expandable home with his Drive-In Housing, featured in Archigram 3. Peter Cook's Plug-In-City, Ron Herron's Walking City and the Instant City, all explored the idea of fully mobile cities in Archigram 4. Archigram 4 was a mobile structure in two parts: a chassis with appliances and personalized apparatuses and an inflatable envelope. Webb structures the chassis like a spine and includes a heating system. The helmet contained a radio and mini-TV. Food and water modules could be added to the chassis as attachments. The two skins would be envelopes for the rider, covered with viewing screens, and they could be used independently or simultaneously. Later in 1967 Webb distilled down the bubble dwelling to create Suitaloon. It manifested into a personal bubble for its ultra-thin membrane, reactive attachment to other bubbles and skin-like organic structure. The Cushicle and Suitaloon proposed a future society of total urbanism and global mobility. The Cushicle and Suitaloon were designed to be optimally functional, portable and comfortable dwellings within a technology-driven society. Through synthesis of biologic and mechanical systems, they achieved function.

Ron Herron's 1966 pneumatic Seaside Bubbles' was a case-study in modular and pliable environments. Later in the early 1970s, the exploration of the bubbles progressed into two distinct directions: a series of personal pod furniture designed to be placed in a larger space led by Lee West's Alpha Chamber, and permanent small structures like the Capsule Tower by Kisho Kurokawa. But the advancement of postmodernism and the development of suburban areas hindered the evolution of pods for over two decades. By 2000, population growth and the introduction of vertical suburbia reintroduced the demand for tiny builds and restorative niches. Dr. Brian Little, Harvard University Professor of Psychology, describes a restorative niche as "the place you go when you want to return to your true self." Whether a quiet walk by a river, practicing yoga or meditation, or even sending an email over a meeting.

In the last fifteen years there has been a sudden boom in design and production of such spaces. They have become synonymous with innovation and technology. From MetroNaps's Energy Pods in Google offices to Jon Gray's Podtime in the Davis Centre Library on the Waterloo main campus, each product aims to provide the user with a publicly located private space, each offering variable degrees of privacy, comfort, and technological sophistication. Since 2003, MetroNaps has been leading the discussion of the idea of napping at work with professionals and trying to eliminate the stigma related to sleeping in public spaces. Energy Pod is the world's first chair, designed specifically for napping in the workplace.

In separate experiments conducted on rats and humans, scientists have found the first direct link between memory and sleep. They suggest that sleep can be the deciding factor between a student's passing or failing. Universities provide resources to increase hand-washing and to limit or eliminate smoking and the use of drugs and alcohol to help students to stay healthy, but they are not doing as much to address poor sleep. The effect of these insufficient practices emerges through academic research.

With the ever-increasing creeping of technology into our spaces, lives, and brains it becomes abundantly harder to pause and renew. We have reached a point where we no longer look at open concept office spaces filled with light and cubical as a luxury. Our schools and workplaces are loud and over-exposing. Our phones constantly light up with various notifications. And frankly, sometimes it's impossible to catch a breath. The average smartphone user checks it every six and a half minutes. That is the equivalent of 150 times per-day. Modernization has added so much to our quality of life, but are we also taking a moment to notice what is slipping through the cracks? What basic human-needs get neglected to have an unfulfilling, ersatz version of connection? Many of us regularly wake up not feeling rested, whether because of scant hours or our sleep quality. To remedy feeling burnt out, we actively seek various measures to fulfill our need for self-care, to reflect and regroup.



