





**in Visible**  
a guide to understanding & designing for introverts

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A thesis presented in partial fulfillment of the requirements for the degree of **Master of Industrial Design** in the department of Industrial Design of the **Rhode Island School of Design**, Providence, Rhode Island.

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2020

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*We often think the objects  
surrounding us are  
lifeless.*

*However...*

*They hear everything we  
say, from our most intimate  
secrets to our common daily  
frustrations. They are the  
physical manifestations of  
our psychological needs,  
and unknowingly, we take  
them for granted.*

*That is why they need to  
have some semblance of  
humanity in them.*

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# abstract

The Extrovert Ideal has been an unspoken pillar of society: a vocal, go-getting person with a Carpe Diem mindset has become a requirement that most are told to strive for in order to be successful. Fundamental institutions like schools and workspaces are designed for extroverts and their need for stimulation, which becomes a hurdle for introverts since it obstructs them from being their dispositionally quiet and thoughtful selves. Such spaces need to be inclusive to allow introverts to be present in the way they prefer. One way to make space for introverts in settings otherwise designed for extroverts is through the introduction and use of objects that respond to the needs of introverts.

While not all introverts are anxious or shy, these objects would provide them with an opportunity to be themselves without feeling self-conscious or embarrassed. The cultural shift of the US, from Character to Personality\* through a historical standpoint made traits like charm and wit desirable. Behavioural Theory in Personality Psychology explains personality as the interaction between an individual and their environment, thus establishing the importance of the correlation between spatial and social cognition in shaping human behaviours. With the idealisation of the Extrovert being challenged by Millennials and Gen Z, it is crucial to create temperamentally harmonious spaces.

inVisible acts as a guide to introversion by providing different introverted traits to objects. This anthropomorphization becomes a non-vocal voice, acting through the person's interaction with their surroundings rather than themselves. This highlights the need for spaces of reflection, specifically for introverts, in public spaces, acknowledging their existence through this silent proclamation.

\*In his book, Culture as History: The transformation of American society in the twentieth century, the late cultural historian, Warren Susman, talks about the evolution of the American society collectively from a culture of Character to a culture of Personality, and how it shaped the social structure as well as the emergence of self as a performative entity.



In order to design for introverts, we need to have a clearer and a better understanding of introversion. It is important to know the different misconceptions to identify possible areas of exploration.

Commonly, it is perceived as shyness or social anxiety. Although introverts are inclined to feel shy, extroverts feel the same way as well. Most of these misconceptions can be summed up in the following way-

- They don't enjoy engaging with others.
- They don't like going to social events.
- They are uncomfortable while presenting or speaking in public.
- They are timid and unable to speak up for themselves.

Introversion has also been misconstrued as avoidance. Avoidant Personality Disorder is a debilitating fear of social situations that can generate fear or anxiety to an extreme. [2] It can also be misunderstood as social anxiety.

However, it is neither of these.

Around 30 years ago, the American Psychological Association (APA) had deliberated putting "Introverted Personality Disorder" to its manual but was persuaded by a number of personality type professionals to withdraw. [3] Even the fifth edition of Diagnostic and Statistical Manual of Mental Disorders (DSM-V) draws parallels with introversion as being withdrawn or detached.

However, these definitions are drawn from the understanding of Extroversion as the Normal facet of a personality. Thus, it is important to identify what led to the normalisation of Extroversion.

As laid out by Susan Cain, in her book *"Quiet: The Power of Introverts in a World That Can't Stop Talking"* the Extrovert Ideal has been the default in society for people to be "successful". The cultural evolution of America as mentioned earlier, was brought about around the time of Dale Carnegie and has been prevalent for more than a century and a half. One of the best examples of the Ideal's perpetuation is the spaces around us that have been made to enforce people to collaborate and engage. Open-plan offices which replaced cubicles, which have become quite common, but are actually not as conducive to productivity as initially assumed, especially for introverts [4].

These spaces create psychological conflict for people who can productively thrive in privacy and minimal stimulation, which in the long run, affects the human brain. In recent years though, as architecture started to become more humane, introverted spaces have started to crop up. [5] Meditative spaces have started being included in architectural plans. But such spaces are not easy to find.

**So how should we define introversion?**

It is a preference for mildly stimulating environments than highly engaging ones. Stimulus is the key word here. Neurologically speaking, introverts have a lower threshold of dopamine which makes them prefer such environments. They are highly self-aware which helps them recognize what spaces they are most or least productive.

Introverts do prefer isolation but there is a fine line between isolation and loneliness. If that is not taken care of, social anxiety can begin to manifest. This makes it crucial to include isolation in the socio-spatial context. By doing so, inclusivity is created, paving the way towards a harmonious society.





## personality in psychology

Many personality theories stem from philosophical standpoints of their creationists. These philosophical debates usually center around topics of behaviour, environment, individuality and optimism, which often intertwine with each other while also being a separate spectrum by themselves.

The most commonly used Myers-Briggs Type Indicator takes a typological approach towards understanding personalities and behaviours. There are plenty others that use psychoanalytic, behavioristic and social cognition approaches. Introversion appears as one of the sub-categorical spectral ends of Type theories.

There are other subcategories which attribute towards understanding people's behaviours as opposites in a spectrum. These can be listed as-

- Sensory vs Intuitive
- Thinking vs Feeling
- Judgement vs Perception
- Introversion vs Extroversion

Introversion remains an umbrella term which can consist of the other categories as mentioned above. One of the drawbacks of this typological approach lends to the formation of rigid stereotypes. While this was not the foundation [6] for this theory, it has been used as a tool to guide career choices.

## about introversion

Merriam-Webster's Dictionary defines introversion as a predominant interest [7] in one's own mental self. The psychological definition also affirms [8] that. The terms introversion or extroversion, as a part of personality theories, were popularised by Carl Jung as behavioural traits. Despite being ends of a spectrum, a lot of misconceptions happen due to the preference for solitude being mistaken as shyness.

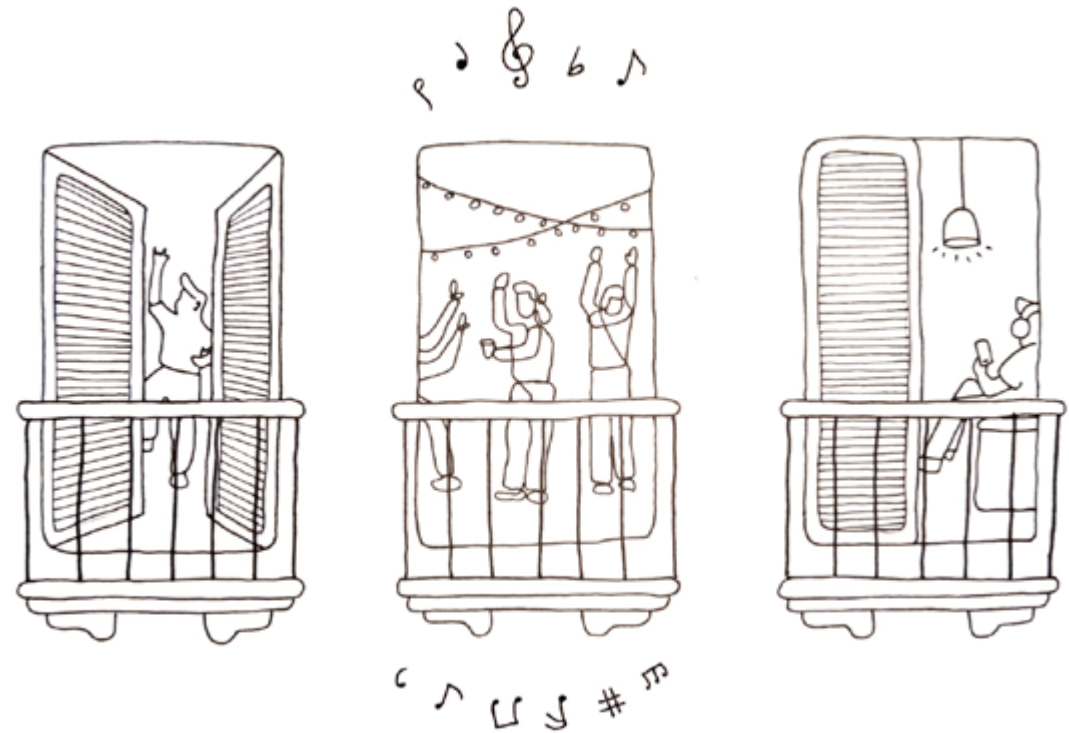
In *Quiet: The Power of Introverts*, Susan Cain mentions how introverts prefer lesser external stimuli, are more investigatory and better listeners. She talks about the precedent bias against the people who do not fit the Western ideals of success which are inherently extroverted. While there is a contribution of genetic and environmental factors that lead towards the kind of personality an individual possesses, practising desensitization through exposing oneself to minor fears has shown to decrease stimulus-response, thus contributing to lower stress response.

On the same note, Marti Olsen Laney's book, *The Introvert Advantage: How to Thrive in an Extroverted World* mentions how neural pathways for introverts are longer than that of extroverts. Introverts are more sensitive to the neurotransmitter, dopamine, than extroverts. The physiological nature of introversion compared to the Western societal bias for extroversion indicates there is much to be explored when it comes to the mental wellbeing of those who are introverted.

The 'Introvert Hangover' which is caused due to overstimulation due to dopamine, leaves the individual mentally and physically drained. While it is always healthy to step out of comfort zones from time-to-time, continuously doing so for introverts affects their mental health, giving rise to dissociation from their 'inner selves', which may manifest as disorders due to anxiety and/or depression.

*Mental Performance in Noise: The Role of Introversion* [9], a study conducted at Belgrade University, Serbia, mentions concentration problems in a noisy environment compared to a quieter one for introverted subjects.

Dr. Elaine Aron, author of *The Highly Sensitive Person: How To Thrive When The World Overwhelms You*, talks about the people with sensitive nervous systems, who are also introverted and how large crowds or events which involve intense social involvement can cause them to be overwhelmed.



I started with a few open-ended questions about introversion. Things like what makes them comfortable or uncomfortable? What makes them asocial? Why are they perceived as antisocial? How does popular culture characterise them?

## the chaotic questionnaire

What makes people un/comfortable? What kind of small challenges do they face as they go about their day? What defines introversion? What is neuroticism? How valid are personality theories? What causes exhaustion in social interactions? What makes people social? Do they feel pressured to socialise? How did people socialise when mobile phones were not so common? What kinds of distractions (or social crutches) do people use? What do people feel about those who do not feel like talking in a social environment? How do people indicate that they don't want to talk in a social setting?

How do they indicate their discomfort? Is discomfort a good tool for communication? Is embracing vulnerability helpful? What causes vulnerability? Is vulnerability and insecurity related? Is there a link between personality and vulnerability? Is there a link between introversion and anxiety? Does passive activity help with anxiety? What makes interactions awkward? Can spaces be introverted? Are objects introverted? How do people recharge? Do spaces have personalities? Do objects have personalities? Can personality be transferred? Is personality about space or individual? Is it about stimulus? Is it about comfort?

## types of introversion

A recent study [10] by Jonathan Cheek aimed at meaningful distinctions within the spectrum of introversion indicated about the four types of introversion-

- Social
- Restrained
- Anxious
- Thinking

Social introversion is the most common understanding of introversion. Social introverts prefer socialising in relatively smaller groups and are comfortable with solitude. This is different from shyness as anxiety is not an influential factor.

Thinking introversion is a newer concept, as such introverts are more self-reflective. They enjoy their introspective moments and are not averse to social activities or events. Unlike neuroticism, thinking introverts are more thoughtful and imaginative in a creative way.

On the other hand, anxious introversion relates to the avoidance of social activities or events. Anxious introverts tend to get painfully self-conscious around other people. This happens when they are alone as well since they would tend to ruminate over things obsessively.

