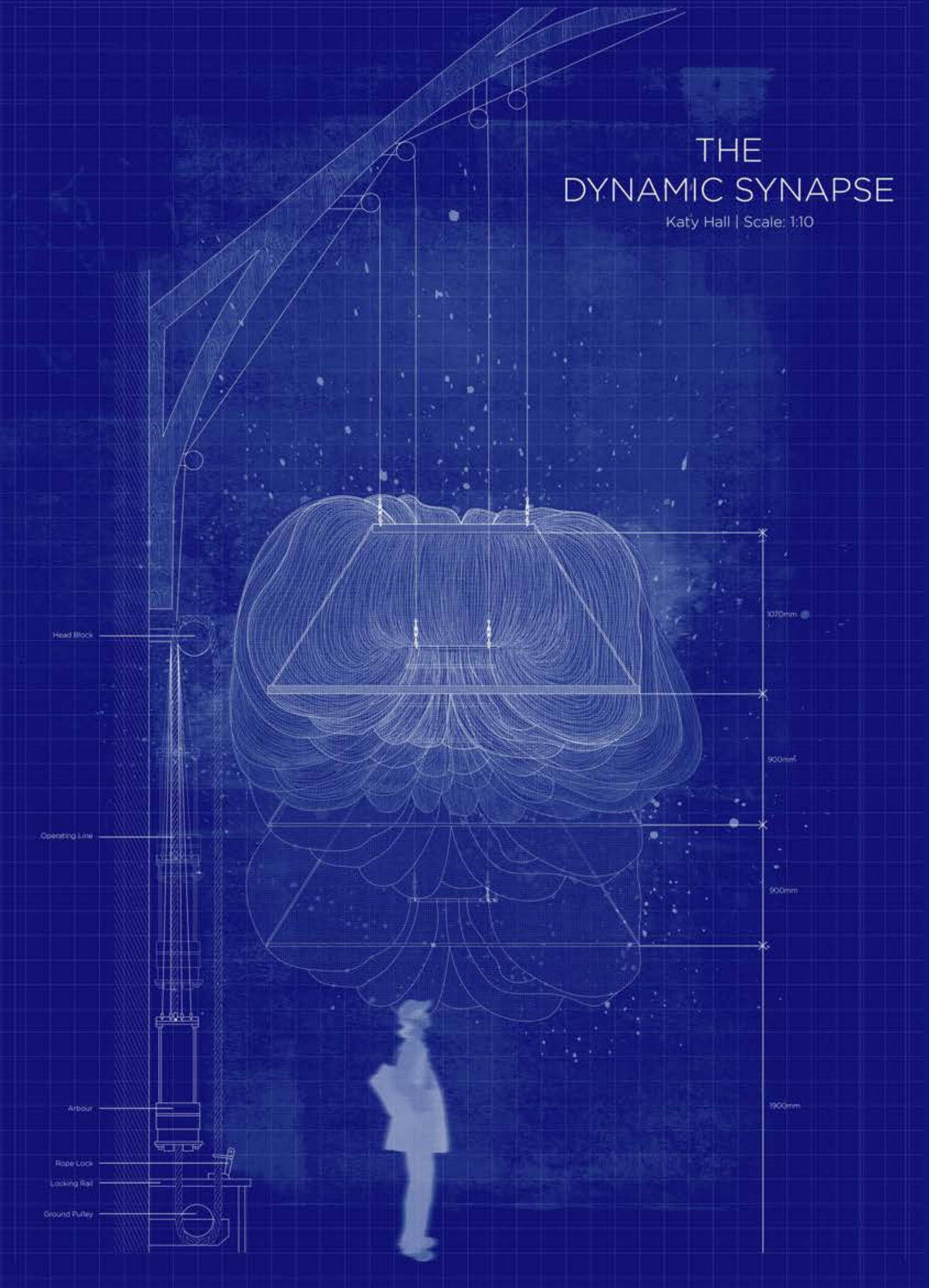
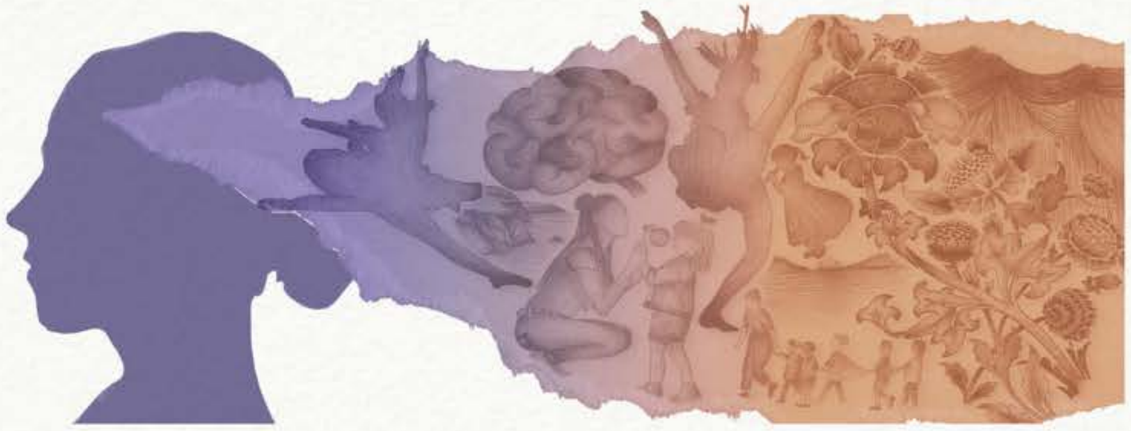