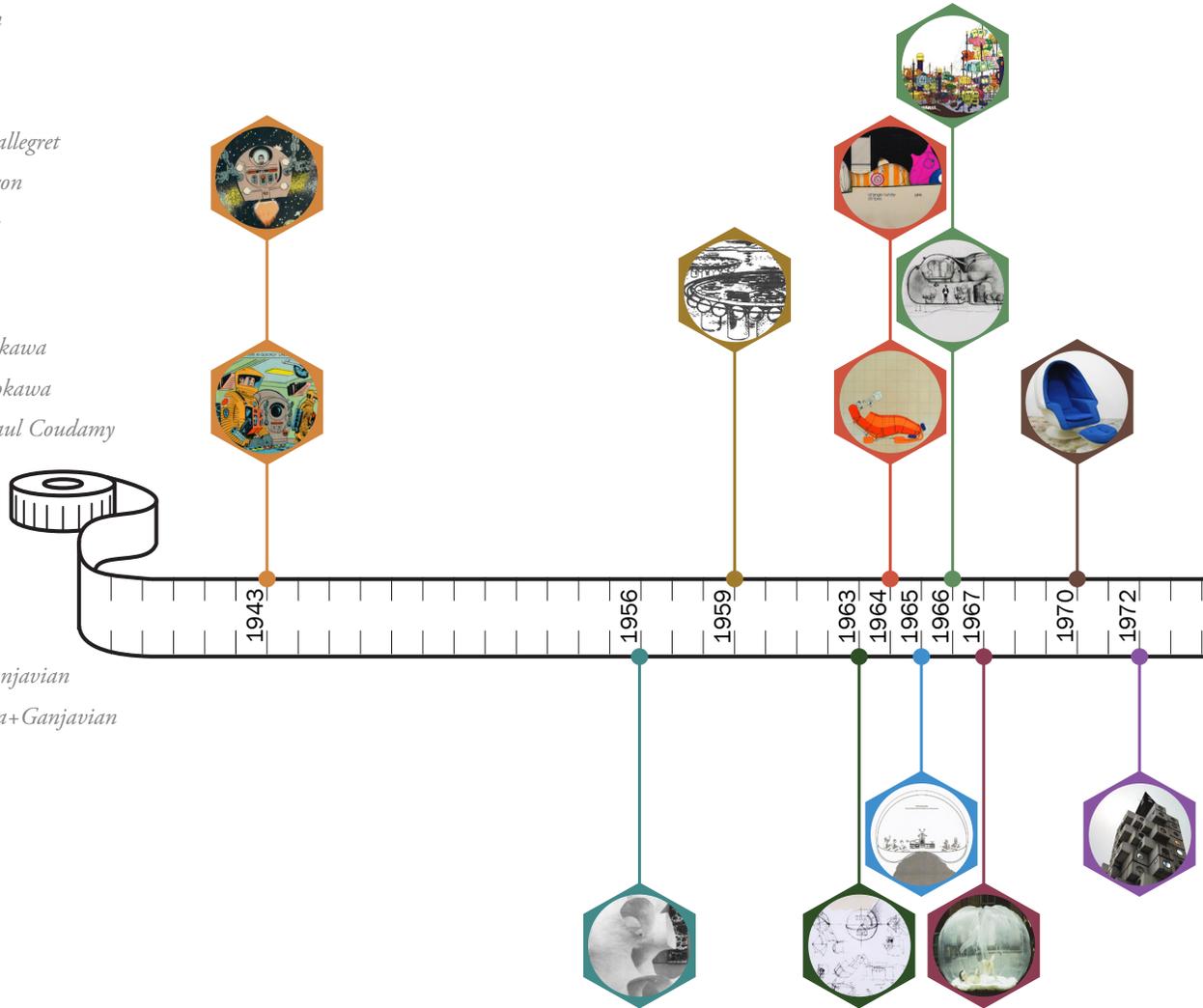
Figure 1.3 *The EnergyPod by MetroNaps*

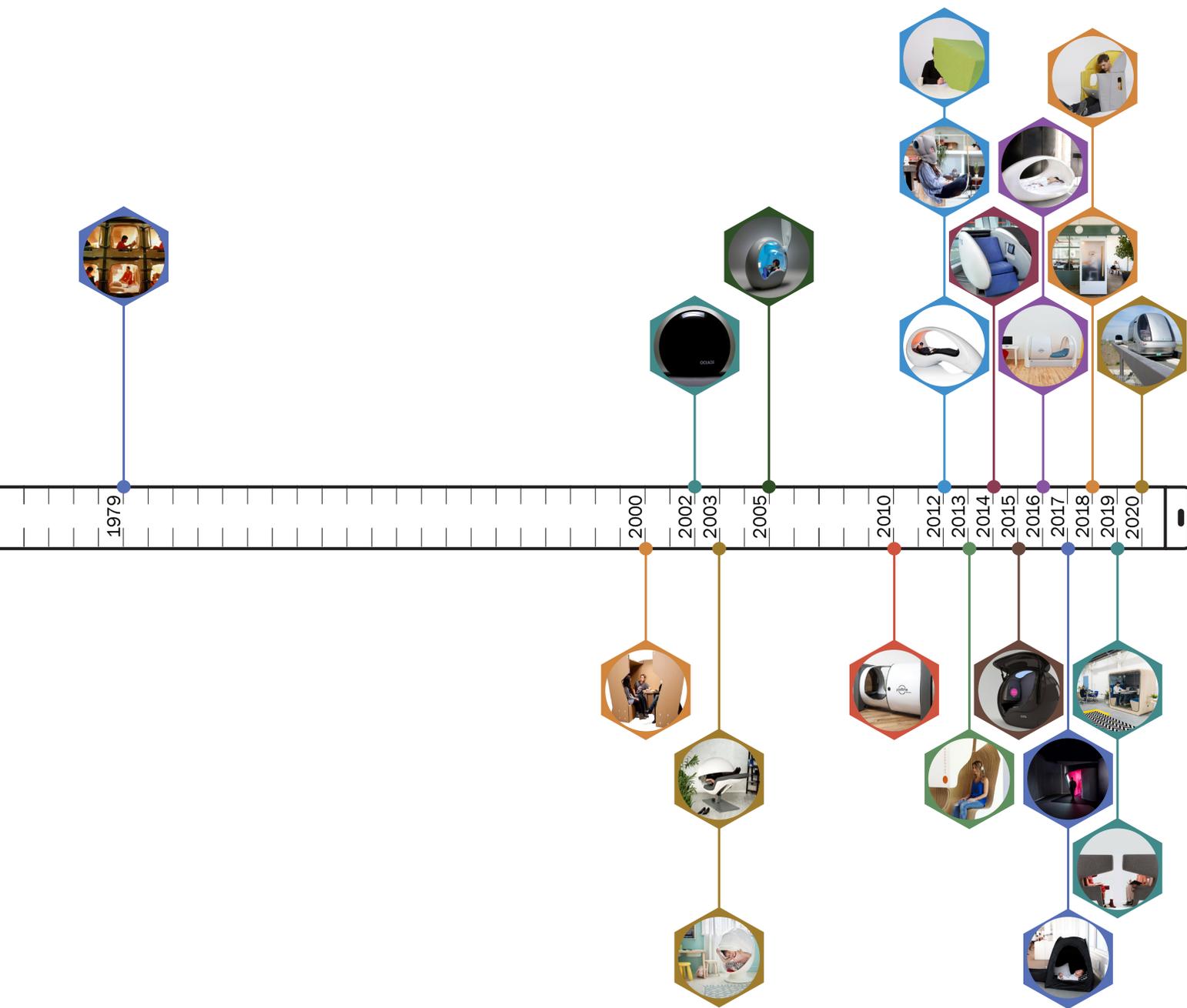
Asurion is a global tech care company. Asurion sponsored the survey by market research firm Solidea Solutions. The survey was conducted in August 2019 of 1,998 adult smartphone users. The results from the previous survey conducted in September 2017 of 2000 adults showed a 12 minute intervals.

The Foundation

Figure 1.4 A timeline of notable personal pods from 1943 to Present
From top to bottom and left to right:

- *Comic Books, Pods of The Future*
- *Soap Bubbles - James Stirling*
- *Marine City - Kiyonori Kikutake*
- *Drive-in House, Archigram*
- *Cushicle - Mike Web*
- *Air House - Ron Herron*
- *Envirobubble - François Dallegret*
- *Seaside Bubbles - Ron Herron*
- *Living Pod - David Greene*
- *Suitaloon - Mike Web*
- *Alpha chamber - Lee West*
- *Capsul Tower - Kisho Kurokawa*
- *Capsule Hotel - Kisho Kurokawa*
- *Celluloise Meeting Pod - Paul Coudamy*
- *Oculus - Lee McCormack*
- *Energy Pod - MetroNaps*
- *Ps Lomsk - Ikea*
- *Ovipod - Vince Fraser*
- *Podtime - Jon Gray*
- *Deskshell - Kawamura+Ganjavian*
- *Ostrich Pillow - Kawamura+Ganjavian*
- *Naptime - LUUUX*
- *HeadSpace - Rich Pierson*
- *GoSleep - Unipipe*
- *Orb - Lee McCormack*
- *Lomme - Cycle 13*
- *Podtime - Jon Gray*
- *Rest - UnStudio*
- *Pause Pod - Egotist Mondial*
- *The Sharkman - Yang Zhao*
- *The Room - Alejandra Albarrán*
- *Loop Phonebooth - onetwosix*
- *Ear chair - Jurgen Bey*
- *Personal Transport Pod - Jacob Roberts*





For Privacy and Comfort

The word privacy is used often and is extremely valuable to most people. It is challenging to precisely outline a definition for privacy despite it being a prominent aspect of daily life. The modern take on privacy either fails to provide a detailed description or becomes too exclusive, while the concept of labelling what is considered private and what is not is widely up for debate.

Even though we live in a society that as a whole is retracting on boundaries, which once were considered private, the need for privacy is still present. We work in open studios and open concept offices, navigate around the city and live much closer to a larger number of people. This makes it challenging to define a fluid concept like privacy as it touches many aspects of a personal life and society. This growth hinders or even at times eliminates our access to what one may consider a private space. It is important to acknowledge that not all privacy interests are equal. This is when a non-hierarchical accessible concentration space could satisfy this need.

The Poetics of Space is a lyrical exploration of home. By creating a journey through the house, from cellar to attic, Bachelard demonstrates how our perceptions of houses and other shelters shape our thoughts, memories, and dreams. Touching back on the importance of comfort and the inspiration of the womb, the design of the pod as a form of shelter become imperative to the experience of the user. Calculated design futures are essential to optimizing comfort while shielding users from the environment and external conditions. The pod is a dynamic project. It is the concept of a body without organs, which refers to a deeper reality underlying some well-formed whole, constructed from fully functioning parts.

The hierarchy in society often considers equally provided privacy and comfort frivolous. In *Nomadology*, Deleuze introduced the concepts around chess and *Go*. Chess represents the state and the striated space, while *Go* (a Chinese and Korean board game) represents the nomad and smooth space. He writes, “the difference is that chess codes and decodes space, whereas *Go* proceeds altogether differently, territorializing or deterritorializing it.” By deterritorializing the place of comfort and privacy, one can blur the lines of hierarchy. This is an opposition to any mainstream school of thought, you don’t need to be a CEO to have the power to close your door, shut your blinds, and disconnect.

Gaston Bachelard (1884-1962) renowned French philosopher who made contributions in the fields of poetics and the philosophy of science.

Gilles Deleuze (1925-1995) French philosopher who wrote on philosophy, literature, film, and fine art. His most popular works were the two volumes of *Capitalism and Schizophrenia: Anti-Oedipus* and *A Thousand Plateaus*.

A Design Manifesto

The decisions I make as an individual, and as a designer, impact the current geological era. Reverting to old methods, eliminating high levels of consumption, and simplifying our approaches to daily life can play a significant role in changing the world.

The problem with this overconsumption is that we have become less resilient. Our definition of comfort has changed. We are so engaged with our day-to-day lifestyle that we tend to forget to disconnect and take care of our minds and bodies.

När's structure and shape hinge on two aspects: first, the architectural endeavour of comfort, second, the environmental experience. These perspectives shape the following manifesto.

[1] A New Epoch

Today, scientific panels internationally have little doubt that we have entered a new geological era. We must face the fact that humanity's impact on the earth is clear. Millions of people travel across the globe daily. These travelers not only burn fossil fuels to move around but also check into airport hotels during long layovers. There, they use sheets that need to be washed, bathrooms that need to be cleaned, and electricity to set the rooms at the right temperature. Eliminating the need for an entire room can lower these impacts drastically. As Gaia Vince – author of *Adventures in the Anthropocene* – emphasises: “There is a conceptual difficulty in appreciating that in just a human lifetime, our species has profoundly changed this billions-years-old planet.” Despite the increasingly obvious evidence, we turn a blind eye to the extensive changes occurring on Earth at the level of individual citizens. Designing a comfortable and user-friendly pod can soften the impacts of traveling, and if designing a portable pod using recyclable and biodegradable materials could decrease our environmental footprint even a little, it should be considered.

[2.1] Craft in the Anthropocene

The Anthropocene suggests that over time humankind has become a global geophysical force intertwined with the most powerful forces of nature. We are depositing materials and substantially changing the world. Our activities are being imprinted and recorded in the layers of strata, rocks, and sediments and will be able to be read by future populations. The use of material is why

craft is a vital aspect of this era. How materials are gathered and manufactured into final products, and when they return to landfills, will affect this era. What we deposit back into the stratum will tell our tale, which offers an extreme projection of what could become of the earthly minerals eventually mined and used by craftsmen in a far future. This is where the use of environmentally friendly materials and methods could become substantially effective in production.

[2.2] Biodegradable Furniture

Biodegradable furniture challenges the idea of how products, like people, may come from dust, and to dust they shall return. The goal of technology is to help the end user live a more sustainable and ethical way of life through uses of local and sustainable materials. Biodegradable furniture can also be manufactured with a reduced energy footprint. The majority of these materials are not only available everywhere, but the time-honoured techniques of using them have also been passed through generations. This system creates something that anyone can use to create their own low-impact and easily recyclable furniture.