While anxious introverts tend to spend too much time with their thoughts, restrained or reserved introverts can be aptly described as analytical thinkers. They would prefer to think before speaking, and pace and analyse their decisions before taking any action.

Cheek's model of introversion helps in broadening the umbrella definition of introversion as it creates an identifiable approach within the label itself. Rather than generalising the "introvert", it helps in distinguishing the various stimuli that introverts would positively respond to, which provides an opportunity of creating inclusive psychological frameworks while designing spaces and their physical components.

as a spectrum

While the most common misperception about introversion and extroversion is the mutual exclusivity, contemporary personality theories view it as a single continuum. Jung, as well as Briggs and Myers, suggest that everyone has an introverted and an extroverted side, with one being more dominant than the other, which is the foundation for the Type theorists.

While Jung viewed Introversion as a state of being interested in one's own mental self, many psychologists over time have interpreted introversion as a characteristic of one's "social" energy. Solitary activities such as reading or meditating are more mentally rewarding for them, as they can get easily overwhelmed in socially engaging events. This reflective attitude, also indicates the preference for minimal external environments, due to their lowered stimulus.

Observing situations that they can participate in, is a common characteristic, which also lends towards an analytical approach before speaking.

Unlike introversion, extroversion can be perceived as obtaining gratification from outside the self. Human interactions become energising for them and social gatherings like parties are pleasurable activities. Time spent with people is more rewarding than time spent alone.

Taking the approach of a single continuum, the middle area is populated by ambiverts. Ambiverts are people who change their behaviour as the situation demands. This indicates that amongst people they know, like close friends or family, the person is highly energetic or extroverted, while among strangers, the person is introverted.

EXTROVERSION - AMBIVERSION - INTROVERSION



PREFERENCE  
FOR MORE  
STIMULATING  
ENVIRONMENTS

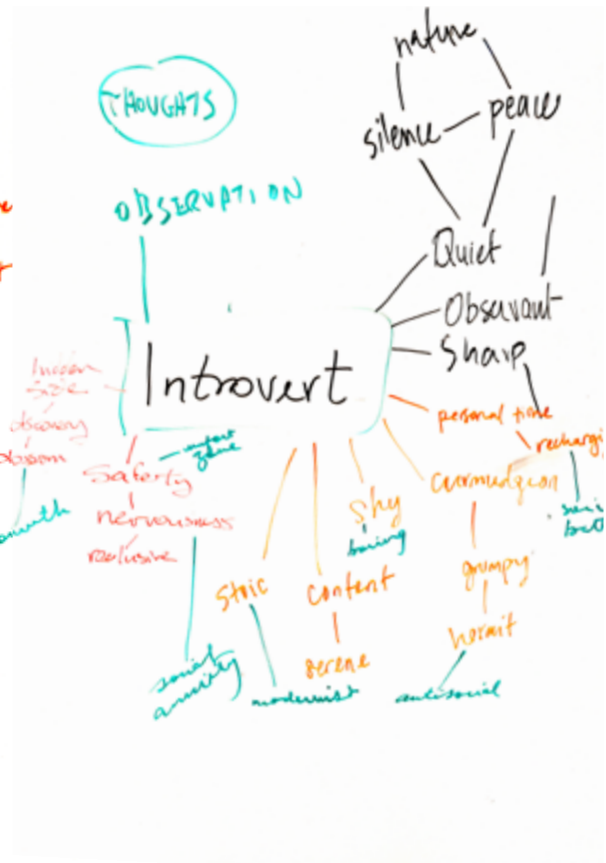
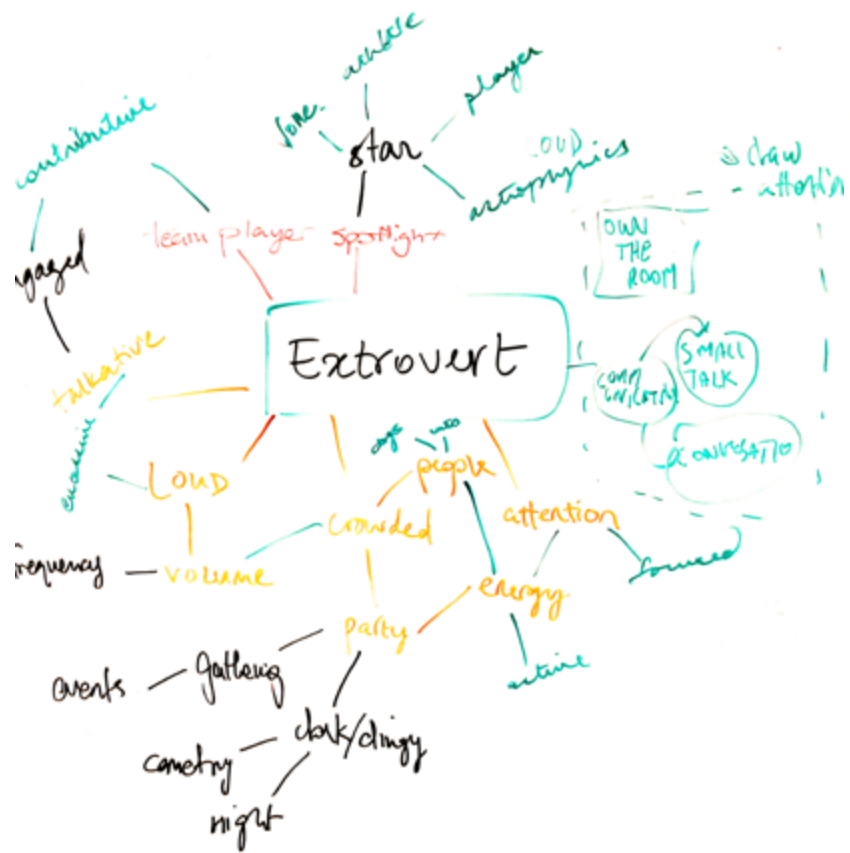
PREFERENCE  
FOR LESS  
STIMULATING  
ENVIRONMENT



As I researched and questioned the spectrum, I wanted to know more about how people viewed each of these topics. A rapid mind map session generated personality trait word clouds that aligned with the facts mentioned earlier. Additionally, half of the participants were curious about the word 'ambivert' before they began the activity.

At this point, I was curious about the words written by the participants, like, "nervousness" and "grumpy". This led to a study about the relation between personality and anxiety, which mentioned that low extroversion tendencies could "play an important predisposing, etiological role in anxiety". [11]







## practice theory

Practice Theory [12] was developed by the French theorist and sociologist Pierre Bourdieu and later became one of the most important works in sociology. Its fundamental lies in understanding the social and cultural relationships through analysis of complex social dynamics in groups, lifestyles or societies.

As a part of Practice Theory, integrating new behaviours [13] happens through changing practices. This can take place through a combination of existing elements in new ways or even the introduction of newer elements through the reconfiguration of recognisable elements.

It is crucial to understand the importance of practice-oriented product design since designed artefacts influence everyday behaviours. To create an inclusive system, these artefacts need to be restructured to accommodate the 'unconventional'.

## survey 1

Based on the mindmap about the spectrum of introversion, I wanted to know more about how people would react in situations which triggered low levels of emotional distress, and how they coped with it. In order to do that, I made an open-ended survey, which created different dialogues with people about the performative nature of some social activities as well as the linguistic barriers due to cultural differences in a simple conversation.

Name (optional):

What do you most relate to (put a cross on the line as an indicator)

Introverted ————— Extroverted

What kind of activities do you enjoy which make you feel rejuvenated?

What kind of activities make you feel drained? Do you feel uncomfortable doing them?

Why do you think they make you feel uncomfortable?

How would you visualise your discomfort? In order to make people more empathetic, would you want people to feel an element of your discomfort?

Please return these slips to my desk after you have filled them out! Also, if there is any feedback you would like to give, please write it on the back of this slip. Thanks for your input! (Aislinn)

To convey my queries clearly, I made a low-fidelity prototype to get people to open up more about their minor emotional reactions in situations of stress or anxiety.



The prototype was visually indicative of how I would behave in situations which caused anxiety. The clarity of peripheral vision was to convey the glances I would make, the blurred part being the area I would avoid.





Most subjects tended towards introversion. The significant highlights of these interviews indicated actions of discomfort and indicators of minor anxieties.

Responses commonly included mentions of natural surroundings, better interactions in a limited group setting, as well as activities which kept the mind occupied in a passive manner.

Being drained by social interactions with people who are unknown was a common factor amongst these responses, like 'welcome parties' or 'social situations where everyone is posturing/performing'. There were also various mentions of vulnerability, awkwardness as well as awareness in social situations, which according to the Arousal Theory indicated over-stimulation, thus affirming their introverted disposition. [14] [15]

In addition to that, the preference for quiet and limited stimuli or even activities which required concentration in environments of low disturbances displayed the correlation of introversion and space.

Name (optional):

What do you most relate to (put a cross on the line as an indicator)

Introverted ————— | ————— Extroverted

What kind of activities do you enjoy which make you feel rejuvenated?

Crossword puzzles, walking for a long time outside, cooking for 1-2

What kind of activities make you feel drained? Do you feel uncomfortable doing them?

parties, social situations where everyone is posturing/performing

Why do you think they make you feel uncomfortable?

feels fake, feels like

How would you visualize your discomfort? In order to make people more empathetic, would you want people to feel an element of your discomfort?

[would like them to realize that I'm ~~awkward~~ uncomfortable but also know that I'm good/trained at performing normativity... so, no visual indicator. maybe conversation cue

Please return these slips to my desk after you have filled them out! Also, if there is any feedback you would like to give, please write it on the back of this slip. Thanks for your input! (Ahhhh)

Name (optional):

What do you most relate to (put a cross on the line as an indicator)

Introverted ————— X ————— Extroverted

What kind of activities do you enjoy which make you feel rejuvenated?

sports.

What kind of activities make you feel drained? Do you feel uncomfortable doing them?


party with strangers.

Why do you think they make you feel uncomfortable?

Not my comfort zone.

How would you visualize your discomfort? In order to make people more empathetic, would you want people to feel an element of your discomfort?

There's always awkwardness.



Please return these slips to my desk after you have filled them out! Also, if there is any feedback you would like to give, please write it on the back of this slip. Thanks for your input! (Ahhhh)

Based on these factors, I wanted to identify the stressors in situations considered awkward by introverts. However, it made more sense to observe the mannerisms and social cues due to their subtleties as a recommended way to have seamless social interactions. [16]



## what is social stress?

Imagine a situation wherein you have an abrupt but highly impactful life-changing situation. Having to act quickly to it, and adapting as well is enough to cause a significant amount of stress. This is a type of social stress.

Dormann and Zapf (2004) defined social stressors [17] as “a class of characteristics, situations, episodes, or behaviours that are related to psychological or physical strain and that are somehow social in nature”. Apart from a life event, other types include chronic issues or daily hassles.

These kinds of experiences trigger a triad of changes - emotional, behavioural and physiological. Due to their impactful nature, they can put one under greater risk for developing a mental disorder and physical illness.





## key concepts of behavioural psychology

As mentioned earlier, the contemporary approach has started to deviate from the Type theory to the Trait theory which treats the dichotomous components like Introversion and Extroversion as a continuum rather than individual types. [18] Behavioural Theories explains the effects of external stimuli on behaviour as a method to understand personality.

Observing mannerisms provides a window to understand and empathise with introverts. Behavioural theory forms the foundation to this approach. it is important to understand behavioural theory as it could give comprehensive insights to my experimental approach.