.Synapse Studio explores how interior design can make visible the often unseen experiences of neurodivergent individuals. Responding to the theme of Imagining Interiors, the project translates the abstract process of synaptic transmission into a spatial language of movement, communication and sensory experience. Through research into neurodiversity and inclusive design, I reimagined the workplace as an environment that actively supports different ways of thinking, interacting and belonging. The project challenges conventional approaches to accessibility by positioning empathy, perception and lived experience at the centre of the design process, demonstrating how interiors can become powerful tools for understanding, connection and positive social change.

Personal Identity



What makes me: weaving connections of mind, brain and digital making, Katy Hall (2025)

For as long as I can remember, I've always been creative. My creativity began in musical theatre. I grew up training in dance, singing, and acting, and I developed a deep passion for expressing myself through performance. As I got older, this passion for musical theatre evolved into a love for all forms of art. For my A-levels, I chose Art/Textiles, Psychology, and Sociology. Growing up in a household filled with neurodiversity, I began to notice how the world often fails to understand neurodivergent people or to create an environment that allows them to thrive. This inspired me to study to become a neurodiversity-focused psychologist at university. However, after a week, I realised I needed to change my studies to be in a more creative field, which led me to this course. This project brings together my love for art and design as forms of expression with my interest in creating a better, more inclusive world for neurodiverse people. I've also always loved working with children and teaching. Helping neurodiverse children in school and teaching in creative activities, I've found so much joy supporting children enjoy and express themselves. This has strengthened my desire to use design not just as a personal outlet but as a tool to positively impact young people.

Synaptic Transmission

Syanpse

noun

a junction between two nerve cells, consisting of a minute gap across which impulses pass by diffusion of a neurotransmitter

GREEK
hapsis
joining

GREEK
aunapsis

GREEK
sun
together

Transmit

verb

1. something to pass on from one place to another
2. to broadcast or send out

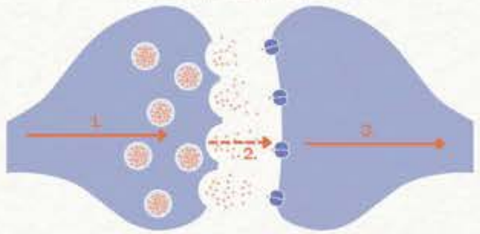
LATIN
trans
across

LATIN
transmittere

LATIN
mittere
send

Synaptic transmission is the process by which one neuron communicates with another. At the end of the neuron (in the axon terminal) are the synaptic vesicles, which contain chemical messengers, known as neurotransmitters. When the electrical impulse (action potential) reaches these synaptic vesicles, they release their contents of neurotransmitters. Neurotransmitters then carry the signal across the synaptic gap. They bind to receptor sites on the post-synaptic cell, thereby completing the process of synaptic transmission.

