

**The Paper House**  
Design report

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## 0. Abstract

The Paper House is a speculative future scenario for Kedelsmedjen, the last remaining historical building on Paper Island in Copenhagen. In this scenario, we see it become a children's theatre and stagecraft school. It would host hands-on workshops of scenography, acting, movement and a public stage for children to show their work in a public or semi-public setting. The Paper House is imagined as a satellite of The Royal Theatre's children strategy. The children would be able to use the house as part of their school teachings and/or in their free time. The project takes its starting points in the existing lack of children's theatres of this kind and in the shift happening to the program and character of Paper Island.



Balten, Pieter (1570): *A Performance of the Farce 'Een Cluyte van Plaeyerwater' (A Clod from Plaeyerwater) at a Flemish Kermi*

## 1. Introduction: personal motivation and problem framing

Throughout history, humans have had a natural inclination to socialise and gather in groups, not only for survival but also to celebrate rituals, myths, and hunting. These gatherings have been recognized as the origins of theatre by theatrical anthropologists (Faoro, 2020). While theatre's significance in social life has diminished in modern times, it has never truly faded away. We believe this is because theatre is deeply ingrained in human nature and represents a primal instinct. However, contemporary theatre has become more exclusive, attracting specific segments of society and distancing itself from the general public. Our aim is to challenge this trend and envision a future where our designed space attracts diverse groups of spectators.

The primary focus of our project is children, as we aim to introduce theatre into their lives from an early age. By creating a theatre specifically for children and offering an educational program, we seek to teach them about community, group participation, the arts, emotions, spatial awareness of their own bodies, and much more. On weekdays, the theatre would host various workshops designed to teach children the fundamentals of theatre, including acting, movement, scenic painting, prop making, and set building. During weekends, the children would have the opportunity to stage their own plays with the support of adults, fostering their creativity and self-expression.

### 1.1 Theatre for children

Children's theatre is one of the main focal points in our problem framing. It served as an initial inspiration for this project as we identified a potential gap in the existing activities available to children. Currently, most theatre experiences for children in the city involve passive engagement. Children sit, listen, and watch, but they have limited opportunities to actively participate and explore their own abilities.

Upon examining the potential benefits of involving children in theatre-related activities, it becomes evident that such experiences hold immense value for their well-being. As stated by The Royal Theatre, "Children's theatre goes beyond mere entertainment. Art and culture enable children to understand society and the world they are a part of. Simultaneously, performances stimulate imagination, allowing little ones to dream big and embark on their own adventures." (Det Kongelige Teater, Børneteater - her kan du tage de mindste med, 2022), This sentiment is not exclusive to The Royal Theatre or ourselves. Our desktop research uncovered several studies conducted on this subject, reinforcing the positive impact of theatre on children's development. We delve deeper into our findings on this topic in Chapter 6.2, "Cultural Poverty: Children, Theatre, and Mental Health."



© Camilla Winther, Det Kongelige Teater



© Teatro Franco Parenti

## 1.2 Paper Island

The other topic we are addressing in our project is our chosen site, The Paper Island in Copenhagen. It sparked an interest in us because of it undergoing a significant shift in the last years, in terms of built environment, appearance and program. From an analysis of the social aspect of the site, we can summarise it as being an industrial site off-limits to the public for nearly 300 years to becoming an extremely popular attraction. In that period it attracted tourists, but most importantly it was Copenhageners' favourite spot because of its vibrant atmosphere, food halls, and longest sunny evenings in the summer. What was also quite specific about it was that it attracted a wide range of users, from the youngest to the elderly people. Shortly after, the historical halls were torn down as a new project was proposed. The only leftover from the past of Paper Island is an industrial building called Kedelsmedjen in Danish, translated to The old boiler and machine house. This is where we will place our theatre house.