According to Behaviourists, all behaviours are acquired through conditioning, through interaction with the environment. They believe that our responses to environmental stimuli shape our actions. [19]

There are two major types of conditioning:-

- **Classical Conditioning:**  
A neutral stimulus is paired with a naturally occurring stimulus, termed as acquisition. It can eventually evoke the same response without the naturally occurring stimulus' presence. This is known as conditioned stimulus, and the learned behaviour is a conditioned response.
- **Operant Conditioning:**  
This is a method of learning that occurs through reinforcements and punishments. Through operant conditioning, an association is made between a behaviour and a consequence for that behaviour. More specifically, by forming an association between a certain behaviour and the consequences of that behaviour, you learn. Rewarding desired behaviour can act as a reinforcement, and can develop habits.

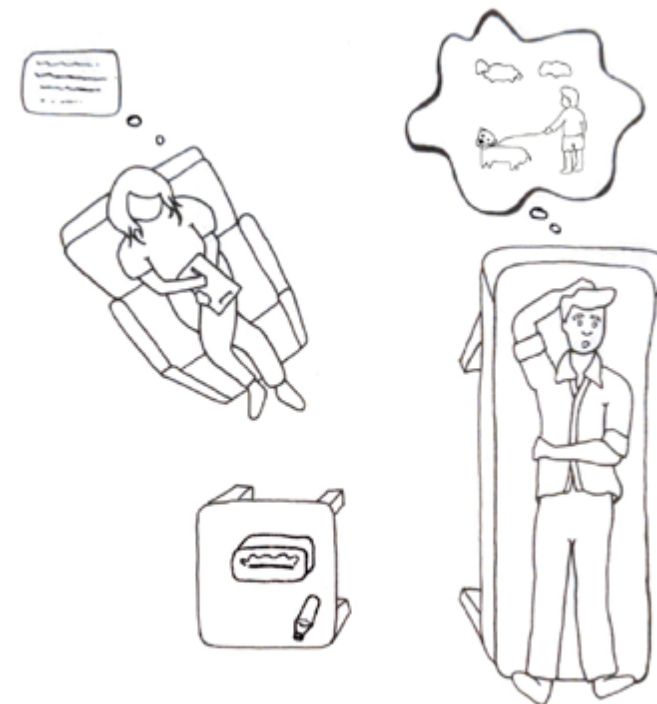
There are a number of therapeutic techniques rooted in behavioural psychology. Though it took more of a background position after 1950, its principles still remain relevant.

Therapy techniques like behaviour analysis are often used to help children with developmental delays acquire new skills. Processes like shaping (rewarding closer approximations to the desired behaviour) and chaining (breaking a task down into smaller parts and then teaching and chaining the subsequent steps together). Techniques such as intensive behavioural intervention, behaviour analysis, token economies, and discrete trial training are all rooted in behaviourism, and are useful in addressing maladaptive behaviours in both children and adults.

While behavioural psychology focuses on observable and measurable behaviours, and is useful in therapy and education, it unfortunately does not account for moods and emotions as they are deemed too subjective.

Critics of behaviourism suggest that behavioural theories do not account for free will and internal influences such as moods, thoughts, and feelings. Also, it does not account for other types of learning that occur without the use of reinforcement and punishment. Moreover, people and animals can adapt their behaviour when new information is introduced even if that behaviour was established through reinforcement.

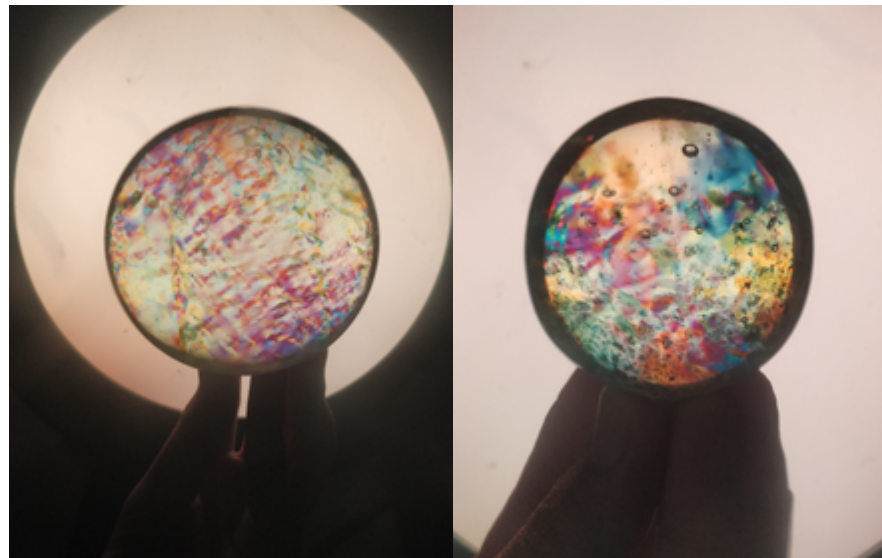
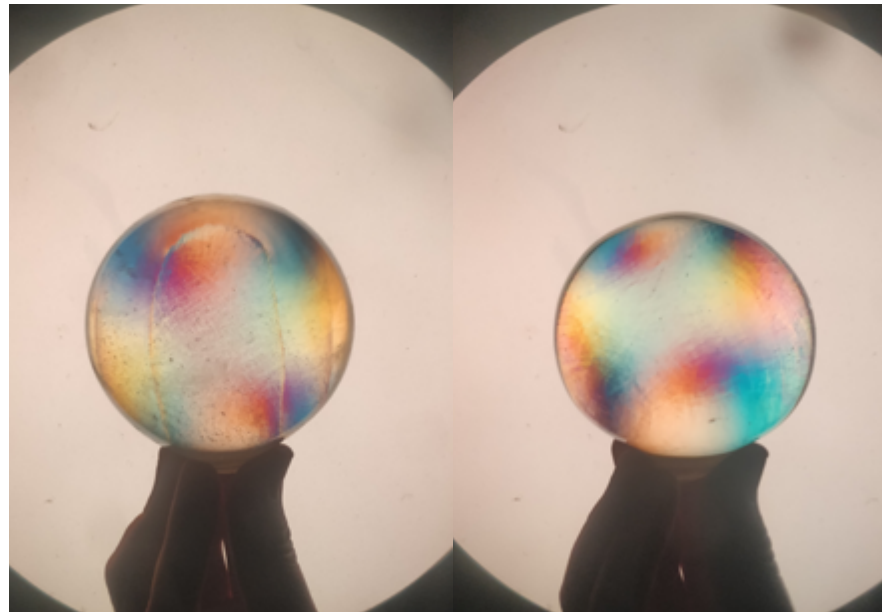
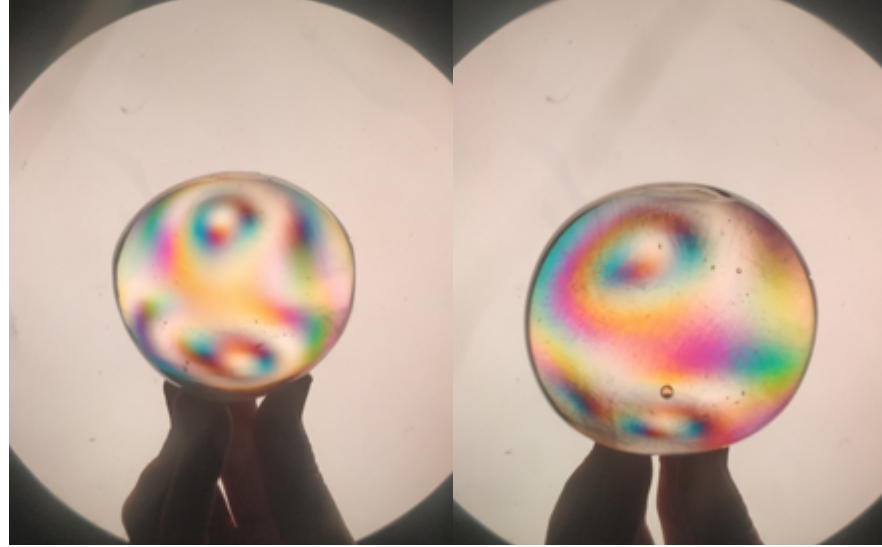
While behavioural theory does not consider subjectivity as an influencing factor, it is crucial to incorporate it in my methodological approach. It is important as a designer to have an unbiased, objective point of view. But at the same time, giving weight to the subconscious and primary emotions can help in creating a deeper and meaningful impact.



## counter-dispositional behaviour

While the behaviourists consider cognitive and emotional effects to be too subjective, it is important to know that Introversion and Extroversion, as a part of the same temperamental continuum, can be understood as predispositional characteristics of personality.

But what happens if an introvert behaves as an extrovert, or the other way round?



A study [20] conducted to assess the emotional and cognitive consequences of counter dispositional behaviour, indicated that while introverts may benefit from acting extroverted, long term negative effects on cognitive performance could be possible.

This is where the performative nature of social interactions creates mental weariness.

Thinking of counter-disposition, with the help of experts, I mixed industrial glass with the one in the furnace. This yielded psychedelic colours under the polariscope due to the incompatibility of the glasses.

*Walking past the Nature Lab, in a chilly fall evening with clear skies, my friend Rohit and I glimpsed at the momentary rainbow on the window.*

*Like cats drawn to the laser pointer, we were fascinated by it. Entranced, each of us "held" it for a few minutes. As the sun neared the horizon, the light reflecting the windows changed and the "rainbow" vanished, making me wonder that I would have missed it if I had not paused.*

*What should we do to feel grounded and connected? And in doing so, realise that taking a break doesn't have to be about being productive.*



## interviews

I had a brief chat with Dr Abrams at NYU, who specialises in social and behavioural sciences, regarding the spectrum of Introversion and how social stress can manifest itself. He mentioned that the brain's survival reaction to fight-or-flight situations was similar to depression and anger responses as an internalised mechanism, and added that the reactions to social stressors manifest themselves in different ways. People who get anxious display indicators through their body language and emotional responses, actions such as fidgeting or crossed arms indicate discomfort and repetitive actions display manners to self soothe. He also mentioned that scientific literature on facial expressions, initiated by Silvan Tomkins and later pioneered by Paul Ekman, mentioned that faces were reliable sources to observe behavioural and emotional changes.



I also had a conversation with Yi-Fei Chen, who specialises in discursive social design, regarding introversion and personality. She talked about her influences for projects stemmed from her personal experiences of discomfort. For her (then) latest project, she mentioned that the desire for social escape which was completely driven by an extroverted environment.