[3.1] Back to Basics

By taking advantage of nomadic methods, the use of synthetic materials and harsh chemicals can be drastically reduced or thoroughly eliminated. This is a contextually based approach, drawing heavily from local culture, history, and geography, which determine the language of each instance and the elements that compose them.

[3.2] Designer-Gatherer

A designer-gatherer considers the challenges of design using sustainable products. The use of sustainable products comes with limitations regarding variety and availability. The design process is partially dictated through the use of materials that have been recycled, cultivated or gathered within close proximity to eliminate known adverse effects of using new products. Currently, there are designers who are invested in redefining our definition of recycled and biodegradable by refining this art. Adital Ela of S-Sense Design is one such designer and teacher whose work aims to incorporate “indigenous knowledge into sustainable design.”

[3.3] Nomadism of Time and Energy

Renewability is an integral feature, which can influence every aspect of production. A product as a system could take advantage of sustainable materials and renewable energy sources throughout its production phase. Multiple distinct elements must come together to create an optimal system. This assembly describes the power and importance of several minor elements working together to support a whole. This idea evokes Gestaltism, a psychological theory that argues for the importance of the whole above its compositional parts.

[4] Embrace

Going back to the initial inspiration for this shelter, its realization as womb-like is imperative to the desired experiences of users in its space. Design features are calculated to shield users from their external environment and its conditions. The concept of an embrace speaks to an understanding of, and adaptability to, the body that occupies a particular feature. This can also be a guiding space planning strategy, allowing for optimal outward views, aligning users' backs with a solid wall or surface. Embracing also addresses the user's needs for anthropometric and ergonomic contours that support the body in a healthy, stable and comforting manner.

[5.1] Soft Room

The architecture of portable rooms and compact houses has become more popular in recent years due to the rapid growth of populations, especially within metropolitan areas, and the compromises they demand to achieve sensory concentration. Although these rooms vary in size (from the size of a single person tent to a self-sustaining trailer), they all investigate the same issues around design, construction, deployment, operation, and future development. The pioneers in creating portable architecture have become experts in designing these small pods, not because they initially selected this niche as their chosen field, but because the problem they attempted to solve has led them here.

[5.2] Comfort and Nurturing Matrix

The model of the nurturing matrix is particularly relevant to understanding nurturing spaces within a larger urban scale, for through distribution of nurturing elements that respond to the sensitivities of the user, the nurturing matrix grows. The word matrix, derived from mother, is from the notion of "that which encloses or gives origin to"

Nurturing matrix is the product of nurturing spaces. It is derived from a series of designed locale interventions that work together, forming a matrix that supports a community as a whole regardless of its scale.

Matrix, the definition, Online Etymology Dictionary - 22 March, 2017

something. Rooted in the term womb, it is where understood to be the source of life and the first spatial experience one encounters. It is notable to mention that the growth of this matrix, translates into a multiplication in growth of the nurturing spaces, thus increasing its .accessibility

A Therapeutic Encounter

Stress not only affects a person's mental health, but it also takes a physical toll on the body. Long-term or chronic stress changes the way the brain works. Normally a person's stress hormones return to a baseline once the stressful event is over. Chronic stress affects this system by keeping the hormones from getting back to a baseline. Inflammatory hormones released due to stress increases cardiovascular and cancer risk, among other issues. The goal of this thesis was to go beyond building a, simply put, indoor tent. The objective was to create a tool to fight stress by passively promoting either tranquillity or exhilaration.

Our sensory receptors react to our environment. For some, the smell of freshly brewed coffee wakes them up, while some use essential oils like lavender to promote better sleep. We open curtains and seek light when feeling down and use colours to evoke emotions. We connect to our environment through sight, touch, sound, and smell. Each of those external stimulants elicits an internal response in us, and it is through these avenues that the sensory concentration space I have designed aims to connect to its target users.

Accessible to the students of the School of Architecture, this work investigates the following therapeutic components and methods of alternate healing to enhance the individuals' sensory experiences while aspiring to alter the state of the school by eliminating awkward naps at desks and cries in washroom stalls.

Chromotherapy

Chromotherapy, also called colour therapy, is the use of colour and light to gently bring about homeostasis. This alternative medical method uses the visible spectrum colours of light to promote natural healing. Although considered pseudoscientific, chromotherapy follows the same principals of light therapy used in neonatal jaundice treatment and blood irradiation therapy, which are scientifically accepted medical treatments for several conditions.

Homeostasis is the inclination toward a stable equilibrium. In biology it is the state of steady internal, physical, and chemical conditions maintained by living systems. This is the condition of optimal functioning for the organism and includes many variables, such as body temperature and fluid balance.

The claim is that exposure to certain hues of light can help people feel better physically or mentally, although this has not been backed up by experimental, peer-reviewed research. On the other hand, colour psychology, which examines the effects of perceiving colour on psychological functioning in humans, is a well-established subject in psychology. Ultimately, since colours give off different wavelengths of electromagnetic energy, it can be conceivable that certain colours have positive effects on the mind and the body.

LEDs allow a dynamic change of colour while being efficient and long-lasting. Through cross-referencing chromotherapy and colour psychology, the following eleven colours were chose to be used in the future fabrication. Each colour possesses frequencies of a specific vibration, and each vibration is related to a different mental and physical state. Chromotherapy uses the visible spectrum (colours) of electromagnetic radiation to adjust body vibrations to frequencies that result in harmony and health. It can also treat seasonal affective disorder (SAD).



Figure 1.5 LED colour chart, Visible light spectrum and the corresponding benefits

LED or a light-emitting diode is a semiconductor device that emits light when an electric current is passed through it.

Sound Healing

A sound therapy treatment is a holistic healing treatment that uses both a passive and participatory experience to relax one's mind and body. Some proponents also believe it can relieve certain ailments, including anxiety and insomnia. The passive aspect is that the user becomes more relaxed by lying down and slowing their breath. By doing this, one can prepare oneself to become the receiver of sound. It is in this place of stillness that the user takes part in the process by becoming more open and aware of each sound that comes in. Sound helps create the pathway to this place of stillness, the same as a mantra helps to arrive at the still point of meditation.

On a more simplified level, listening to music can have a remarkably relaxing effect on our minds and bodies. There has been extensive research on the influence of music can have on physiological functions: slowing down or boosting the pulse and heart rate, lowering blood pressure, and decreasing the levels of stress hormones.

Motion-Assisted Therapy

The therapeutic setting for individual psychotherapy has shifted over the recent years. The recent developments place the patient in a more dynamic state, whether a treadmill, a bounce ball or a rocking chair. Motion-assisted therapy improves mental focus, promotes relaxation, and reduces pain. Movements such as rocking dilate blood vessels, resulting in easier blood flow throughout the body. This encourages healthy blood pressure, which reduces stress, and rejuvenates the body.

Motion-assisted therapy methods are growing in popularity as a tool for increasing emotional and psychological wellbeing in fighting dementia. "There's the stereotype of older people on a porch happily going back and forth in their rocking chairs," says nurse researcher Nancy Watson at University of Rochester. "It turns out that the activity really does bring some peace of mind to many folks." It's been very well-documented with infants that a gentle repetitive motion has a soothing effect. This study has shown that the same is true in an older population that is emotionally distressed. Residents who used the platform-style rocking chairs also requested less pain medication during weeks they rocked. Rocking motion also stimulates the balance mechanism in the inner ear. Improved balance was also seen in the aforementioned dementia patients.

Sound Bath is a meditative experience and a relaxation technique where participants 'bathe' in the sound waves produced by instruments such as drums, singing bowls, and chimes as well as the human voice.

Aromatherapy

The use of essential oils for spiritual and therapeutic purposes goes back to ancient civilisations in Persia, China, Egypt, and Rome. Today, aromatherapy is considered a pseudoscience that uses aromatic materials, including essential oils and other aroma compounds, with the aim of improving one's psychological or physical state.

Essential oils, also known as herbal or floral essences, can be used individually or blended together to support and promote this healing process. Whether to uplift and energise, or to sooth and calm down, aromatherapy blends, improves, and maintains mental and physical health. As a designer-gatherer, I value the practice of making things. I chose a variety of available fruits and home-grown herbs to make my own essential oils, in order to create the most pure and genuine results. Some oils were cold pressed, while others were heat extracted. Finally, these oils were mixed in different ratios and combinations based on their attributes to create the following four blends.

*Refresh: A contemporary take on the famed Four Thieves
Vinegar*

*Ingredients: Clove Bud Oil, Lemon Oil, Cinnamon Bark Oil,
Eucalyptus Oil, Rosemary Oil*

Aroma: Sweet, invigorating, and camphoraceous

Attributes: Uplifting, energizing, and cleansing

Unwind: Take your time to unwind and feel nurtured

*Ingredients: Orange Oil, Tangerine Oil, Lavender Oil,
Chamomile Oil, Ylang Ylang Oil, Sandalwood Oil*

Aroma: Floral Citrus

Attributes: Calming, relaxing, and soothing

Invigorate: The perfect pick-me-up to revitalize your mind

*Ingredients: Bergamot Oil, Orange Oil, Lime Oil, Grapefruit
Oil, Lemon Oil*

Aroma: Citrus with light herbal

Attributes: Uplifting, refreshing, and energizing

*Breathe: An opening blend encourages deep breathing and
relaxation*

*Ingredients: Peppermint Oil, Eucalyptus Oil, Hyssop Oil,
Rosemary Oil*

Aroma: Fresh Mint

Attributes: Purifying, cleansing, and refreshing

Figure 1.6 *Essential oils blends prepared during the research phase, ingredients, and attributes*

The Framework

Part Two

IS THIS
FELT?