2. Neurotransmitters then carry the chemical messages across the synaptic gap. They bind to receptor sites on the next neuron.



Synaptic Transmission Diagram, Katy Hall (2025)

1. Information is passed down the axon of the neuron as an electrical impulse known as action potential

3. Neurotransmitters are excitatory or inhibitory. Excitatory neurotransmitters make the next neuron more likely to send a signal. Inhibitory neurotransmitters make it less likely to send a signal.

Application

The functioning of synapses has inspired my design approach, particularly their dynamic and communicative nature. Just as synapses transmit and adapt messages within neural networks, my design aims to embody these same principles being modifiable, dynamic and protective.

Project Brief

Often neurodivergent requirements are forgotten or missed in design so I'm passionate to create design that is accessible for all. I aim to explore how neurodivergent individuals are affected by their atmospheric conditions. By investigating 3 key principles: adjustable design, levels of enclosure, and lighting, and their impact on neurodivergent cognitive emotional comfortability. Creating spaces that are, not only functional, but theatrical and experiential creating more than just a design but a holistic experience. Through my connected ceiling design I aim to create a space that can give it's neurodivergent users autonomy through its responsive elements being able to increase comfort, reduce anxiety and stimulate curiosity.

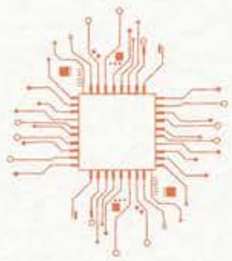
Overload Of Messages Collage, Katy Hall (2025)

I was inspired by an ADHD brain in creating this visual. I spoke with an individual with ADHD asking about their thoughts that underly their life and other thoughts. Things such as money, time, food, sport, sleep, music came up. I created a visual that showed how lots of messages can feel overwhelmed. That brought me to the question: "How do I create a practice which limits any further overwhelm from more jumbled messages?" I want to limit the messages through a simple, rooting design. Having the ceiling feature not only act to help accommodate preferences but create these grounding points throughout the space.

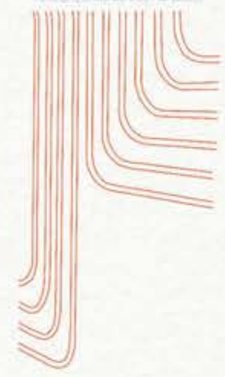
Messaging

Neural Exploration

Synaptic transmission being about a passing of messages lead me to think about what messages our brain sends us, as well as what messages our surroundings tell us. I wanted to look at different types of messaging. In a circuit board, for example, there is often a hub to which all the connections link, giving a central "brain" for message distribution. This led me to think about whether I have a space in my design that could act as this hub a central location from which the others rooms stem.