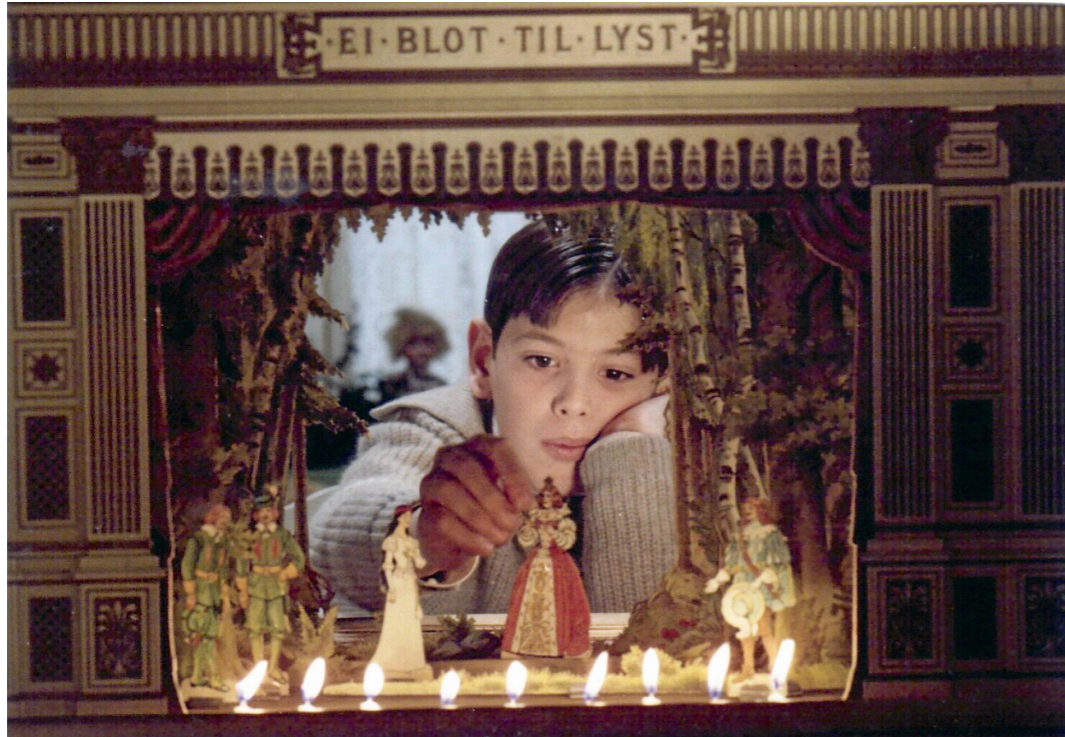


Papirøen as a construction site, © Cobe



Kedelsmedjen, Transgravsvej 11 © kbhbilleder.dk

## 2. Project statement



Ingmar Bergman, *Fanny och Alexander* (1982)

How can we revitalise the old boiler house by creating in it a space for teaching children stagecraft, with a starting point in the building's location, the interior tectonics and its history?

Linking the island's historical name with one of the most versatile and sustainable materials – paper, we will investigate how it can work as a driver in the process and the leitmotif of the project.

Our aim is to keep the program of this building public and create space for a meaningful and socially productive activity – for the children, their parents and visitors from outside.

### 2.1 Design report foci

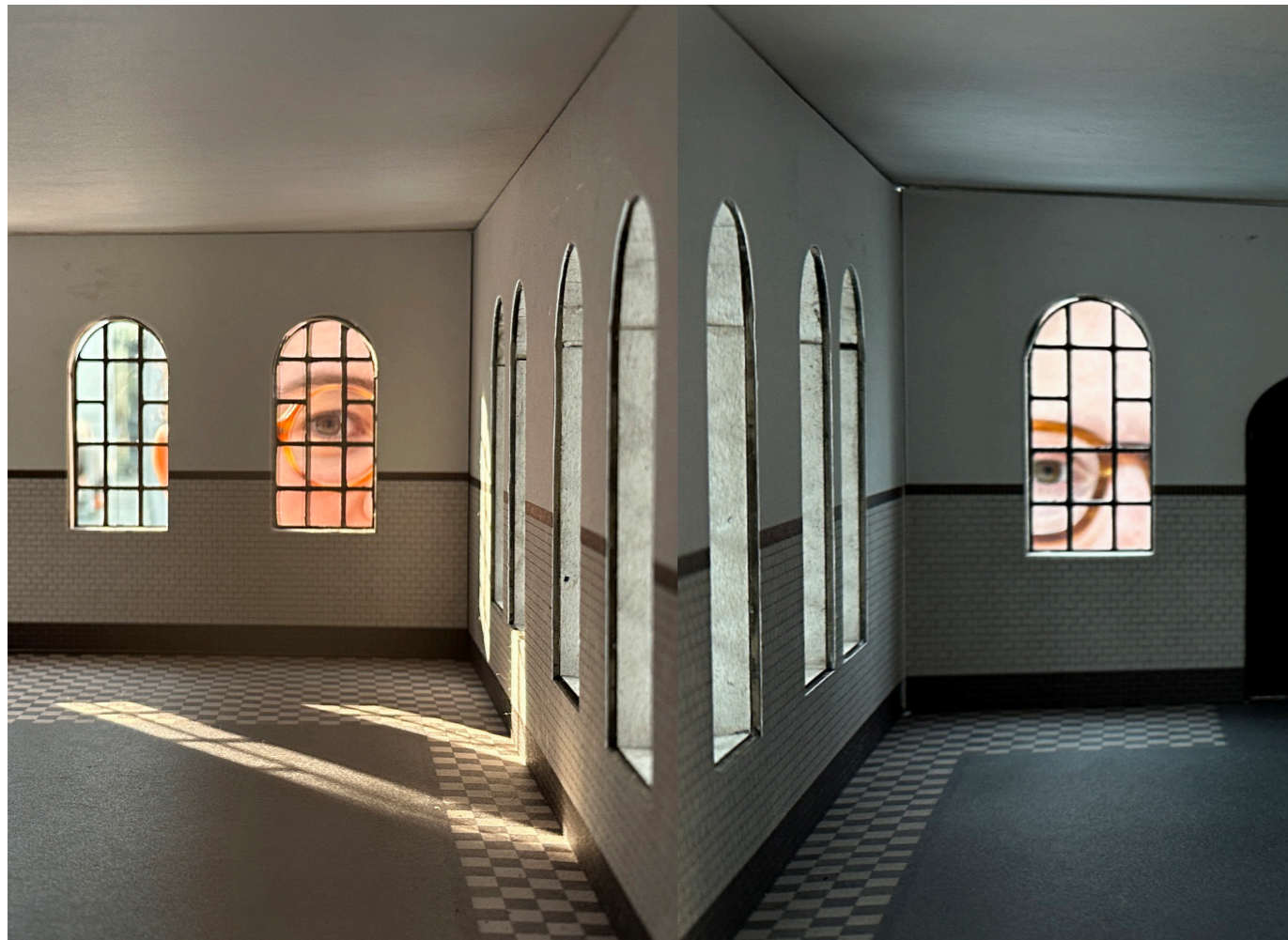
In the programme we introduced our theoretical research and perspectives on architecture and theatre and the political aspect of the site. In this report we are bringing our focus onto the theoretical perspectives regarding the well-being and spatial design for children, and on our design process and proposal.