Some Hindus had brought an elephant for exhibition and placed it in a dark house. Crowds of people were going into that dark place to see the beast. Finding that ocular inspection was impossible, each visitor felt it with his palm in the darkness.

The palm of one fell on the trunk.

'This creature is like a water-spout,' he said.

The hand of another lighted on the elephant's ear. To him the beast was evidently like a fan.

Another rubbed against its leg.

I found the elephant's shape is like a pillar,' he said.

Another laid his hand on its back.

'Certainly this elephant was like a throne,' he said.

The sensual eye is just like the palm of the hand. The palm has not the means of covering the whole of the beast.

- Jalāl ad-Dīn Mubammad Balkhī, "Rūmī"

Masnavi-i Ma'navi - 13th Century A.D.

Translated by Arthur J. Arberry

The Framework

*No one leaves home unless
home is the mouth of a shark.*

Warsan Shire

Of Experiments and Felt

The function of the design manifesto was to highlight the imperative aspects of När's design, and a key element to this process was selecting the right materials. Through a combination of research and experiments, I aimed to answer the following questions about the qualities of each material being considered:

- Is it environmentally conscious?
- Is it safe to build with?
- Is it easy to work with?
- Is it comfortable?
- Is it affordable?

A total of six materials – plastic, newspaper, denim, wicker, carpet and felt – were tested and ranked using the above criteria.

The first three were recycled materials: plastic bottles, newspapers,



from top to bottom:

Figure 2.2 Plastic bottle rope cutter.

Figure 2.3 Layering the raw wool in an alternating horizontal, vertical and diagonal directions.

Figure 2.4 Soaking felt in warm soapy water and rolling.

Figure 2.5 Wet felting, Final result.

and denim. For the plastic bottles, I used a DIY plastic bottle rope cutter to shred them into 3mm strings, which then I wove into a 20x20cm sheet. For the newspaper, I used a shredder and then soaked the pieces in water overnight. After draining the excess water, I used the pulp and a plastic tray as a mold. Dried sheets were between 7 to 11mm in thickness. I purchased the recycled denim from Rona. It was being sold in 25mm thick sheets as a multi-purpose insulation. The newspaper and denim were biodegradable. None of the three would have provided any fire-rating unless chemically treated. Plastic bottles were the only moisture and insect-resistant option. Plastic bottles, followed by denim, were noticeably more durable against wear and tear, although it was difficult to shape or build with them. None of the three options provided enough structural integrity. Denim again came on top in both comfort and noise dampening. All three options were very cost efficient (free).

The second group contained newly obtained materials: wicker, natural fiber carpet, and wool felt. For the wicker option, I used slender branches from a willow tree and spiral-wove them similar to a basket. The carpet was factory made but I used wet felting to transform raw wool into sheets of felt for the last option. The process was delicate yet crude. It required hours of rolling and unrolling the wool to achieve the desired texture and consistency. Wicker and felt were the least processed, but all three options were biodegradable. Felt was the only material that was naturally fire resistant and self-extinguishing. Upon research, it became clear that felt reacts the same to fire as a sheet of drywall does in the same thickness. Felt was also the only new material tested in this group that was moisture-resistant. Wicker and felt were both insect resistant. All three were very durable and provided enough structural integrity. As an armature, I struggled with basket weaving and I found the material hard to shape and assemble. Carpet and felt were also the two most comfortable and noise dampening materials I tested. Wool felt was the least cost-efficient.

Wool felt was biodegradable. It was a noise, vibration, and thermal insulator. It could hold 50% of its weight in water without feeling wet to the touch, and was a naturally viral, bacterial and fungal repellent. Not only it checked all the boxes I was concerned with, but it also was a delight of a material to work with. The only concern was its price tag. Each linear meter of 12mm F-7 industrial felt would have cost me \$280. My entire budget for this prototype was \$800. I needed to find a way to lower the cost order if I wanted to go with the product that was giving me the best material properties and design aesthetic.

När: Constructing a Sensory Concentration Space



Figure 2.6 Materials attribute ranking. A visual guide

Of Apprenticeship



from top to bottom:

Figure 2.7 Brand Felt Ltd. head office, Mississauga, ON

Figure 2.8 Brand Felt Ltd. factory, Mississauga, ON

Figure 2.9 The Felt Store, sales office, Mississauga, ON

SAE is a category of pressed wool felt, made from high grade wool fibers which are mechanically pressed using heat, moisture and pressure. The process is mandated by SAE standards which determine the wool content, density, and other properties of each grade. The lower SAE numbers have a higher wool content and thus are more machinable, and have greater vibration absorption and abrasion resistance. SAE felt is also unaffected by sunlight and maintains its original form after long periods of stress.

Felt was the material I wanted to pursue, so I began searching for local manufacturers. That is how I came across the Brand Felt Factory in Mississauga. I reached out to Jasper Brand, the executive manager of Brand Felt Ltd. and explained my thesis and asked if I could tour the factory. At first, he was hesitant, and it took some persistence, but he finally agreed to meet with me. Later on, he explained that each mill and manufacturer have their own well-guarded secret mixes and techniques, thus they rarely let any outsiders in.

I visited the Brand Felt Factory for the first time in July 2018. Jasper was much younger than what I had pictured. As we sat down in the boardroom, I began by sharing my thesis with Jasper. He wanted to know why I chose felt, what my design goals were, and what I was hoping to gain from touring the facility. “Now that I know you are not a mole, let me begin by telling you a little about who we are and what we do here.” Jasper was the fifth generation of manufacturers of SAE Industrial felt in Canada. He came from a long line of felt manufacturers in Germany, where his family still operates the Filzfabrik Wurzen mill. Filzfabrik Wurzen is the oldest felt mill in the world today and is the successor company to the once famous J.D. Weickert Piano Forte Felt Factory, also known for its legendary Weickert hammer felt from 1848 until 1945. Brand Felt Inc. was established in 1959, the factory was recently expanded to include cork, neoprene, burlap, foams, and rubbers in their product line.

“Young people don’t shop for felt anymore. For the last couple of years, we have been trying to rebrand felt into something new and exciting. Now we sell yoga mats and water bottle covers. For me, felt is art. Here we only use sustainably-sourced raw wool, and that is not cheap. You can buy Chinese felt online for a fraction of the cost and that doesn’t help us either. You would see and feel the difference if you put the two side by side. You can even smell it, but many people don’t want to pay extra for something they think they can’t see,” Jasper said as we walked across the street to tour the factory. He seemed passionate about and proud of his work. The intense heat and the potent smell of raw wool caught me off-guard even before I set foot in the building. “You’ll get used to it in no time,” he said as he led me through a sea of rolls of felt in every tone of cream, grey, brown and black toward the loading bays. He pointed at the tents of wool bales. “This is where it all begins.” For the next hour we walked through the factory as he explained every step in the art of felt-making.

[1] Arrival

Cleaned wool arrives in bales from all over the world. Wool hot spots include: New Zealand, Spain, and South Africa. The wool is available in a variety of types and grades, which is determined by the fibre length and denier or thickness.

[2] Mixing

Different grades and colors of wool fibre are then mixed depending on the type of the felt being made.

[3] Carding

To begin the felting process, the wool is sent through a carding machine to loosen and untangle fibres from the clumps they form naturally. Rotating combs then card the fibres, aligning them into a fine, even sheet. Several of these fluffy coats are layered to achieve the desired thickness to form batts.

[4] Wet Felting

The batts are laid out on a steamy conveyor belt and covered with a wetted canvas to prevent moisture from escaping. This steaming process prepares the wool fibre structure for felting. The batts are then compressed between oscillating metal plates, which causes the fibres to interlock. Wool fibres have a scaled-like cellular structure that allows them to become entangled. When the wool is exposed to moisture and heat, the fibre's scale structure opens up and outward. Under the combination of heat, moisture, motion and pressure, the fibres become permanently entangled, or felted.



from top to bottom:

Figure 2.10 *Arrival, an open bale of raw wool*

Figure 2.11 *Mixing grade A white wool*

Figure 2.12 *Roll of wool after carding*



from top to bottom:

Figure 2.13 *Roll of Industrial grade wool post fulling*

Figure 2.14 *Trimming and pressing*

[5] Fulling

In the fulling stage of the wet felting process, felt batts are sprayed with boiling water and fed through rollers which apply further pressure, heat, moisture, and movement. Under this process, the batts continue to shrink, tighten, and harden. This process is repeated until a desired density is achieved.