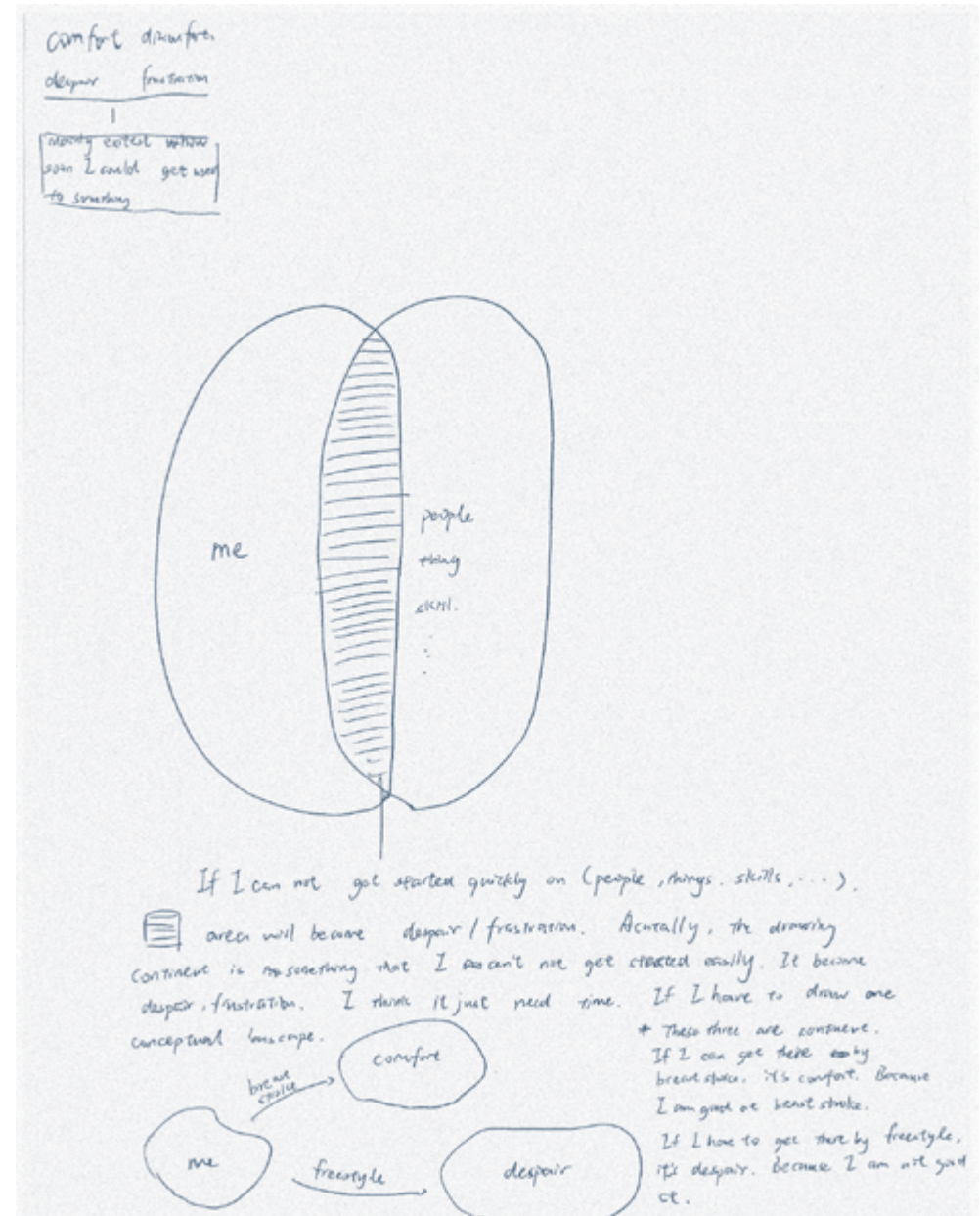
It is strangely intriguing that smoking or drinking are socially valid excuses, allowing these meditative moments while being surrounded by the humdrum of everyday life.

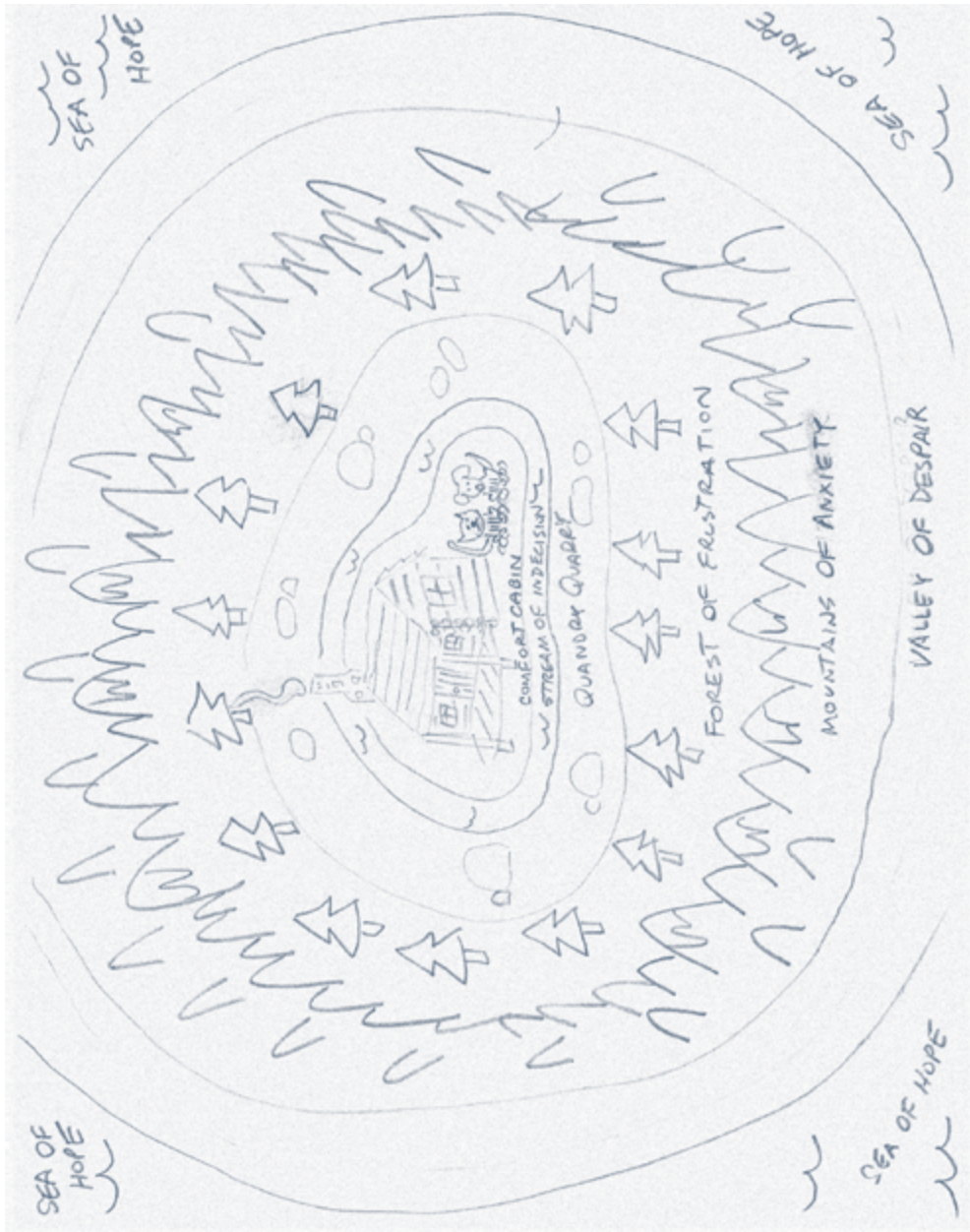
During the interview, as I mentioned the first survey findings, she talked about the Impulse Tool, which was a project that displayed the emotional state of the wearer to the observer. [21] The project toyed with the idea of vulnerability as a tool rather than just an emotional reaction while conversing with strangers. She also mentioned Brene Brown's TED talk on vulnerability. Brown describes embracing vulnerability as a practice for being more empathetic. [22]

In order to gain a deeper understanding of the comforts and discomforts during social interactions, I handed out another survey which required people to map out their emotions in a topographical form. Based on the survey findings and the fictional topographical data, a lot of commonalities were starting to become evident. The need for space, the anxieties and insecurities, the personal priorities started to give a clearer picture of the introverted needs.



One of the key components of any social interaction is communication, so this led me to question if discomfort was a good tool for communication. In the digital mindfulness podcast, Steve Selzer, who deals with design and product strategy, talks about Designing for Friction. He emphasises that while empathy is a critical part in Human-Computer Interaction, removing all elements of friction leads to impatience and lack of resilience. He urges that while designing, including discomfort, could lead to self-reflection and personal growth. [23]





While self-reflection can be considered a skill in and of itself, it's worth calling it as a separate strategy because it's an overt path to self-discovery and personal growth.

Rather than keeping discomfort, can introversion be an added element while designing?







## the relation of stimulus & recharge

In neural chemistry, dopamine plays a strong role in introversion. Dopamine is a neurotransmitter, released by neurons to send signals to other nerve cells. There are several individual dopamine pathways in the brain, out of which one plays a major role as the motivational component of reward-motivated behaviour.

The anticipation of rewards creates an increase in the dopamine level in the brain and plenty of addictive drugs can reconfigure the dopamine sensitivity levels, which can negatively affect the brain chemistry. Other brain dopamine pathways are involved in motor control and in controlling the release of various hormones. This cluster of pathways forms a neuromodulatory dopamine system.

In popular culture and media, dopamine is often seen as the chemical of pleasure, but the current opinion in pharmacology, dopamine signals the perceived motivational prominence (i.e., the desirability or aversiveness) of an outcome. This, in turn, propels the organism's behaviour toward or away from achieving that outcome.

How does this tie with introversion?

In technical terms, introverts appear to be more sensitive to changes in mesostriatal dopamine (DA) activity than extroverts as they can be characterized by more effective neuronal compensatory mechanisms for maintaining homeostasis in neurotransmission. Furthermore, responsivity to changes in DA activity seems to be mediated by up-regulation of postsynaptic receptors.

Simply put, introverts are more receptive to dopamine changes than extroverts. Extroverts acquire dopamine as they socialise which increases their threshold, while introverts are content with mild dopamine stimulation.

## HSPs and stimuli

As introduced earlier, HSP or Highly Sensitive Person is someone who is overwhelmingly attuned to their environment. Sensory processing sensitivity (SPS) is a defining characteristic of HSPs. It is a part of the Type theory mentioned earlier, and involves “an increased sensitivity of the central nervous system and deeper cognitive processing of physical, social and emotional stimuli”. [24]

It has been noted that people with higher SPS have a higher response to stimuli. The perceptual threshold of the external stimuli is lower, which results in quicker overstimulation due to deeper cognitive processing of the said stimuli. This may lead to increased reaction time and can be noticed in the form of cautious behaviour or low risk-taking. However, a higher SPS trait is not a disorder.

Statistically, introverts have a higher SPS than extroverts. And it has been observed in experimental research that introverts are better able to detect stimulus at lower levels. [25]

This makes it crucial to consider the environmental stimulus, especially when sensory overload might be an issue.





*Walking through the spiral walkway of the Guggenheim, I realised I had spent almost four hours going through the Paintings for the Future exhibition. Hilma Af Klint's work had been ahead of Kandinsky and Mondrian. As I took another look at the Swan, No.17, I realised that its dynamism lay within its dualities, not the brilliant red which caught the eye. They underscore light and dark, life and death. The duality also represents the union of opposites, necessary for the creation of the philosopher's stone in alchemy. As I broke my gaze and started to walk away, I wondered how I was so captivated by it. It felt like experiencing the painting itself was an almost dissociating experience.*

*What can we do to create objects that inspire such fascination, that breaks the flow of thought, and allows the moment to just be?*

## productivity & stimuli

Based on the spatial, the psychological and the social design perspectives, I tried to flesh out the visual stimulus a little more. In order to understand the relation between productivity and visual stimulus, a prototype that limited the field of vision was made. The safety goggles have a limited field of view, and block out almost 70% of the sight, including the peripheral vision. Pairing it with a pair of earmuffs, the amount of sensory stimulus drops considerably.



In order to understand its effect, I provided a Rubik's Cube to be solved. With the environmental stimulus, the time it took to solve one side was around 25 seconds with less eagerness to attempt solving the rest of the cube. However, with the stimulus inhibitors, the time dropped to 20 seconds and an additional 1.3 minutes to attempt trying to solve the entire cube. In this scenario, lowering the amount of stimuli positively affected productivity, like solving a Rubik's cube.



## the writer's club

To explore the spatial component of introversion, I visited the WhatCheer Writer's Club based in Downtown Providence. Being a quiet co-working space, the interiors are designed keeping introverts in mind. The open space in the front has a soft area and high desks and chairs, which members like to use alternatively. Windows are wide and tall enough to allow plenty of natural light and double-walled to prevent sound from getting in. The floors are carpeted to soften sounds of footfalls. Acoustic tiles in the ceiling quieten the space to the extent of hearing coin drops. The loud street noises cannot be heard inside, save for the occasional car horn.