*Theatre on the Fly* by Assemble Studio, an experimental temporary venue (2012)

### 3. Interdisciplinary collaboration

Due to our respective backgrounds, with Annika coming from the field of architecture and Katarina having training as a scenographer, we met at the Spatial Design course. Our collaborative process has been an interdisciplinary fusion of theatre and architecture, facilitating a constant exchange of knowledge, perspectives, and tools. One significant meeting point was our work with a 1:25 architectural model, which provided a relatively large scale, more common in set design models, yet retaining an architectural focus as well. Throughout the entire process, we have closely collaborated, without strict divisions of tasks. It was important to us that both of us were involved in every aspect. The advantage of our diverse backgrounds became evident as this interdisciplinary approach helped us clarify our arguments and make informed decisions. What may have been easy for one person could be challenging and complex for the other, and this diversity strengthened our final outcome. Engaging in continuous dialogue added depth to our process and ultimately influenced the quality of our result. Furthermore, this ongoing dialogue fostered trust in each other's choices and decisions, while also facilitating mutual learning from our individual competencies and skills.



*Katarina and Annika in the model-building process, own picture, 2023*

## 4. Site



Rolls of paper being loaded onto ships at Paper Island © Københavns Museum



Public activity on Paper Island in 2014 © berlingske.dk



render of the future urban district by Cobe

### 4.1 Historical context

Christiansholm, an artificial island in Copenhagen Harbour, has served various functions for the city throughout its 300-year history. Initially a shipyard, it later became a war hospital, cannon and cold storage, and a paper warehouse. The island's nickname, PAPIRØEN, originated from its paper storage era. In 1878, Salt- og Kulkompagniet A/S Christiansholms Fabrikker converted the island into a cold store, demolishing military installations and establishing warehouses, furnaces, workshops, and a boiler and engine house for steam engine production. The Copenhagen Port Authority repurchased the island in 1939.

During the mid-1900s, the Danish Press Joint Purchasing Association (DDP-FF) utilised the island to store paper for the Danish daily press. The island supplied paper to Copenhagen and other towns in Zealand, Lolland-Falster, Møn, and Bornholm. With approximately 50,000 tonnes of paper stored annually (equivalent to 100,000 rolls of newsprint), the island earned the colloquial name Papirøen.

On November 26, 2012, Trans Dania made its final docking, and the last roll of paper was unloaded. In the following years, the island underwent experimental and creative transformations, accommodating temporary activities and businesses. In 2014, the popular Copenhagen Street Food market opened, accompanied by the temporary presence of Experimentarium and the establishment of Copenhagen Contemporary art centre in 2016. These endeavours swiftly converted the island from an industrial area into a sought-after destination with a distinctive identity.