[6] Dyeing

The felt batts are washed to remove any impurities and ensure uniform colouration. Vegetable-based dyes are introduced and set in a dye bath.

[7] Drying

The felt is rolled out across a drying bed and dried with heat.

[8] Trimming

The irregular edges are trimmed off on each side to create a crisp finish.

[9] Pressing

The felt is pressed and measured to ensure a uniform thickness.

[10] Rolling and Packaging

In the final manufacturing stages, the felt is rolled, packaged, and ready for shipment.

It was mesmerizing to witness sheer sheets of fibre fly off the carding machine and float in the air across the room to be rolled into cloud-like giant rolls of brushed wool, to hear the gentle hum of a century-old, one-of-a-kind machinery, to feel the steam rising from beds of wet felting fill up the space, and to watch two-dozen technicians attentively handle each step of the production. I felt on a mission to soak up as much information as I possibly could. “What a wonderful process!” I exclaimed as we were leaving the factory, and half-jokingly added, “are you hiring by any chance?” They were not. “Too bad! It really seemed like a fun trade, also I was really hoping for that employee discount,” I continued, as I was getting ready to leave. I was packing away my camera and notebook, when he asked if he could see the sketches from earlier again. “How much felt do you think you will need?” Luckily I had the 3D model with me to get a few measurements off of. The answer was in the ballpark of 6 metres of 12mm F-7. I did the math in my head. “uh... that is more than double my entire budget!” He pulled the calculator toward himself and while punching in a series of numbers asked if the shade mattered. It did not. “If you are serious about learning how to do this, I think we can work something out.”

Over the next two weeks I shadowed Jad and Ninad. It was August, and yet the factory was so hot that I would step out periodically to cool down. Standing up all day with virtually nowhere to sit down made the days feel even longer. At the end of each day, as I would walk out sweat-soaked, with achy feet, and covered in wool fibres, knowing I had learned something new. Whether it was how to correctly open a bale, or how to mix colours, how to properly load a machine or what noise to look out for, it was a dance, and I thrived off it.

By week three I got to collect all the grey bale leftovers from all over the warehouse, weigh it, and feed it through the mixer. By Thursday evening, my sheet of wool was trimmed, pressed, rolled and packaged. I put my name on it, dropped off my 138 lbs roll of felt at their storage warehouse, paid two dollars and ten cents per pound (for 150 pounds of raw wool) said goodbye to an incredibly kind and supportive group of people, and returned to Cambridge. It was the time to tie all the design's loose ends and start the construction.

Of När

My intent in designing När was to provide an environmentally conscious private place of solace within a bustling public setting. The structure of the pod comprises of two main components: a wooden basin enveloped in a layer of felt. The sheet of felt I made earlier was employed as a sustainable structural element that defined the enclosure and catered to the desire of comfort and privacy I looked for. Remaining sustainability-minded in sourcing other materials, I also used recycled concrete form-boards for fabricating the base and sides. The base was slightly raised off the ground and suspended via shock-cords to accentuate and encourage a rhythmic movement. The cushion-cover was sewn from 2-millimetre-thick red felt and then filled with recycled off-cuts of memory foam from a local factory. I took advantage of the uneven texture of the foam pieces to create a soft feel while allowing the users to sink in while providing them full-body support. The crown utilises 100% of the wood offcuts and elegantly houses all the electrical equipment used for creating the sensory experiences.

The light source is a 6-metre strip of RGB LED that I coiled around the interior of the crown. The indirect lighting illuminates the interior as it gently washed down the sides and thus makes the interior feel more open than it actually is. As a claustrophobic person, it was important to me to employ such techniques to counter the sense of confinement within the space. Another trick I used was to create a breeze using a silent exhaust fan fitted in the centre of the crown to prevent air from becoming stagnant inside När. This was inspired by MRI machines that use a subtle stream of air to increase comfort during imaging. The fan in När boosts air circulation by moving the air from the inside to the outside. The air then flows to the inside of the pod due to the negative pressure created. This process also improves the air quality as felt filters out air particles in the range of 1 to 200-micron. The directional speaker is installed directly above the exhaust fan and faces downward toward the user. The sound field creates a more immersive experience by providing a crisper sound quality and improving noise control. The user can access the speaker via Bluetooth connection to their mobile device to play music or pick from the pod's white noise library. Due to the limited space available above the crown, I custom-made a scent diffuser by 3D printing the reservoir fitted with an ultrasonic atomizer. The system disperses a negatively-charged fine mist of water and essential oils into the air. A built-in power plug and USB port allows the user to charge their electronic devices while using the pod.



Figure 2.15 När, School of Architecture, Cambridge

Light, audio and scent components of the pod are all electric-powered and require a control interface. Initially, I attempted to create an app as an interface to control and customize the sensory experience. The app was to offer the user two options to pick from: either a guided sensory experience, or a manually-controlled environment. Through the guided experience, the user would first answer a few basic questions regarding their mental and physical state and the environment then adjusted based on these responds. The manual control, on the other hand, would allow the user to pick their own scent, light intensity and colour. They could also pick from the white noise library or play any music by connecting their mobile phone to the Bluetooth speaker.

I began by programming the lights into an app to adjust the colours, as well as their brightness and patterns. I began experiencing problems when during the next step I tried to add the audio controls to the light-control interface. It became apparent rather quickly that creating a functional and user-friendly app was no easy feat for me, especially as a novice programmer working with time constraints. Fabricating a prototype while programming an elaborate app fell outside the scope of this thesis. In the end, I made the decision to separate the controls. I launched the app to control the lighting and also as a snippet to showcase my design intent and left both the audio and the scent-diffuser to be operated manually.



from top to bottom:

Figure 2.16 *När - looking out, School of Architecture, Cambridge*

Figure 2.17 *När - the crown, School of Architecture, Cambridge*

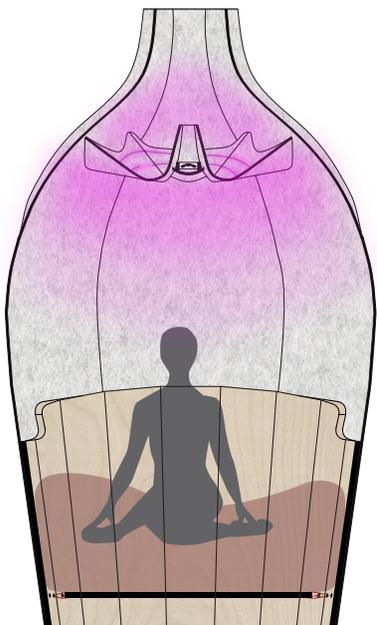


Figure 2.18 När - Chromotherapy module

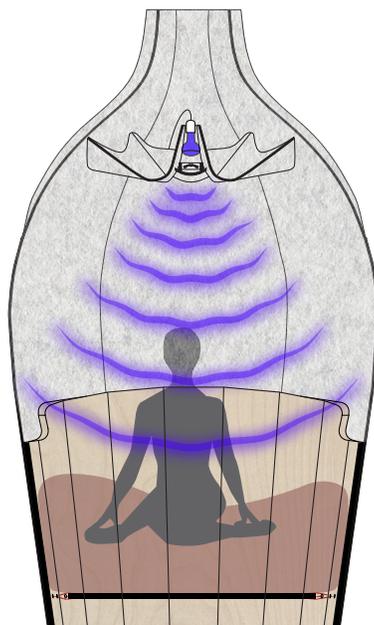


Figure 2.19 När - Sound healing module

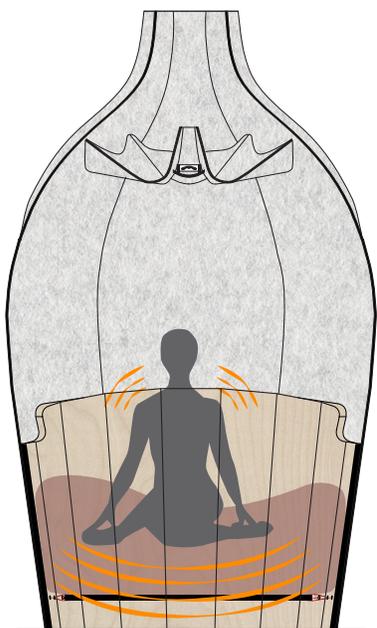


Figure 2.20 När - Motion-Assisted therapy module

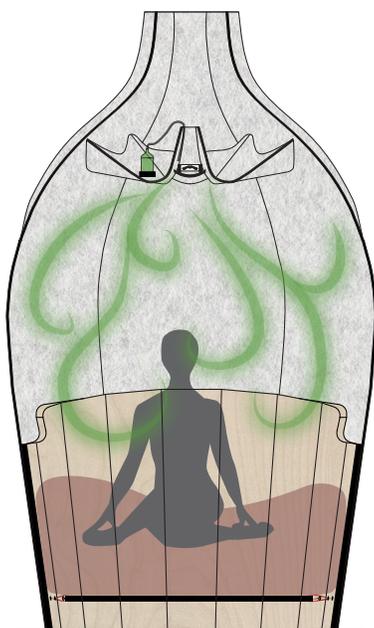


Figure 2.21 När - Aromatherapy module

The Framework

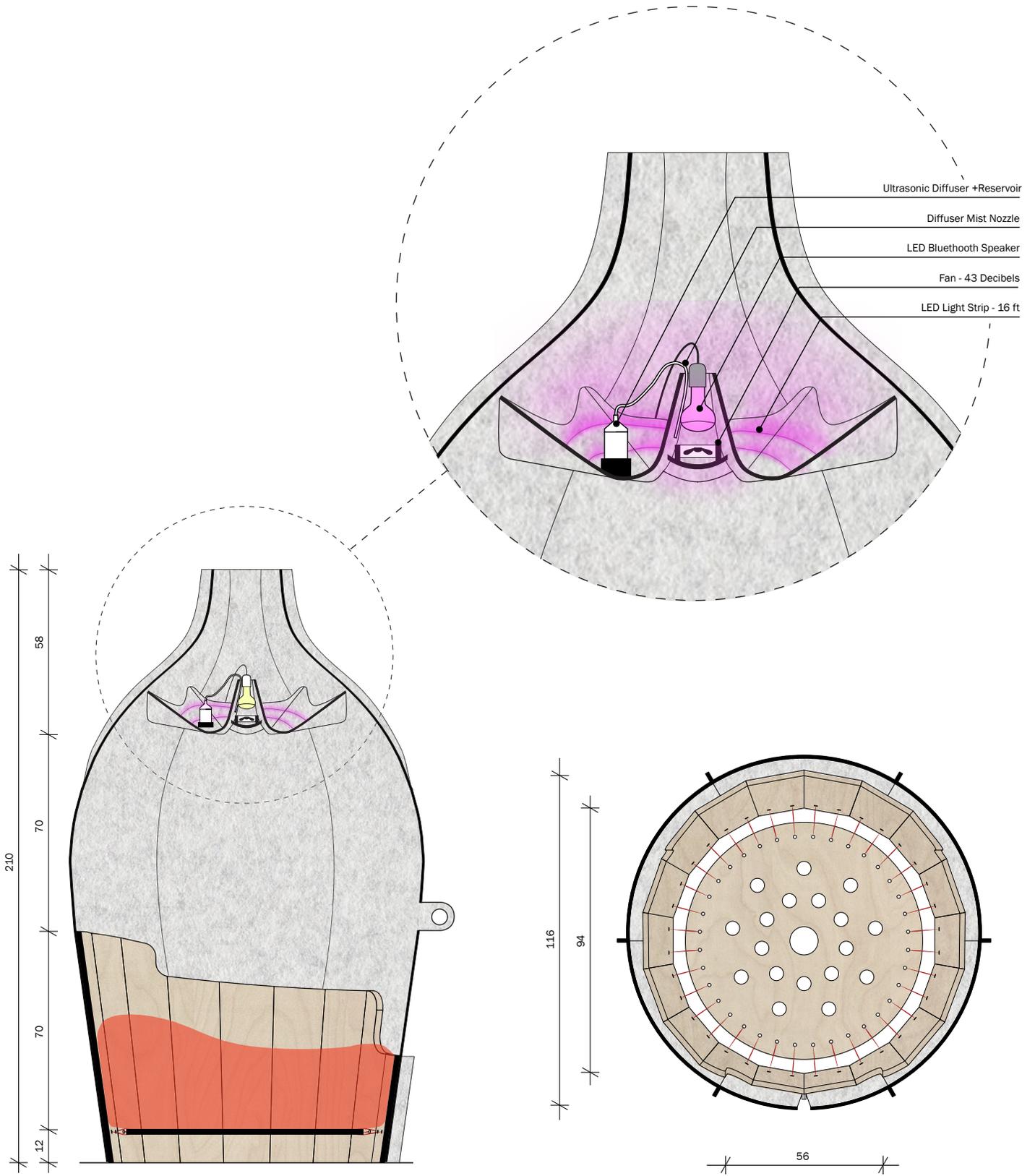


Figure 2.22 När - Section + therapeutic modules detail - NTS

Figure 2.23 När - Suspended base, Plan - NTS

Of Sway

I began constructing the pod from the inside out. The wooden base and the cushion insert were the first pieces I constructed. By the end of the second week of October 2019, I was getting ready to work on the Felt layer. I called the Felt Store to schedule a time to pick up the sheet of felt I had made earlier. The next day I had a voicemail from Marina at Brand Felt. “Hey Vantar, we are having difficulties locating your item. I went to the warehouse to look for it, and it’s nowhere to be found. I am trying to sort this out. Call me when you get this message.” The next day she confirmed that my roll of felt was sold. The bigger problem was that they did not have the same product, in a similar tone, available in stock, and it would have taken them closer to a month to custom-make another roll for me.

I designed every element of När around felt, which rendered it practically impossible to replace. Although the next closest factory was in Michigan, replacing the felt was financially impossible, and using another material to represent felt would fall short in both aesthetics and performance. After the initial shock and devastation were passed, I knew I had to go back to the drawing board. What were the fundamental characteristics of this design? Which elements were essential and which could I afford to let go off? And of those I deemed important, how was I to go about reinventing this metaphorical wheel and do so with the limited budget left?

As I peeled back the layers to focus on the experiences I aimed to create, it soon became very obvious that the goal of När was to soothe and nurture your body and mind and allow your senses to concentrate inward. This was the restorative niche born from the desire to hide away in plain sight. That is how I designed Sway, the portable and deconstructed sister of När.

A saucer was CNC-cut from the leftover recycled concrete forms to define Sway’s physical boundaries. It was then polished to a mirror finish on the concave side and laminated with a thin layer of felt on the convex side. The serene smoothness of wood and the tender weave of felt elicit the viewer to get up-close and personal. With the convex side on the ground, it inspires a sense of play. A seat to rock, spin, or sway in. The slight curvature of the saucer assures gentle movements. The user’s safety is also provided during rocking by holding on to the edges, while the layer of felt dampens any rocking noises. Flipped over, it acts as an ergonomic meditation block to get comfortable on, move inward, and find stillness of body and mind.

The headgear is an oversized hood, also made from felt and reinforced at seams with boning. It allows for privacy while virtually eliminating exter-



from top to bottom:

Figure 2.24 *Sway - Someone meditating*

Figure 2.25 *Sway - Chromotherapy*

The Framework

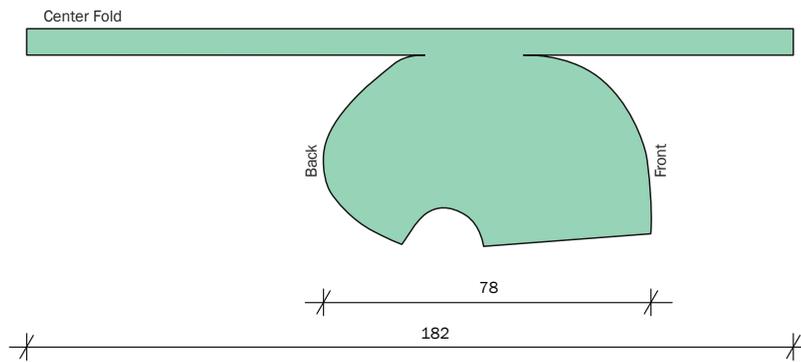


Figure 2.26 Sway privacy shroud - pattern -NTS

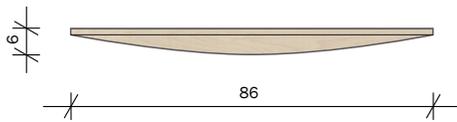


Figure 2.27 Sway rocking base - NTS



Figure 2.28 Sway LED controller + Power bank

nal distractions. The speaker comfortably rests around the neck to create an audio dome and an immersive experience. Finally, a sheet of flexible printed circuit with 125 GRB LED lights is laminated between the layers of the hood. The LED controls are combined with a lithium ion battery to allow wireless operation. To create a cohesive experience, I programmed the same eleven colours and white noises from När into the headgear. Sway became the deconstructed interpretation of a restorative niche, build upon När's intentions.

The Home Stretch

On November 15th, exactly four weeks before my scheduled Master Thesis Review, I received a call from the Brand Felt. My replacement sheet of felt was ready to pick up. The work began the very next day. I am one who obsessively cares about even the most insignificant details. I can spend days working on details which many would never see or notice. With only one sheet of felt and the deadline fast approaching, I had no time to waste and no room for errors. I had one shot to execute a clean and sophisticated final product and to finish it on-time. To keep myself in check, I created a template for the felt component. It was a slightly modified version of the 3d model, altered based on observations from previous sketch models. It enabled me to create a uniform pattern creating no wasted felt. The use of template for cutting and stitching the pattern streamlined and sped up the process and prevented mishaps. I used a pneumatic punch tool to create the holes for stitching.