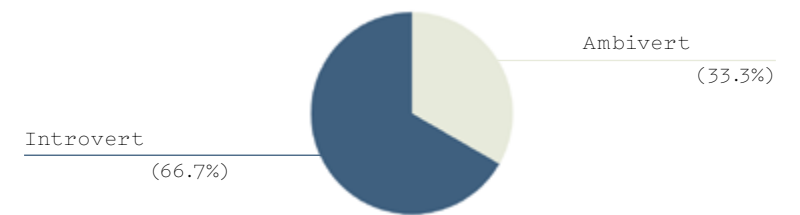


The rear space gets even quieter, with a semi-library, a podcasting studio, a sprint space and a telephone space, all in their small rooms. There is a soft area, close to the windows as well, which has a more home-like feeling. Fresh plants and flowers add to the decorum, as well as convey the harmonious need for nature in office spaces. The desks have a bookcase in the front, limiting the distraction. And the preference for isolation while working, led to the library desk accommodating only one person.



The design decisions for the rear part were informed from the front part of the space. This was based on the amount of use of desks, comfort of chairs, preference of the soft area as well as isolation, and the desk height.

In order to identify the basic elements about the space within the Writer's Club, a survey was conducted to determine the personalities of its members and the reasons they would find that place more conducive to work.



Based on the data, two personas were created to identify the formative elements of the "perfect" workplace. While none of the members were extroverted, the average idea of a perfect workplace included the following elements-

- Adjustable desk
- Adjustable chair
- Lots of natural light
- A Window
- Soft or low light



**Name:** Jane Williams

**Age:** 36

**Personality Type:** Introvert

**Occupation:** Remote Tech Designer

**About:** Jane is a freelance tech designer with over a decade of experience. She likes to illustrate in her spare time. She requires a space to work since she cannot work from home.

**Schedule:** 9AM to 5PM

**Pains:** Wearing headphones all day; Strongly bothered by smells of food or smoke

**Perfect Workplace:**

*"Should have a good chair and desk, plenty of outlets, a bulletin board, artpieces & a place to keep books. It should be quiet with large windows, I like a lot of natural light!"*

**Stress relief at work & home:**

Work: Taking breaks to draw, read or write.

Home: Physical activity & listening to music.

**Why can't she work from home?**

*"Because I can get more done in a dedicated workspace. Also, my apartment is kind of tiny and the desk isn't suitable to sit in for long hours."*



**Name:** Mark Gordon

**Age:** 32

**Personality Type:** Ambivert

**Occupation:** Audiobook Narrator

**About:** Mark loves to read. His interest in books is what led him to be a part of a small startup that digitises books. While he works part-time, he would like to work more. He also drinks a lot of coffee, and is happy to talk to people who share his views & opinions.

**Schedule:** 10 hrs per week

**Pains:** *"I need to follow a routine. I would also like to work more than I do currently."*

**Perfect Workplace:**

*"Old books, I like how they smell! A desk and a cushy chair. It should be quiet. I get lost while I read, so no distractions or anything that reminds me of home or chores."*

**Stress relief at work & home:**

Work: Taking breaks to talk to coworkers and get some food or coffee during breaks.

Home: Netflix, cooking and reading.

**Why can't he work from home?**

*"I associate home with feelings of pleasure and relaxation. I tend to procrastinate, so I need a different space to work."*



Since the propagation of the extroverted ideal is more prominent in workspaces, including the introverts in an environment which is non-conducive becomes mentally taxing. So the issue of inclusivity in workspaces becomes evident. There are no fully introverted or fully extroverted people as Carl Jung mentions in his book, *Psychologische Typen*.

So how do we address the social aspect of workspaces, but at the same time give agency to the people who work there?

The term social crutch comes to mind. A social crutch is basically a substitute which people are dependent upon when they are in any uncomfortable social setting. For example, the smartphone has become a social crutch, an escape into our comfortable mental space at any point in time. So what other objects do people use to signify their social discomfort?

The prominent use of noise-cancelling headphones or earphones in an open studio is a great example. In a space filled with fifty people, working with focus becomes challenging. Talking to people who used those headphones, most of the time it wasn't for the music but the need for sensory destimulation to allow concentration.

Since the Writer's club was a perfectly introverted space, the questions started to indicate towards the need for social filters, which are semi-sensory in nature, that allow people to manipulate their physical space as per their choice while keeping in mind the needs of other people. Such social filters have to be present by themselves, rather than being carried around like headphones.

With open workspaces, there is an overload of sensory input to any individual. While open spaces were created on an Extroverted Ideal from a psychological and sociological standpoint, the voices of introverts can get subdued or overlooked. Architectural changes have started to happen, catering to physical senses. In other words, physical spaces have started to develop personalities.

## the relation of spaces and personalities

Until now, most of the research has focused towards understanding introversion from the lens of behavioural psychology. And as mentioned earlier, subjectivity is overlooked in the conventional process.

However, when it comes to processing external stimuli individually, subjectivity becomes a critical factor, thereby shifting the frame of reference from the individual to the space itself. So it becomes crucial to understand the relation of the individual to their space, which is an important factor architects consider while designing effective buildings.

A fairly recent study establishes this relation of the individual to their space. [26] The social and spatial spheres of existence are reviewed in contexts varying from philosophy to evolution, and two spatial reference frames are investigated. However, things get interesting when the authors/researchers define personality-

*“According to that same (self as a product of the mind) view, personality provides the dispositions through which an organism perceives and interacts with the world, and as such provides a framework for the mind to operate within (Ferrari and Sternberg, 1998). Therefore, the self can be thought of as a reference frame of the mind derived from the interaction between personality dispositions and the environment. The ego is that which creates the self, and these are a product of personality and the environment (Lewin et al., 1936; Wayment et al., 2015).”*

While it is mentioned that there are multiple ways of understanding self, and personality, one of the key takeaways from this study is the spatial reference frame directly influencing the perception of self.

Two reference frames are established in relation to Self-

- Egocentric reference frame that represents objects in relation to the location of self,
- Allocentric reference frame represents objects in relation to one another.

Both reference frames can be perceived as interpretations of the world through a highly-personalised lens of Self, which becomes a comprehensive definition of the spectrum of introversion and extroversion.

Both are complementary in terms of social behaviour. Overlaps of spatial and social behaviour are discussed extensively within this study.

*“Social perspectives change spatial perspectives. Our language reveals how social relationships are mapped onto spatial ones: a close friend vs. a distant relation. These mappings occur on a societal level as well.”*

Throughout this study, causal relationships between spatial and social self are established, paving way towards understanding how an individual’s personality and their relation to the environment can be cognitively beneficial.

I also had a brief chat with Kristen Sayles who works at the Butler Hospital in Providence, RI, regarding the spectrum of introversion and the relation of personality with space. While she mentioned that introversion and extroversion are not considered as psychiatric illnesses, she did talk about the use of sensory rooms for people with psychological issues and disabilities.

## snoezelen

Snoezelen, or controlled multisensory environment (MSE), has been used as a therapeutic tool for people with developmental impairments. These are rooms specially created to soothe and stimulate various senses of the person, accompanied by a therapist, with the help of lighting, colour, sounds, scents etc. It was developed in the 1970s in the Netherlands, and such rooms have been created in institutions all around the world. The most significant aspect is that it does not rely on verbal communication.

While its effectiveness has been questioned over time, a quality improvement study from 2003 shows that it had positive effects on 98% of its participants. [27] Another comprehensive study from 2012 shows that in times of distress, around 93% of its clients found these rooms helpful. [28]



Another study about the sensory approaches indicates that multisensory rooms or environments evolve the culture of care to a responsive and collaborative methodology. [29] For those with anxiety disorders, calming forms of stimulation, such as progressive relaxation and deep breathing, are often helpful (Champagne, 2003b; Kinnealey & Fuiek, 1999; Manheim & Lavett, 1989). Two of the more common nursing methods are aromatherapy and therapeutic touch (Buckle, 2001; Krieger, 1997). Aromatherapy has been found to diminish pain, improve sleep, and increase comfort and relaxation (Buckle, 2003). Krieger (1997) found a therapeutic touch to be effective in decreasing anxiety and pain and increasing wound healing. Used together, aromatherapy and therapeutic touch are a powerful combination (Buckle, 2003).

The research available and the authors' experience suggest that sensory-based approaches and multisensory treatment rooms are beneficial to both individual consumers and inpatient psychiatric programs.

The Snoezelen is a perfect example of a multi-sensory space. While they are generally made for people with acute behavioural disorders, the efficiency with which they allow the patient to relax is remarkable.

However, the spaces are immobile. Objects like pens, notebooks, smartphones are mobile and develop certain wear and tear according to use. The familiarity of an object is a subjective emotional stimulus, overlooked in behavioural psychology. Moreover, in a digital age crafted physical objects have become coveted possessions, often carrying a personal meaning to the user.

So along those lines, can we borrow these personalities from the physical spaces to be developed into objects? Or rather, can objects symbolise the identity struggles of the Introverts?

*Walking through the Main Greens of Brown University, I came across this wonderful piece by Giuseppe Penone. It represents the force of gravity in the natural world and the human body but I was struck by its ability to make you pause and contemplate.*

*What if we could make everyday objects that only allow contemplation?*

*Tapping into our introverted side would allow us to view things from a non-extroverted perspective, thereby nurturing freethinking\*.*

\*Freethinking stems from freethought, which says that viewpoints about truth should be formed from logic and reason, rather than tradition. The contemporary belief is that it is freedom from the constructs created and acquired from the society.







Due to the relation of spaces to personalities, I looked into the projects done by other artists and designers. Identifying works that have already been created would help in developing a framework for the project.



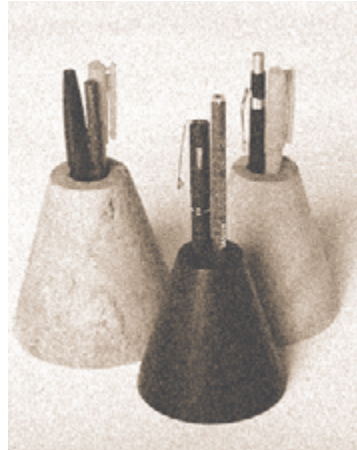
An Introvert's  
Transformation:  
[30]  
The need for personal  
space is physicalised in  
a highly **metaphorical**  
sense, and sparks the  
question about the need  
for inclusivity.



Desk Accessories:  
[31]  
**Disguised** playful functionality, in otherwise familiar objects, to vent stress addresses the stigma of workplace habits.



Schizophrenic Cutlery:  
[32]  
Tools which **question** the “normal” behaviour by giving a glimpse of how mental health conditions can affect behaviour. Modification of existing cutlery to disrupt its normal functionality conveys behavioural change through the object.



Dyslexic Tools:  
[33]

The utility of the objects are based around the disability of the user/designer that helps them, which **benefit** them, rather than limit them.

In her project, Skin Secret[34], the Taiwanese designer I-Ting Ho mentions the importance of self-awareness as a reflection of one's personality. She mentions that people usually use objects as a representation of their thinking or taste. While she uses skin as a component in her self-exploratory work, it also highlights the personification of physical objects as a socially driven measure to highlight their identity.



Can introversion be personified?

## summary

*“Our culture made a virtue of living only as extroverts. We discouraged the inner journey, the quest for a center. So we lost our center and have to find it again.” -Anaïs Nin*

Until now, most of the inquiry focused on understanding the depth of introversion in psychological terms. It has been clear that introversion is an integral part of the temperamental continuum of personality psychology. Certain trait theory tests indicate where an individual lies in the behavioural spectrum, and socialising for innate introverts may be encouraged from time to time. However there may be consequences of counter-dispositional behaviour, which need to be kept in mind.

The neurological relation between external stimulus and the affected individual shows the intricate link of personality and environment. This was then confirmed by the additional linkage of spatial cognition. In understanding this connection, one of the most crucial takeaways was how behaviour is linked to personality and how conditioning can be used to address any maladaptive behavioural concerns.