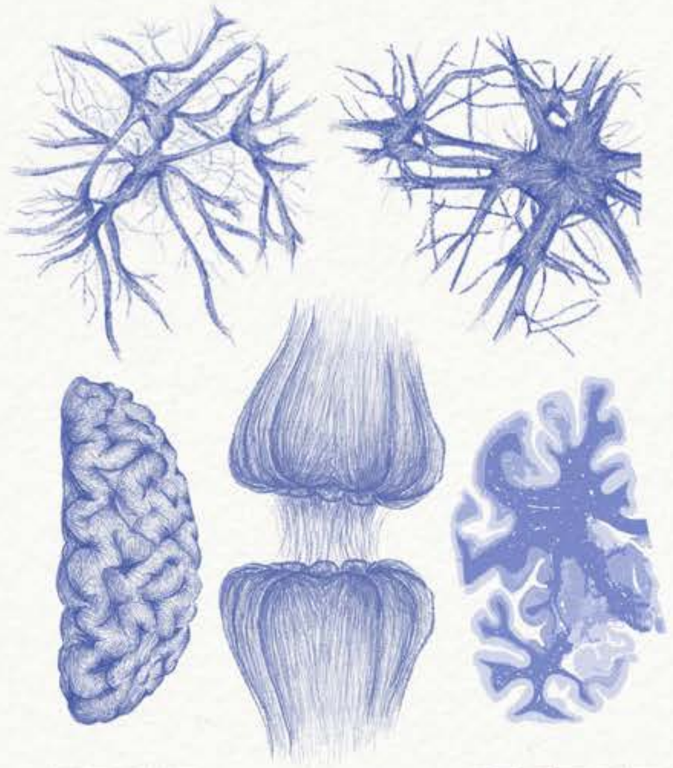


Messaging Sketches, Katy Hall (2025)



Way Finding

My talk with the 'Access Director' of the RSC highlighted how important signage is. Due to neurodivergent individuals feeling overwhelmed easily, it is essential to create clear messages. I wanted to create a design that used way finding as a way of reducing any overload by conveying simple messages of where everything is. For example: experimenting with a floor design giving clear direction as well as simple, clear signage assisting with direction.



Initial Forms

Neural Exploration

This ceiling design celebrates neurodiversity by drawing inspiration from the structural and functional differences found in autistic brains, such as increased synaptic density, and variations in cortical thickness. Using sketches of synapses, neural transmission, and brain matter, the design translates these biological patterns into spatial forms, textures, and lighting.

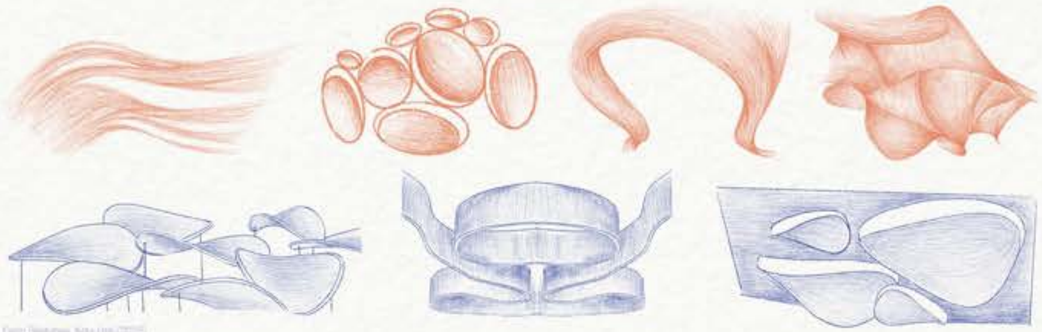
Dense clusters, flowing folds, and luminous gradients represent the beauty of cognitive diversity. It Transforms scientific differences into an inclusive and immersive sensory experience.

Neural Sketches, Kiely Hall (2025)

Brain Scan Digital Drawing, Kiely Hall (2025)

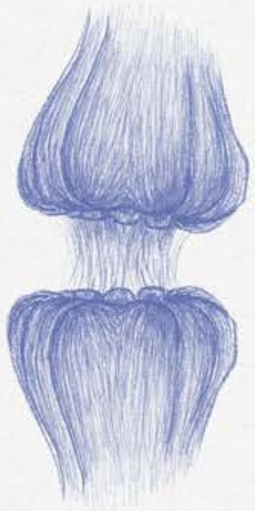
Form Development

To experiment with designing I pulled key elements out from my brain and synapse sketches. Using these elements as inspiration, I started to create designs based of these forms . The rounded edges, curved edges, repeated elements started to emerge across my sketches, creating a clear design direction. These forms will be used across this whole design of my practice with a key feature of these forms in the ceiling. In particular on the panels that will be moveable to adjust to the users needs. I hope to have integrated lighting within them as well.