The last step was to assemble the crown to house the therapeutic components. First the exhaust fan, followed by the speaker, the ultrasonic diffuser, and finally the LED strip light were connected. The plan was for the crown to hang flawlessly from the outer layer with each point of its star-shaped form meeting the husk at its seams. What I failed to account for was the accumulated weight of these components and the structural integrity of the envelop with upwards of 25 lbs suspended from it. After a few unsuccessful attempts trying to form the felt so that stood up on its own, I used 5mm fibreglass rods in each seam to hold the form up. Small pockets were added on either end of each seam to keep the rods in place and in compression. Adding supplementary ribbing provided the needed support by pushing against the seams. This ballooning effect also noticeably opened up the interior.



from top to bottom:

Figure 2.29 Sway - Family Counselling Centre Of Brant, Brantford

Figure 2.30 När - Lighting controller

The Framework



Figure 2.31 När - Felt exterior pattern +
Stitching pattern

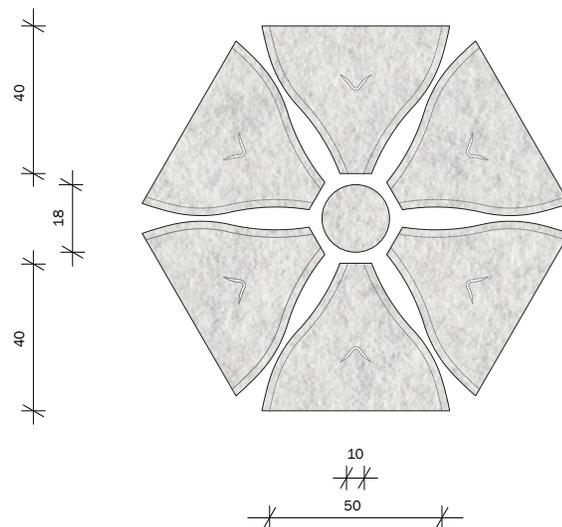
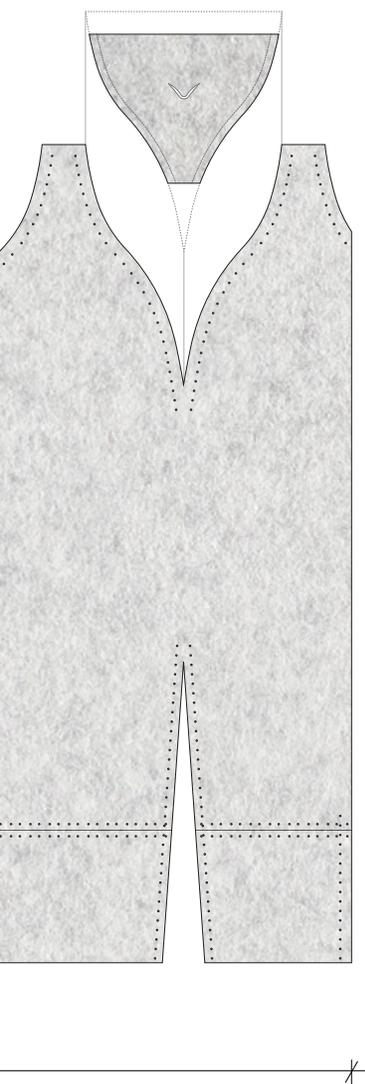


Figure 2.32 När - Felt interior crown
wpattern



The Fabrication

Part Three

Figure 3.1 *In Workshop - Fabricating*



Why cannot every life hold out hope for a resonant, centering datum? This need not keep others at bay, cast them as strangers, or be situated outside the city. The hut's memory suggests strategies for making such a datum. It might frame in rich and multiple ways itself, its inhabitants and their relationships, its equipment, its social context, the theater of passersby, the sun and tracking shadows, glimpses of the sky, breeze and wind, rain and snow, flora and fauna. It might be neither too big nor unnecessarily flexible, instead helping its occupants to configure intensities of situation. It might encourage reflective moments thought at a slower pace. Configuring daily, weekly, and seasonal routines, such a datum could dignify and sustain any life, attuned to the commonplace closely watched. Such centering may arguably be achieved more easily in a rural setting. However, the challenge posed by the hut's memory, particularly for architects, is how so powerful a datum might be achieved—without exclusion—in urban conditions.

*-Adam Sharr
Heidegger's Hut - 2006*

The Fabrication

It is difficult to begin without borrowing, but perhaps it is the most generous course thus to permit your fellow men to have an interest in your enterprise.

Walden, Henry David Thoreau

A Photo Diary

It all started with a question. How is one to ground themselves in an increasingly virtual and abstract world? Fabrication became the medium to explore this question further. The question began to grow, develop and ultimately flourish into two personal interpretations of a restorative niche, separate yet interconnected.

När and Sway each were created twice. The first creation was mental, conceived through imagination and design. The second creation was physical, moulded by my hands, which resulted in the manifestation of an abstract idea. The following photos are the evidentiary record of this process.

The Fabrication

När

The Base



Figure 3.2



Figure 3.4



Figure 3.3



Figure 3.5

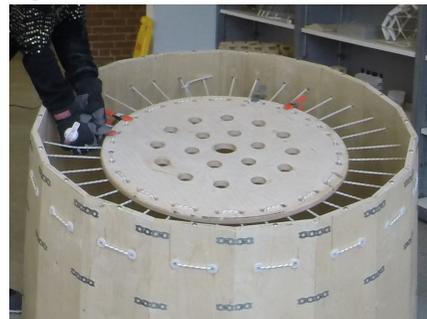


Figure 3.6



Figure 3.7

The Husk

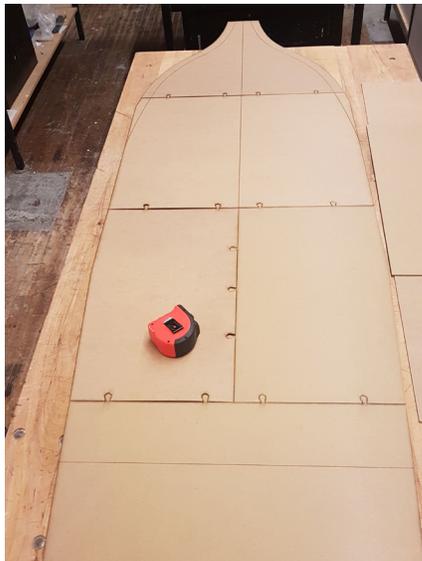


Figure 3.10

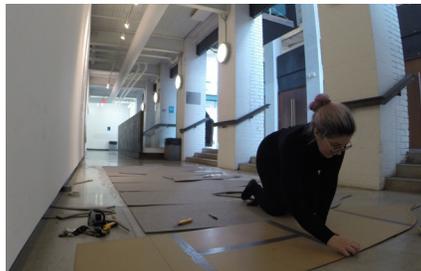


Figure 3.8



Figure 3.9



Figure 3.12



Figure 3.11



Figure 3.13

The Crown



Figure 3.14



Figure 3.16



Figure 3.15



Figure 3.17



Figure 3.18

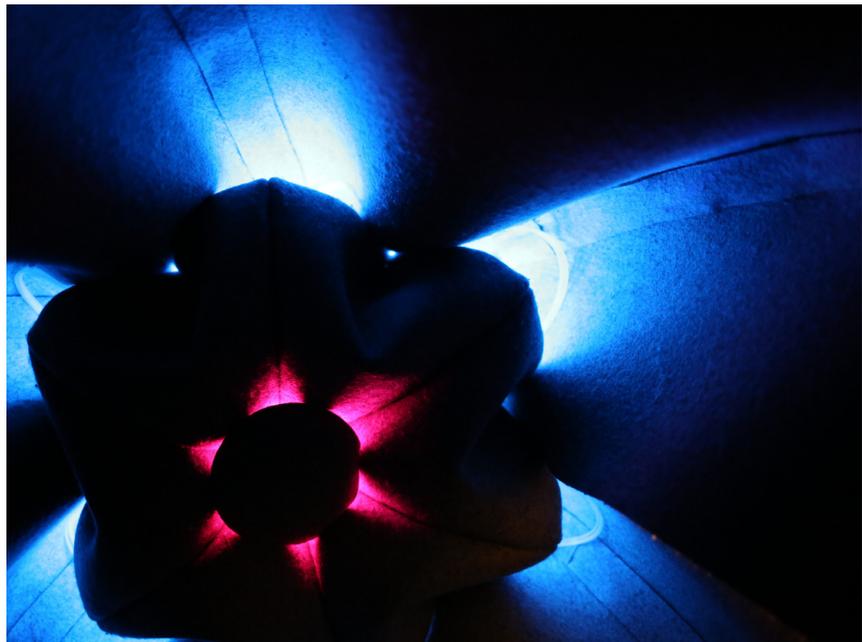


Figure 3.19

The Details



Figure 3.20



Figure 3.21

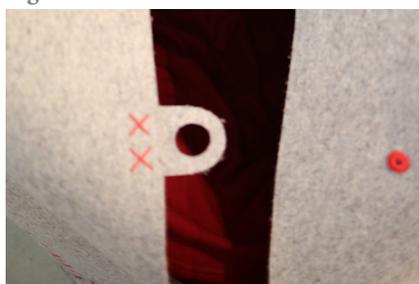


Figure 3.22



Figure 3.24



Figure 3.23



Figure 3.25

The Fabrication



Figure 3.26



Figure 3.27



Figure 3.28



Figure 3.29



Figure 3.30

Sway

The Saucer



Figure 3.31



Figure 3.32



Figure 3.33



Figure 3.34



Figure 3.35

The Fabrication

The Shroud



Figure 3.36



Figure 3.37



Figure 3.38



Figure 3.39



Figure 3.40

*THIS IS THE QUESTION OF **PRIVACY** AND **COMFORT**,
IN REGARDS TO PROVIDING AN **INSULAR SPACE**
FOR **PUBLIC**
AMIDST THE CHAOS OF EVERYDAY LIFE,
A **SUSTAINABLE ONE**.*