Starting from 2019, the island underwent redevelopment into a new urban district, expected to be completed by 2024.





Byggeskolen BIBIANA at Papirøen (until 2022) © BIBIANA, Kedelsmedjen, Papirøen



current state of the building, used as a showroom of the model by Cobe, visualisations and some samples of kitchens in the future apartments for potential buyers, own picture, February 2023

#### 4.2 The Boiler and Machine Building

The Boiler and Machine Building (Kedelsmedjen) was constructed by Salt- og Kulkompagniet A/S in 1909 and is the only remaining structure on the island. Located at 11 Trangravsvej, the building has significant historical value and features red brick construction, a pitched roof, a front gable, and round-arched windows with small glazing bars.

Throughout its history, the building has served various purposes in alignment with the island's activities. Most recently, it housed Bibiana Denmark - The Children's Building School 360 degree on Papirøen, where primary school classes could observe the construction process and gain insight into the impact of Copenhagen's major transformation. However, the children's building school ceased its operations in the building in 2023.

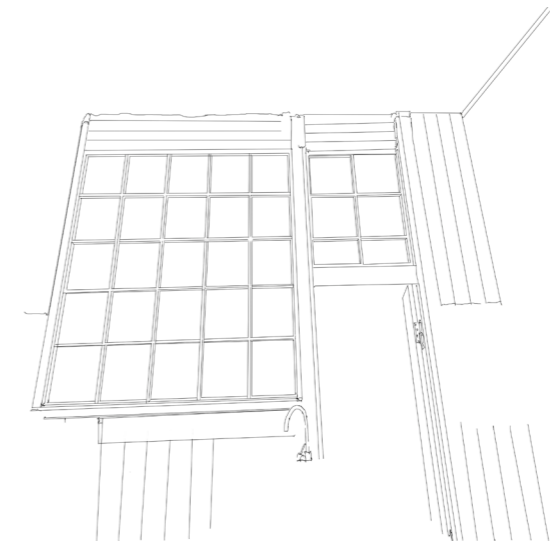
The ground floor of the building features three entrances. Upon entering through the middle door, we find ourselves in a small entrance space that leads into a corridor and a series of smaller interconnected spaces, ultimately leading to the old cafe at the opposite end. On the eastern side of the building, there is a distinct space with its own separate entrance and a double-height ceiling. This space is entirely painted in black and features a concrete floor with some remaining patches of small grey tiles. There is a visible roof beam structure. On the western end of the building, a spacious area with numerous windows on three sides provides panoramic views of the water. The unique characteristic of this space, aside from the windows, is its materiality. The walls are tiled in off-white and dark brown tiles, while the floor combines black and white checker tiles with a large concrete patch.

To access the first floor, an external staircase is available. Upon entry, we find ourselves in another corridor that mirrors the one below. There is a small toilet on the left side of the entrance, and stairs leading to the second floor. The southern part of this floor is dominated by a long, open space with an abundance of windows, allowing ample natural light to fill the area.

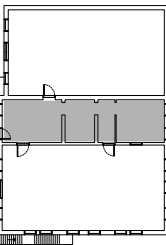
The second floor offers the most intimate atmosphere among all the floors. This is achieved through the inclined roof design and the bearing walls that divide the space into smaller interconnected areas. The floor is made of concrete, and the walls also maintain a concrete finish, adorned with intriguing geometric painted patches. Additionally, there is a small storage area located in the attic.