Although multisensory spaces like Snoezelen are targeted towards people with developmental impairments, the idea of embedding interactive qualities in physical objects would make them more relatable. As humans, we have a tendency to develop emotional attachments to inanimate objects, especially when they comfort us in our times of need/stress/anxiety.

Keeping that in mind, can embedding introverted qualities in everyday objects create a sense of belonging for introverts? Especially when they would address their anxieties?



## experiment 1

The Writer's Club seemed a perfect place for introverts and extroverts alike, but probably more so for introverts. Based on the personas created earlier, I carried out a survey to understand the orientation of certain elements within a workspace.



Parallely, I created a low fidelity prototype for a portable hood that would allow people to create their own spaces of isolation. However, since it was only a single element in this system, I felt that a definite framework would need to be established.

## snippets

In order to get more information about why the presumptions about introverted people have been perpetuating, I reached out to a few old friends with whom I engaged in a conversation of similar nature while floating a few ideas to gauge what they responded most positively to.

### Conversation 1-

AG: Have you ever had any moments when you feel like whatever you are doing, you would rather do it at home than do it outside, or wherever you are?

HS: All the time! Just now a few friends were making plans to go have a drink, but I just want to stay at home.

AG: So did you decide to go?

HS: Nah, not going. What are you trying to do?

AG: I am trying to see if I can design regarding the misconceptions about introverts. But what happens most of the time is that it is usually misjudged as antisocial behaviour, anxiety or attention deficit disorder. Has it ever happened to you, that people wonder if you are antisocial or not?

HS: Yeah, back in undergrad. All the folks in my dorm used to hang around each other's rooms, but I was always cooped up in mine. But going back to what you were saying, I think it is less to do with anxiety. It's just more about not having to deal with so many people. Not getting out of the comfort zone I'd say.

AG: See that's the thing! People have prejudices towards introverts being antisocial, shy, anxious, when it's all about the response to external stimuli. Based on what you just said, would you say it's somewhat about



personal space?

HS: Yeah. What I think is that there are people who are associated with each other purely because of proximity in say a professional or academic setting, and there's no real common interests between them but these people who are associated by proximity often try to socially bond through unrelated activities like drinking, watching a movie or sports. Now these activities may not generate the same interest in everyone and hence some people have low motivation to do it because they want to keep doing their own things while others have a tendency to forge new relationships and are up for more random activities and hence are so outgoing or extroverted.

AG: That's a very interesting take on it and I agree. What about people who still have the same interests but are not motivated enough? Do you think given the right series of motivational tools, they'd still choose not to participate? Also, is it the activity that is of interest or is it the group?

HS: I think, yes, with the right motivational tools they'd choose to

participate. And as for the either or question, I think it's a multi level scenario where first the group needs to pass that barrier after which the activity comes into play.

AG: Let's take today's scenario - what do you think would have made you go out with your friends for drinks? Because you can stay in and drink as well, so why do you think going out and drinking is such a big thing?

HS: More to do with the company I think. Been going out with them since forever and now I just didn't want to.

AG: What if it had been a group of old school/college friends or cousins or family, would the situation have been different? Or is it more about consistency of going out compared to staying in?

HS: Yeah, if it was a different group who I hadn't met in a long time then I'd have probably gone.

AG: So when you don't decide to go, you don't feel guilty about being left out right?

HS: Nah, not really.

Conversation 2-

SS: Not just home, I prefer to work if I'm alone and there's not many people around.

AG: Is it about physical presence? Or is it more bothersome if people come up to you and initiate conversations while working?

SS: Physical presence. and the fear of the latter, I guess. I feel like people are constantly looking over my shoulder about what I'm doing, which makes me very conscious. Or if it is my manager or someone, I don't want them to judge midway.

AG: Any social activity which you might have decided to skip or not do, which involved a group of people in the last few days?

SS: New year parties. But otherwise I like going to workshops or meetups that are of specific interest to me.

AG: Any time during regular work days?

SS: I don't have much leaves from my office, so I generally have the office excuse, but I skip a group planned dinner sometimes if the crowd is the same which I had met a week ago

or something.

AG: So not doing the same group activity you've already done before in the week?

SS: Yeah. And it is mostly dinners and hanging out or house parties. I will be up for anything new, I guess I feel I might not have enough to talk about in a similar setting.

AG: Do you feel like you get tired after being there for a while though? Or no?

SS: No, not really. It is the enthusiasm to go that is lacking. Once I go, it's fine, more or less. Unless there's a bunch of new people and they're doing some activity which I don't normally do and try to pull me in.

AG: I feel like after a few hours, I don't have enough energy to socialize anymore, for house parties or any party for that matter.

SS: I get that, yeah. But if you find a fellow introvert, why not? I always look for those. Or dogs.

AG: That's true, for sure! Can you think of anything that makes you uncomfortable in a social situation like a party?

SS: Family gatherings. The ones with people who talk or gossip, not the people who have games.

heart types. But not in a group.

AG: What about the ones with activities that make you feel out of your comfort zone?

SS: Whenever I don't feel like I belong, or that I have anything to contribute, or I have to pretend to listen/understand/laugh. Or folks talking about politics.

SS: Bit of both actually. But with some background conversation laid out. I hate small talk. Something to get me started at least, then it usually rolls.

AG: With people you know, or strangers?

AG: Right, that's true... This is a hypothetical scenario, but let's say if you have a deck of small talk cards which have an answer to almost all the kinds of small talks that people do. And anytime you have to make small talk, you can use those to keep the conversation going? Would that feel like too much effort?

AG: So it feels performative to an extent?

SS: Yeah, my head should be occupied, it shouldn't think about being conscious.

SS: Uhm, the conversation would not seem much natural, but I guess it could work as cue cards. Such that I learn beforehand, but only try to see one when really needed. Like checking my phone to pass an awkward moment.

AG: Do you think cards/games would lead to more engagement, than say just going out for the night and drinking?

SS: Of course! I have book meetups, board game meetups, friends who jam for fun, chai friends. All that I enjoy.

AG: So if those cards would have a fun element, like a 2 person activity, would that be more engaging? That way the discomfort of small talk could be made a little less.

AG: So more preference for this, than any other activity like going out to a bar and just drinking and talking, right?

SS: Definitely! Although I do like 1:1 chatting with people in a bar. Heart to

SS: Oh that might be good, but for an introvert-introvert case. I would enjoy it, but the other person has

to be into it too but it  
might make a good sense to  
take it to a dating app.

AG: Yeah, that's true. Having an only introvert game  
seems a little more engaging though.

### Conversation 3-

AG: During your regular day, are there any moments when  
you feel like you'd rather be home doing something  
alone, than be in a group or crowded space?

PS: All the time. It's like  
regrouping.. Because I'm  
most myself when I don't  
have anyone around.

AG: So was there any moment in the past week, when you  
had the same feeling? Like if someone asked you to  
join them for a group activity, did you decide not to  
go because you wanted to be by yourself?

PS: Decided not to go, 3 out  
of 5 times. Very rarely..  
Depends on the company.

AG: Why did you decide not to go? Also, has it ever  
happened that people assumed you were antisocial? Any  
other assumptions people have made?

PS: Just didn't feel like it.  
Yes, they have. Before  
knowing me, I have come  
off as someone with an  
'attitude' or you know,  
someone who thinks is  
better than others... After  
getting to know me better,  
people have confessed to  
being kinda afraid to  
approach me.

AG: Because of you not talking a lot as well?

PS: I don't talk in groups  
if I'm new and the topic  
is not engaging. And I  
don't approach people nor

make eye contact if not  
necessary... I'm usually  
not aware that I'm doing  
this... I'm just thinking  
something and zoned out  
from the conversation...

One of the few takeaways from these  
conversations was the confirmation  
of the common presumptions of  
introverts coming across as  
antisocial, which makes people feel  
they are unapproachable. In order  
to create a better facilitation  
method, creating an engaging tool  
which motivates them to participate  
in group activities seemed like  
a plausible overarching solution.  
This, combined with providing them  
with an agency, would address the  
conflict of personal space in a  
public setting.

Something to make them *blend in*, but  
also *stand out*.

## hierarchy & framework

The number of recurring elements in the snippets and literature had me thinking about clustering them and creating a framework. The direct needs as per the repetitive pattern were-

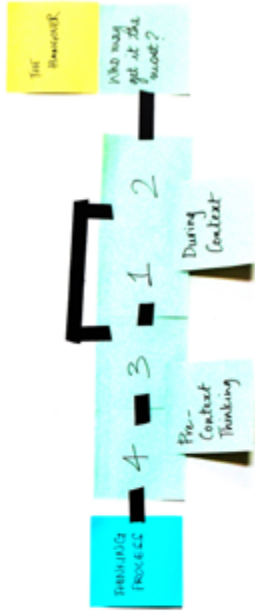
- Isolation
- Private space
- Natural elements
- Focus-oriented tools

However, these needs were not individual, but interdependent.

While these were the ones more understandable through their recurrence, it resembled the law of Pragnanz a lot. To make the concept more tangible, as well as create non-vocal communication for better understanding, a hierarchy had to be established. Drawing parallels with Maslow's Hierarchy of Needs, I created a similar hierarchy for the indirect or psychological needs of introverts.



| INDIRECT NEEDS                                    | SOCIAL | ANXIOUS | RESTRAINED | THINKING |
|---|--------|---------|------------|----------|
| MENTAL ENGAGEMENT ①<br>PASSIVE / ACTIVE           | P / A  | A       | P / A      | A        |
| LESS STIMULI ②<br>People-driven / Activity-driven | A      | A       | P / A      | P / A    |
| PREPARATION ③<br>Underlying fear of...            | X      | ✓       | X          | X        |
| MOTIVATION ④<br>HIGH / MEDIUM / LOW               | M / L  | H       | L          | M / L    |



| INDIRECT NEEDS                                    | SOCIAL | ANXIOUS | RESTRAINED | THINKING |
|---|--------|---------|------------|----------|
| MENTAL ENGAGEMENT ①<br>PASSIVE / ACTIVE           | P / A  | A       | P / A      | A        |
| LESS STIMULI ②<br>People-driven / Activity-driven | A      | A       | P / A      | P / A    |
| PREPARATION ③<br>Underlying fear of...            | X      | ✓       | X          | X        |
| MOTIVATION ④<br>HIGH / MEDIUM / LOW               | M / L  | H       | L          | M / L    |

# INDIRECT NEEDS

- Mental Engagement
  - ↳ Passive / Active
- Less Stimuli (People or Activity) <sup>Sensory</sup> <sub>Process</sub> <sup>4</sup>
  - ↳ Activities which are not so overwhelming when tired/enhanced
- Preparation (underlying fear of...)
  - ↳ allow planning & prep for any overwhelming activity
- Motivation (H.M.L.) <sup>1</sup>
  - ↳ Consequential Thinking <sup>2</sup> <sub>about how much energy will be needed & if it is worth it</sub>

Cognitive Processes influenced.

Interactive tendencies

# STRUGGLES

- SMALL TALK
- ALONE TIME
- PHONE CALLS
- OVERTHINKING
- SPOTLIGHT
- MULTITASKING

## Best suited I

|     |   |     |     |
|-----|---|-----|-----|
| S   | A | R   | T   |
| P/A | A | P/A | A   |
| A   | A | P/A | P/A |
| X   | V | X   | V   |
| M-L | H | L   | H-M |

G.M.

Should not be explicitly stated?

INTROVERTS WHO GET ANXIOUS IN OVERWHELMING SOCIAL SITUATIONS.

[is this really necessary?]

## DIRECT NEEDS

- SAFE SPACE
- PRIVACY
- STRESS MGMT.
- PHYSICAL ACTIVITY
- MENTAL STABILITY
- SLEEP
- CBT.
- BEING PREOCCUPIED.
- STICKING TO FAMILIAR.