Form Sketches, Kiely Hall (2025)

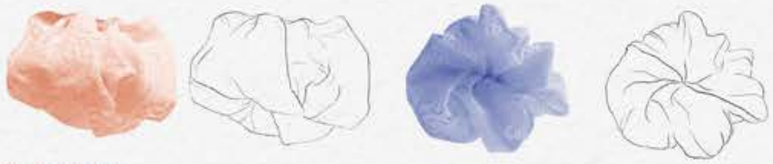
Ceiling Development



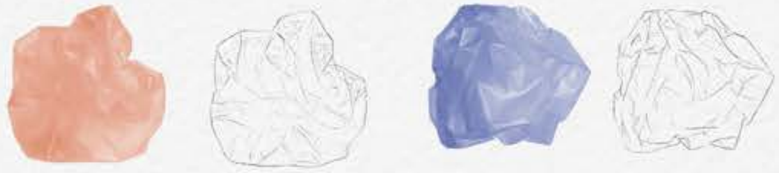
Perspective View

Reflective Plan

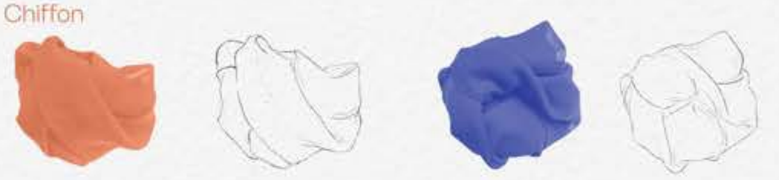
Lace



Cellophane



Chiffon



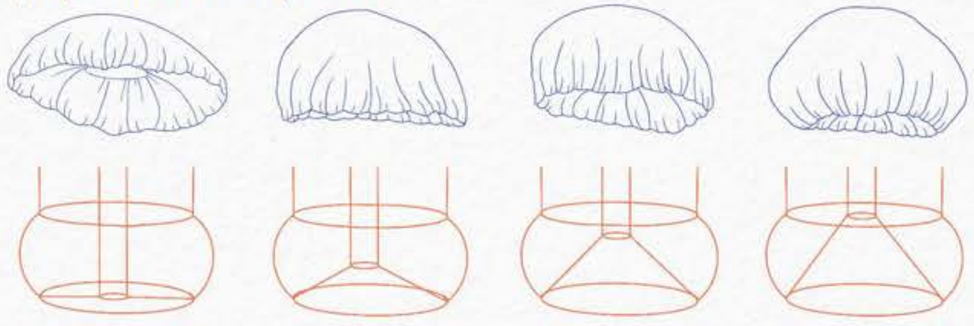
Using different materials, I experimented with recreating the shape of a synaptic. This process led me to form some really interesting structures featuring deep folds, scrunchies, voids, and layers. I found the lace material to be the most impactful as it balanced the scrunched textures with flowing, delicate areas, creating a series of dirtiness and calm.

Fabric photos of development session, Kiely Hall (2025)

Sketches of development session, Kiely Hall (2025)

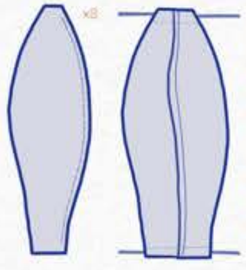
Synapse Construction

Synapse Internal Composition



Synapse skill sketches, Ruby (2025)

Sewing Pattern



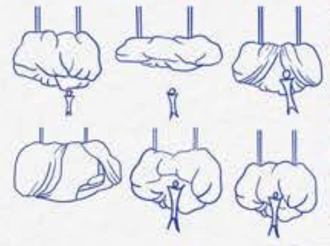
I designed my own sewing pattern inspired by the curved panels of a hot air balloon. This pattern is repeated eight times and the panels are sewn together. Folds are built into each panel, creating a channel that allows wire to be threaded through the fabric. This internal wire structure gives the form stability.