Conclusion

I speak understandingly on this subject, for I have made myself acquainted with it both theoretically and practically.

Walden, Henry David Thoreau

Lessons Learned

The design and construction of a restorative niche was driven by the desires to deepen my understanding of architecture of experience and comfort and to create something tangible. To make, I first had to learn, experiment, make decisions, and follow through with them. I learned to look deeper, to be present, and at the end of the day, to leave room for mistakes. I learned that just like you and I, two pieces of the same material – although identical on the surface – could behave differently. The art is in utilizing and working around the imperfections. Felt-making was an echo of life. To shape the supple raw wool into felt and give it structure, heat, pressure, copious amounts time, and patience were needed. There were no shortcuts.

This project put me in the unique position of being the designer, the builder, and the client. It left my hands open to make instant design decisions or modify the fabrication methods. Other times, I had to step back to see whether those decisions were solely based on personal inclinations or

Conclusion

prejudice for pursuing a method over another.

In the end, I learned to place myself in the world through my design. Although the scope of work defined by this thesis may be complete, the developments of När and Sway continue to grow and evolve as I continue to grow and develop as an individual and as an architect.

The Next Step Forward

Our bodies can reveal what our words cannot. Martha Graham, the pioneer of modern dance in the 1920s, was a powerful communicator. She pursued dancing as a professional career against all odds. She was considered too old, too short, too heavy and too homely to be taken seriously. “They thought I was good enough to be a teacher, but not a dancer,” she recalled, but she was resolute in her desire to communicate how she felt through movement. In 1930, Graham premiered a haunting solo dance of mourning called *Lamentation*. She sat on a low bench, wearing a tube-like shroud with only her face, hands, and bare feet showing. In the dance, she began to rock with anguish from side to side, plunging her hands deep into the stretchy fabric, writhing and twisting as if trying to break out of her own skin. She was a figure of unbearable sorrow and grief. She did not dance about grief but sought to be the very embodiment of grief.



Figure C.1 *Lamentation - A movement study*

Lamentation was the dance of sorrow, “not the sorrow of a specific person, time or place but the personification of grief itself.” The tube-like shroud was the dynamic media to amplify her otherwise less significant movements. Graham’s inspiration for the piece reportedly came from the Old Testament’s Book of Lamentations, which begins with “how doth the city sit solitary, that was full of people! How is she become as a widow.” But the work’s success lied within permitting the audience to draw their own individual interpretations aside from the source material. To dance writer Helen Thomas, the solo had a maternal quality that suggested “the struggle

of birth for both mother and child.” Graham swayed and twisted, knees apart while her arms and legs strained against the fabric to resemble fetal movements within a pregnant belly. She “[was] also the child being born: her limbs [were] encased in an elastic sheath; they push[ed] and stretch[ed] outward, straining toward release, with only the head visible.”

Lamentation inspired a new form of Body-centered expression. “The body reveals what words cannot.” Today, designers like Kristin Neidlinger translate what Martha Graham predicted to a galvanic extimacy responder: technologies intended to enhance in our health and overall well-being. Her recent project, *Mood Sweater* is an emotive fashion that interprets emotions and displays mood instantly as an interactive light display. With a little imagination and some design, the readily available sensors and technologies can materialize our emotions and even express them to the outside world in beautiful and meaningful ways. They can reveal what words cannot.



Figure C.2 *Mood Sweater* by Sensoree - Kristin Neidlinger

Incorporation of Therapeutic Biomedica

Therapeutic biomedica are a series of biosensors which read the body systems and then translate that data into visual, audio, or tactile displays. This creates a biofeedback for the users, which brings awareness and mindfulness. Biofeedback also could also act as a tele-display and tell others how we are feeling. This new level of connection with others – extimacy – is not the opposite of intimacy.

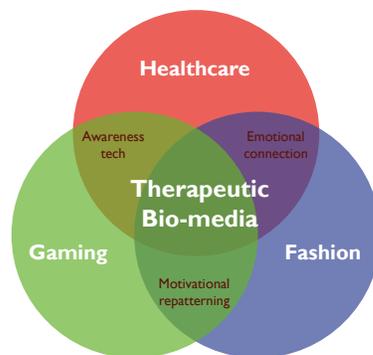


Figure C.3 *Therapeutic Bio-media* is the product of available technologies in an array of industries

Conclusion

Extimacy allows our surroundings to pull us, to work with us, and to receive us. It allows one to remove the tendency to self censor and thus be more susceptible to a mutual exchange with the surroundings. This offers awareness for the self, but also provides a communication tool that boosts empathy for others.



Figure C.4 Extimacy

The Biomedia Palette

By incorporating a palette of biomedia, and arranging the different biosensors based on necessary information, we can collect the data, and translate it to analog displays, whether visual, audio or tactile. This feedback information can further build upon or improve the initial data received in order to change or improve the users' experience in space and thus their state of mental and physical being. For example, if the person's brain waves and pulse indicate dejection, the environment can promote a sense of euphoria by adjusting the light, sound and scent, or a sense of tranquility through a vibrotactile embrace.

Extimacy coined by the psychoanalyst Jacques Lacan, is the sharing of experiences or thoughts usually considered private.

Intimacy is the capacity to be rather weird with someone, and the knowledge that's OK with them. -Alain de Botton

Biosensor is an analytical device used in conversion of a biological response into an electrical signal, such as GSR or galvanic skin response as method of measuring the electrical conductance of the skin by monitoring the sweat glands activity. It can be used to reflect human emotional activity.

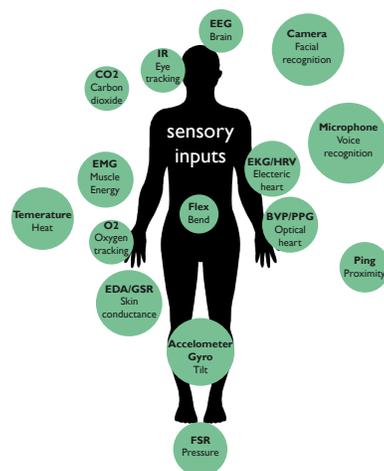


Figure C.5 Biosensors are available to collect personal bioinformation

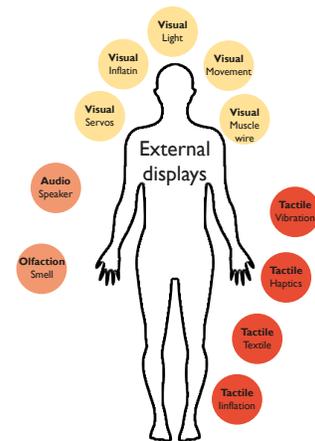


Figure C.6 Bioinformation collected can then be translated into real-life feedback

Afterword

This thesis was conducted because the relevance and importance of restorative niches as they become embedded in the narrative of our daily lives. The fabrication process provided an environment where small mistakes transformed into learning opportunities. After completing Sway, I set it up in the library at the Family Counselling Centre Of Brant. One therapist shared her experience. “I sat in the saucer and drape the oversize hood over my face not knowing what to really expect. Swaying from side to side was playful and comforting, and my mind quiet down on the account of focusing on preserving the rhythm. The colourful light was captivating and the sound of a tropical rainstorm muffled the chatters coming from the waiting area. Disembodied footsteps of people faded in a distance as I took a moment to listen to the footsteps of my mind.”

Concluding this thesis is only a starting point of a voyage towards the architecture of contentment.

*I plant my hands in the garden; I will become
green and lush, I know,
I know, I know . . .
And the swallows will lay eggs
in the hollows of my ink-stained fingers.*

*- Forough Farrokhzad
Another Birth
1962*

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