↳ no/limited

↳ passive/active-mental engagement

↳ catchment approach

↳ activities which can allow them to come out of their shell

## STRUGGLES

- MIGHT BE G.A.D.
- PRODUCTIVITY
- NAMELESS FEAR
- WANT TO BE HEARD

(computer-mediated anxiety)

## INDIRECT NEEDS

- NOT LESS INTXN.
- BUT MORE ENGAGEMENT
- APPROPRIATE PEER
- ADDRESSING HYPERAWARENESS.
- GETTING OUT OF COMFORT ZONE
- NEED RELEASE OF ANXIETY.

↳ also see intro to that

↳ baseline

↳ stay in the zone

↳ motivate

↳ allow them

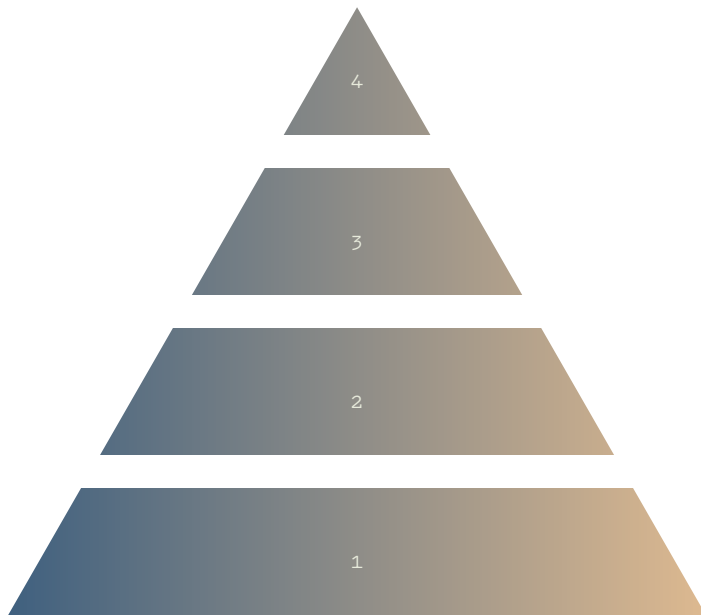
↳ activity which can allow them

↳ motivation & items help them recharge

↳ (paired?)

Request: Create mental engagement & in a safe



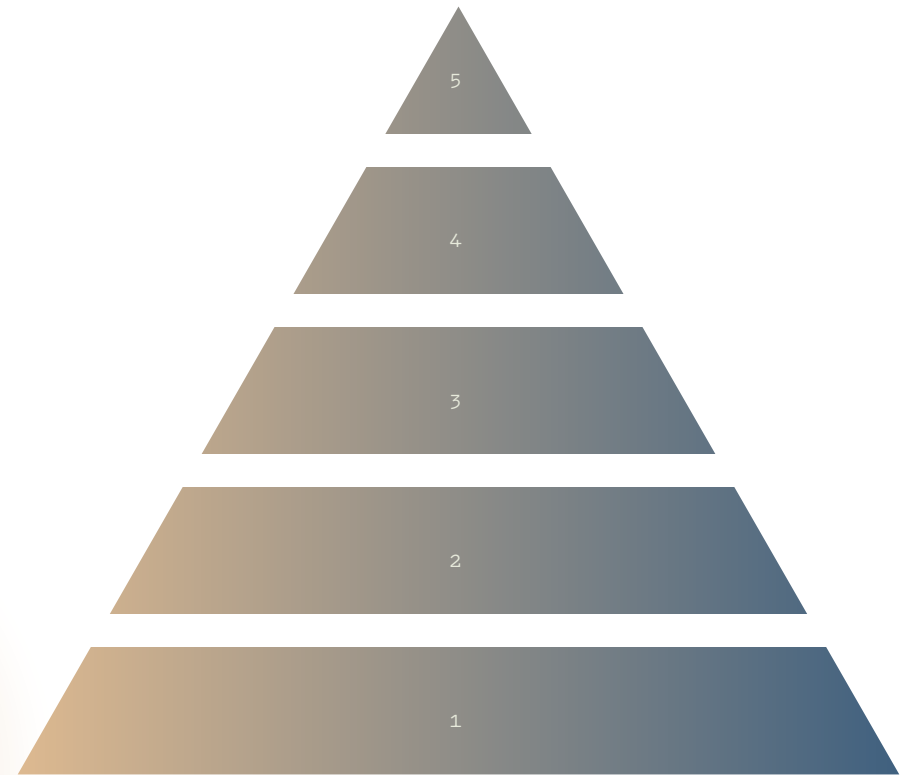


- 1 Motivation acts as the fundamental requirement, as there is consequential thinking involved regarding the energy required and if that task would be worth the effort.
- 2 Preparation comes into play when the decision has been made, as the amount of social input involved in the task would need to be balanced out by social isolation or recharging.
- 3 Effective mental engagement comes as a result of proper preparation. There is always some leeway to the amount of preparation as control is relinquished, but not entirely. If the task doesn't make the person comfortable, it is difficult to have adequate mental engagement.
- 4 The final element that should end up being satisfied is the person's stimulus to that environment. The tasks/activities the person engages in, should not leave them feeling overwhelmingly tired or exhausted.

For a comprehensive understanding of this, it felt important to tie it to the four categories of introversion to determine which type of introversion needs a louder voice. Within the established hierarchy, there needs to be another element which presents itself as the "Introvert Hangover".

With these five elements, I wanted to prioritise the acknowledgement for the anxious kind of introvert in a social environment, as this counter-dispositional interaction could end up affecting them negatively for them in the long run.

This interaction would also have to be non-verbal as I was reminded of people's preferences for using noise-cancelling headphones for focusing and reducing distractions.



An introvert's hierarchy of needs

A similar non-verbal interaction takes place in the NYC Subways, with people averting their gazes to avoid eye-contact. So incorporating it in the function would adhere to the introverted nature of the user.



## experiment 2

Keeping that in mind, for a brief activity, I ended up creating a mechanism which was representative of the need for private space. While it was rudimentary, it was enough to provide a plausible direction in the amalgamation of spatial inclinations, stimuli and personalities.



However, each category of introversion had its own anxiety, which manifested in the form of social exhaustion or even as a space to free-think.

Thus it made sense to have a family of objects, much like the family of introversion, that would respond to the silent, subconscious needs of the introverts.

## ideation

I started to explore how interactions with furniture can take place for conveying the individual needs.

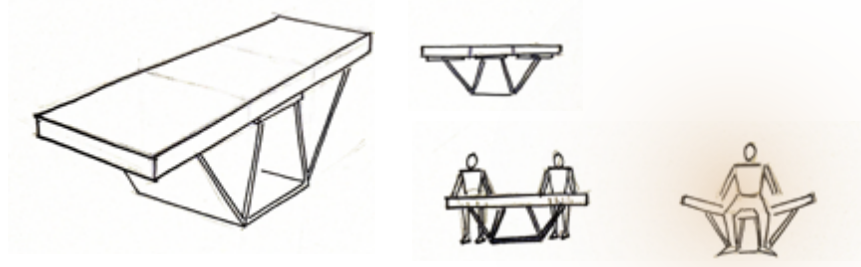
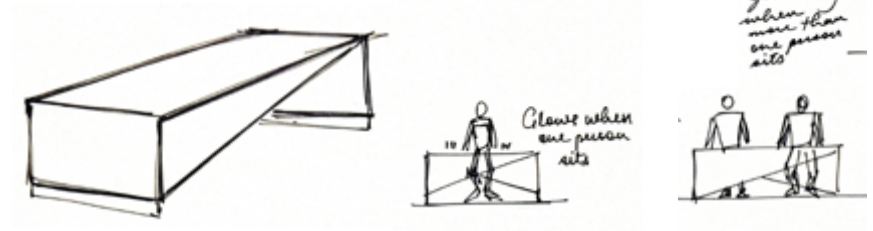
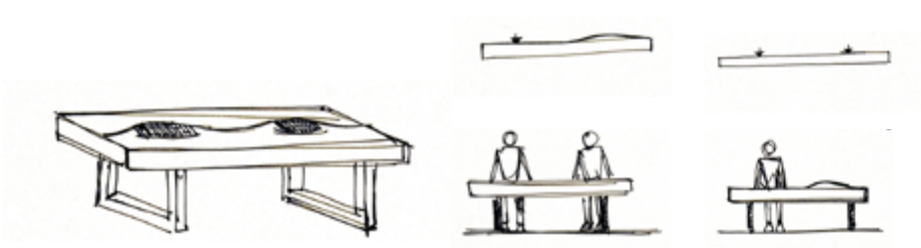
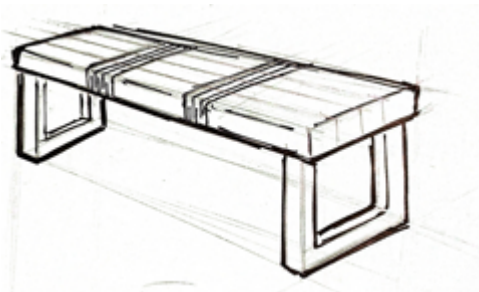
While I began with just one interaction, revisiting the STAR model helped in identifying the needs for each of those categories.

This helped in creating the invisible range of furniture that appealed to introverted side in everyone.w

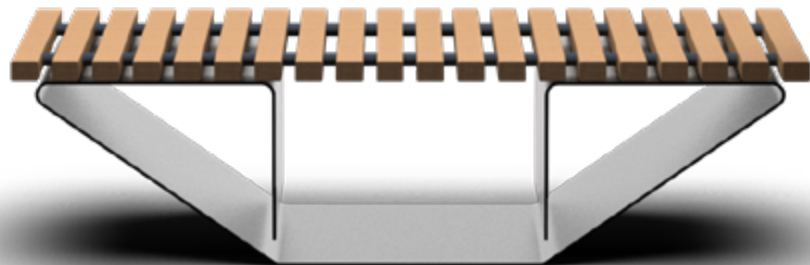


## direct

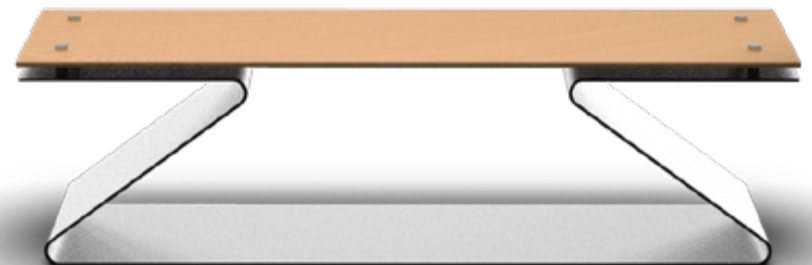
direct is the physicalisation of the need for mental space. Inspired from thinking introversion, it cultivates the ability to get lost in thoughts and contemplate while visually signalling the same.



After initial testing, the first iteration involved rope-bridge like seating, with a metal base for integrated support.

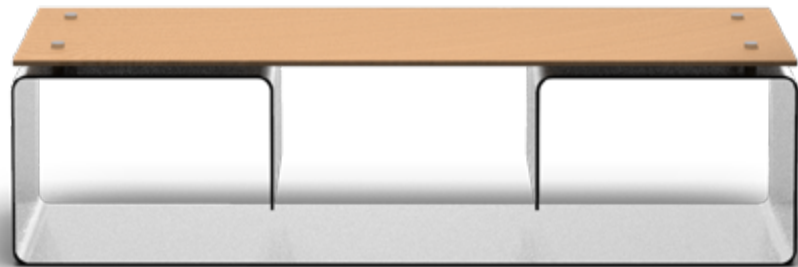


The second iteration involved adding standoffs, and replacing the seat with bendable plywood. In this case, the design's flexibility was based on tension .