Concept Models

I made a mock model of my moving synapse using my sewing pattern. This helped me observe how the material behaves when the inner circle moves up and down. As the centre rises or falls, tension shifts through the stitched areas and along the wire, causing the fabric to fold, stretch, or ripple.

Folded development models photos, Ruby (2025)

Iteration Sketches



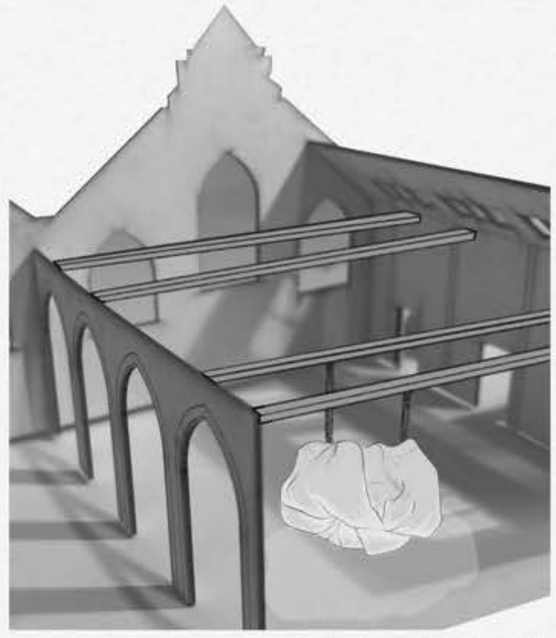
These iteration sketches explore the features within the ceiling design. I wanted to play with possible functions such as whether it works as a curtain to pull back and stand in, just a lighting canopy, or a seating pod.

Development Sketches, Ruby Hall (2025)

Scale Experimentation

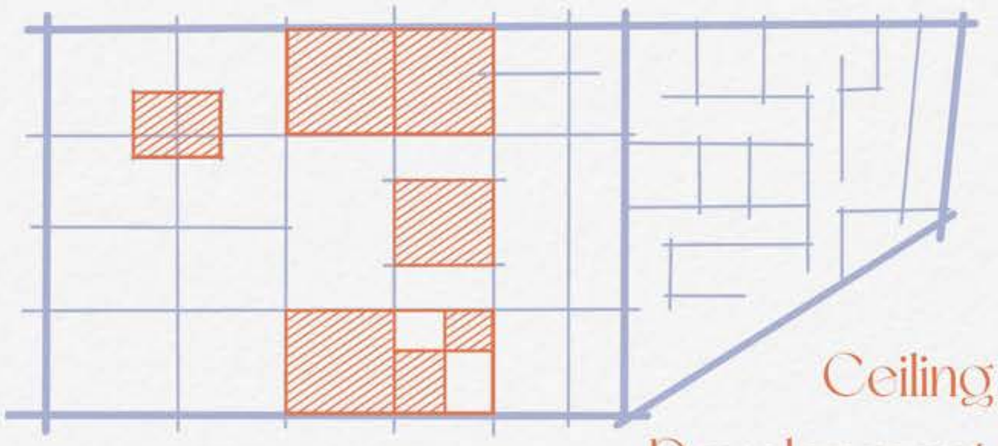
Sketches of developed models, Ruby Hall (2025)

Using my lace model I've sketched in some people at a variety of sizes to experiment with the scale of these features. There is a great vastness to the first one which creates real impact but may feel overwhelming in such a large space. The second balances impact with comfortability, creating a comforting shelter. The third may create an initial interesting environment but would need the scale to be larger to create a consistent protective atmosphere and have significant lighting impact.



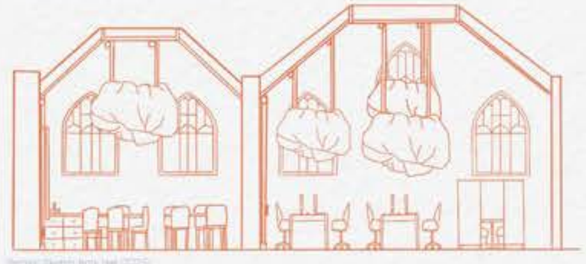
Sketching in Design Hub, Bristol Uni, Ruby Hall (2025)

I've sketched my design within the space to explore how it might look and feel in context. I also considered the impact it would have on the lighting. The light radiating from within the structure creates a grounding and comforting atmosphere, which I believe will be effective in calming individuals.