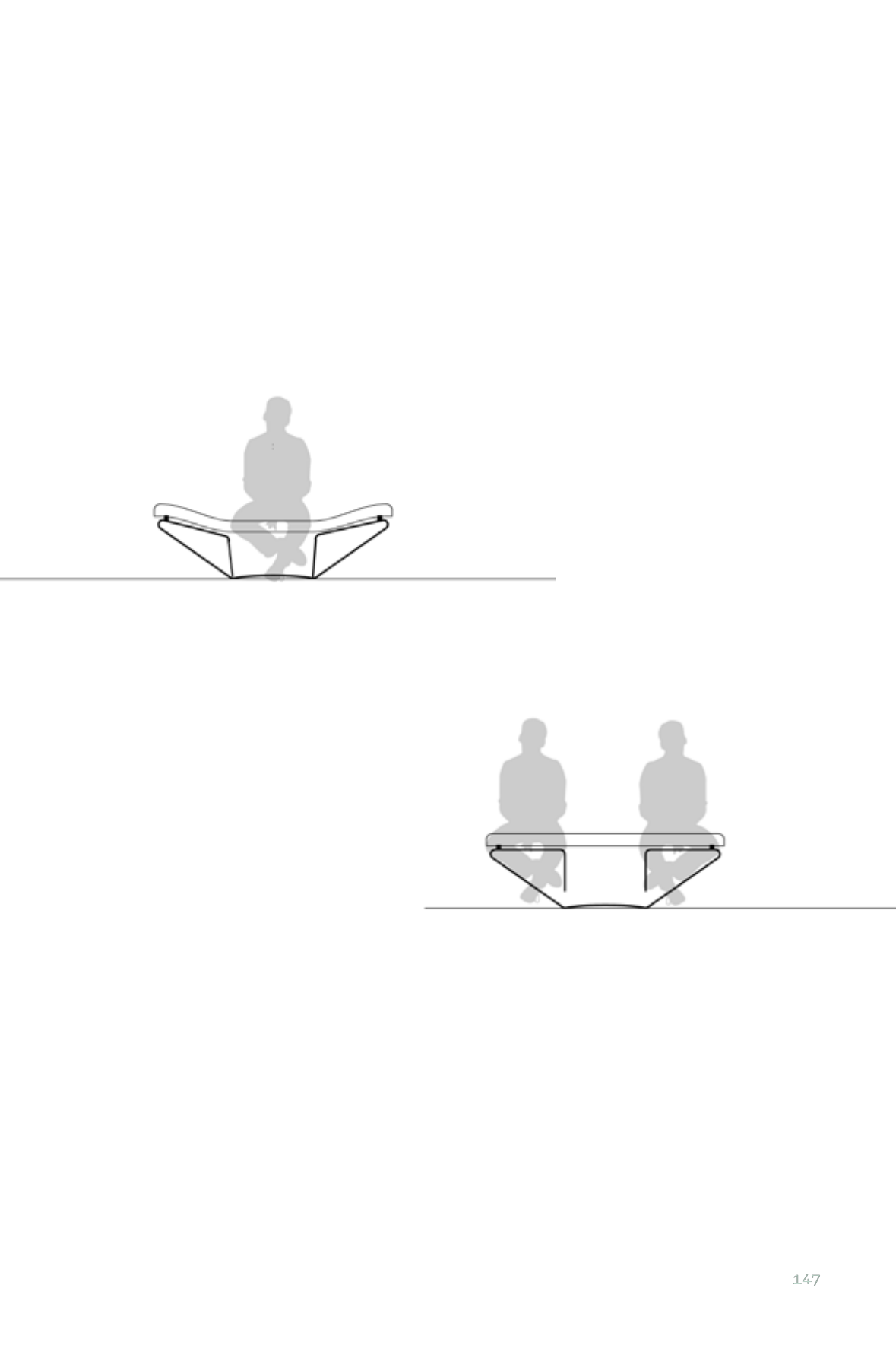


Another iteration involved equating the form with the length of the seat, creating a uniformity. The initial instability was being reconsidered. The supports were reintegrated.



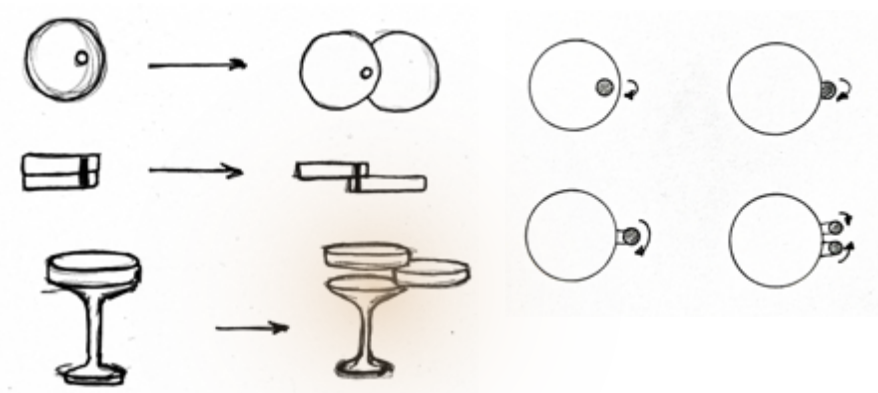
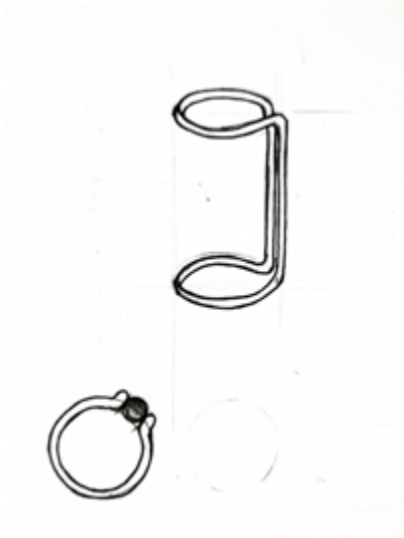
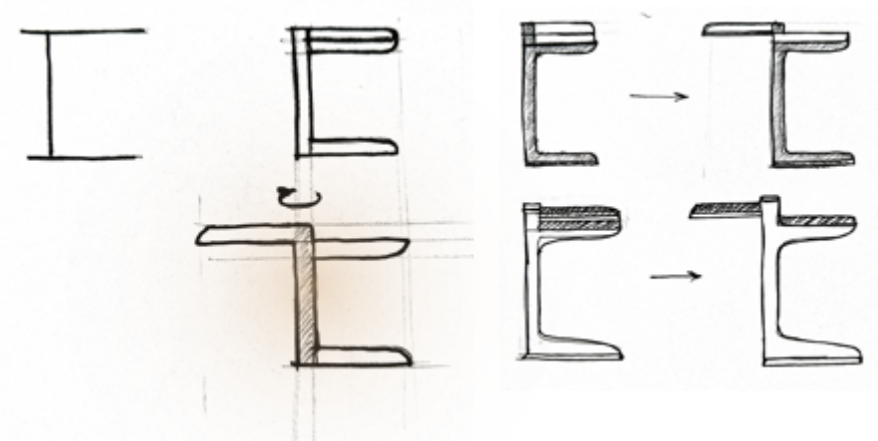
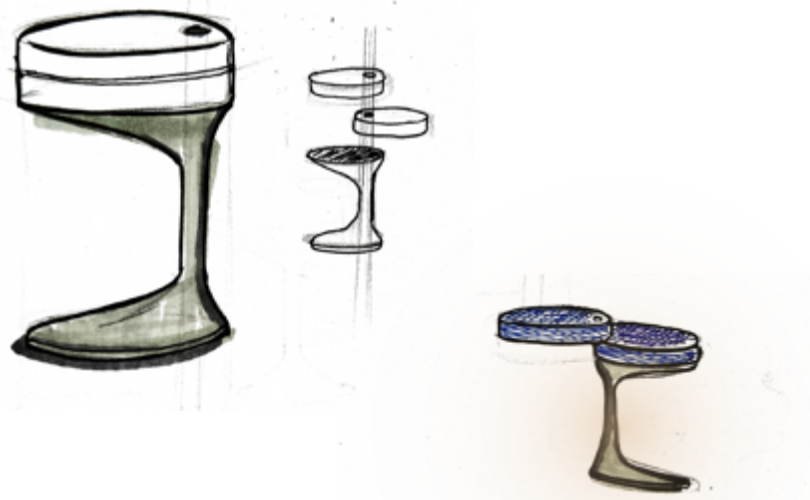
The final iteration involved adding upholstery along with the standoffs. A slight curve was added to the base to create a better weight distribution amongst two edges rather than a single surface.





## choice

Derived from the understanding of social introversion, **choice** allows the control of immediate social space. Social introversion comes with mental exhaustion after social activities. With the ability to control the socio-spatial dynamics, choice provides an opportunity to be a part of, and apart from.



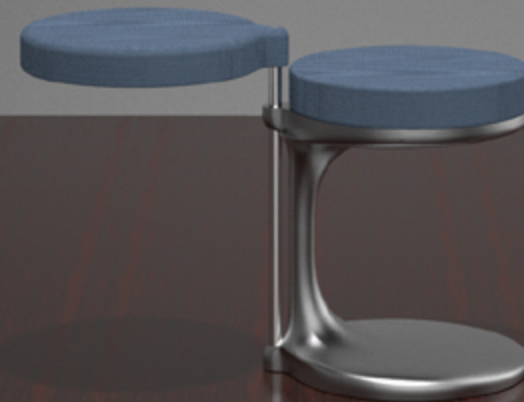
The first iteration involved a single support rod system, which was then separated to allow flexibility and weight distribution.



The second iteration included the separate rod, but the rotating base was visible.



The final iteration had additional height to accommodate for the multiple seating.



## moving forward

To continue with the inVisible family, in addition to social and thinking, anxious and restrained types of introversion will be added. This would be to provide a holistic sense of understanding about introversion.

The other concepts will be integrating additional aspects of environmental and emotional viability. These can be viewed in the near future.

It is crucial to know that these concepts exist to create an understanding. The main takeaway is the framework which can be used to create spaces and/or experiences that can create a better understanding about introversion. They can be used as educational tools to introduce empathetic understandings about the intersection of personality and spaces.





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All other images are by the author.



I am immensely thankful to the people and places that contributed in the creation of this project-

To Paolo Cardini, Agi Haines & Ben Jurgensen for leading us through to the end. Your support has been akin to the North Star.

To Sara Ossana and Yi-Fei Chen, for pushing the bounds of my work and allowing me to evolve through it.

To Emily Cornell du Houx and Elizabeth Leeper, for nurturing the quiet voice to emerge and (hopefully) blossom.

To Tucker Houlihan, for being a gem of a person and helping me realize my whimsical furniture aspirations.

To Mark Laughlin, for teaching that good books are not laid out overnight.

To the few who made these 2.5 years memorable- Hyunseok, Mary, Jingwei, Sarah, Taber, Alex, Rohit, Irina, Ji, Zihan, Alyzeh, Charlotte, Joyce, Vidur, Jake, Kyungah, Ben, John, Rebeca, Steven, Sushant, Vivien, Yutong, Ziyang, Shiyang, Bayan, Kevin, Merrick, Kopal.

To Ellie's Bakery & Cable Car Cinema and Cafe, for the bleary-eyed, early morning lattes; Serendipity Gourmet Deli, Pakarang Thai Cuisine, Fellini's Pizzeria & Fortnight Wine Bar for the nights of food and comforting conversations.

To my parents for supporting me throughout this whole experience, and my sister for bearing my painful critiques.

And lastly, to you, the reader-

*This book was written in a time of duress that was only read about in history books. The class of 2020 faced unsettling obstacles, academic and personal, to say the least. I hope, through this book, you not only carry the project's purpose, but also the willpower it took in putting it together.*

Book Design & Layout

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Illustrations

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