Ceiling Grid Division of Building, Ruby Hall (2025)

Ceiling Development



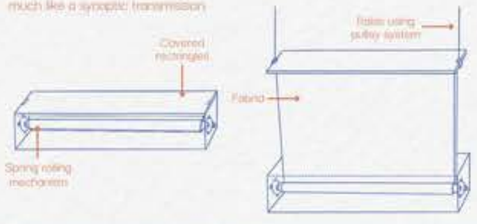
Section Sketch, Ruby Hall (2025)

I've created a grid in the building using its natural divisions to figure out where best to add in my ceiling features. Due to the building being double height, these features are necessary. Having one of the features in each zone such as the chill zone, work space, workshop and the circulation space create points of grounding. Any space can be overwhelming but with the adjustability of the ceiling features, the user can modify their environment to their preference. This gives it's users the opportunity to make what was possibly an overstimulating, open space into a productive, protective, and comfortable space.

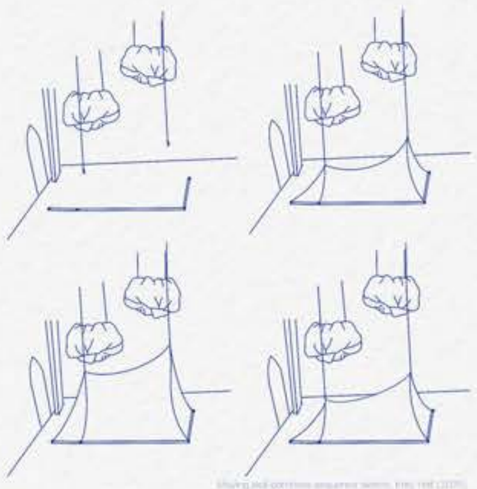
Floor Development

To mimic the way synapses communicate between two neurons, I wanted my design to create a dialogue between the floor and ceiling. By allowing both elements to move vertically, the space gains a dynamic, humane quality. Enclosure is not fixed but can be raised, lowered, or withdrawn as needed. This vertical interaction helps create a sense of comfortable enclosure and protection, with the space is responding to its users.

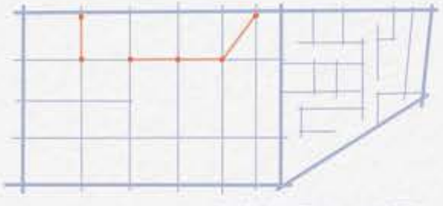
The system works through a series of small covered rectangular openings in the floor. When not in use, the fabric partitions will pull down down into these openings, via spring loaded rolling mechanisms. When users want to create a partition, they simply lift an indented section of the flooring, that contains a hook which they would attach to the fabric. Then, using the integrated pulley system they could raise it to whatever height feels most appropriate. This mechanism gives users further control over their environment, reinforcing the idea of a space that can adapt, communicate, and respond much like a synaptic transmission.



Using the same grid system as my ceiling, (using the gridlines of the existing building) I've developed a floor grid to determine optimal locations for movable fabric walls. These partitions allow the space to be subdivided as needed, giving users further autonomy in shaping their environment. With the partitions being made from fabric, they also serve a secondary purpose: softening acoustics by absorbing sound and reducing reverberation.



Moving and opening sequence sketch, Ruby Hall (2025)



Floor Grid Division of Building, Ruby Hall (2025)

Rendered Floor Plan

1. Reception
2. Cafe/kitchen
3. Chill Zone
4. Formal Workspace
5. Stairs to mezzanine
6. Workshop
7. Womens Toilets
8. Mens Toilets
9. Accesssible Toilets

Rendered Section A

Chill Space Visual

Formal Workspace Visual