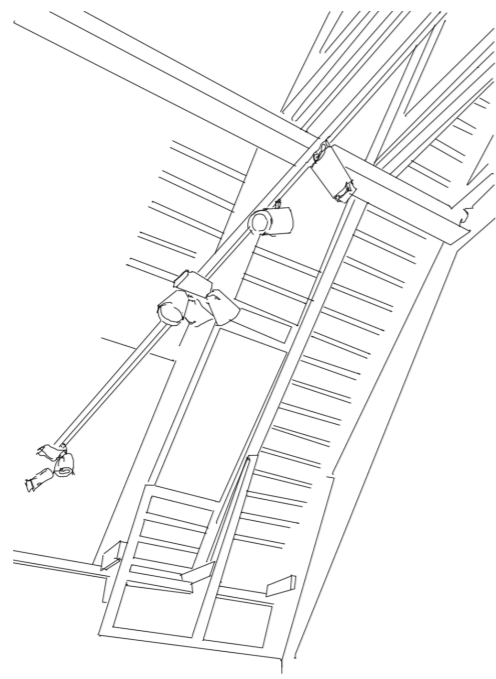


exterior

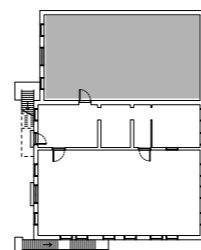


ground floor - entrance, corridor and old café

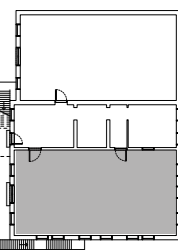


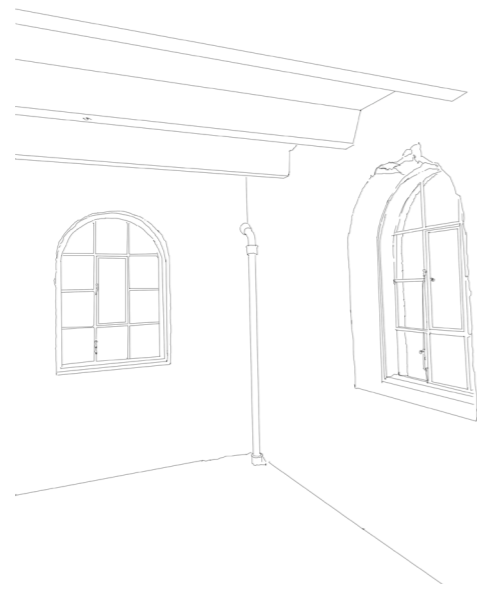


ground floor - NE

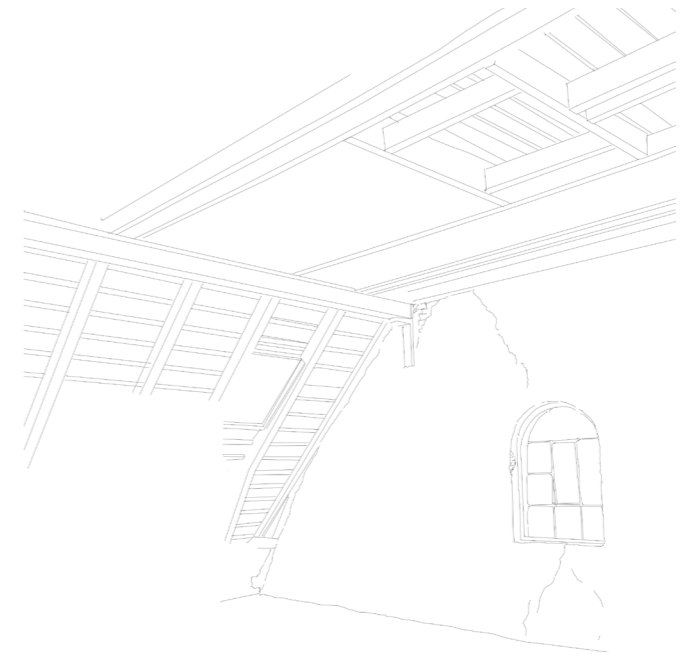
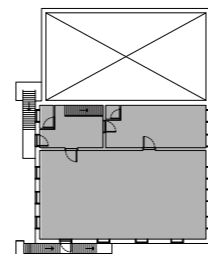


ground floor - SW

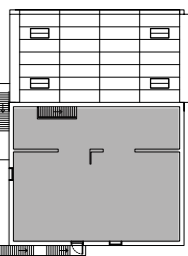




first floor



second floor



#### 4.3 Political context. From culture to private property

Christiansholm, located in the Inner Harbour of Copenhagen, enjoys a central location near major cultural and historical attractions. The industrial appearance of the Copenhagen port has dominated the waterfront for the past 150 years. However, Christiansholm is undergoing construction and is expected to be completed in 2024. The vacant land has attracted investors seeking high-profit opportunities, including luxury apartments, upscale showrooms, and restaurants targeting the affluent class.

Papirøen, situated in the inner harbour near notable landmarks, was closed to the public for decades but underwent a transformation during a five-year period (2012-2017) of cultural offerings. It became a popular urban district and the fourth most visited attraction in the city. The development project, led by Cobe in 2015, aimed to maintain a public ground floor while adding future city structures above it. However, the new master plan reflects a shift towards private property with accessible shops, raising concerns about the prioritisation of profit over public features.

*The question of what happens to our cultural buildings and rituals when urban districts and landmarks are prized more as real estate than as neighbourhoods, and theatre is seen neither as art nor social practice but as a creative industry is one that is troubling scholars of architecture, geography, and theatre and performance studies. (Rufford, 2017, p.57)*

#### 4.4 Future scenario

In 2024, a new district will open in Copenhagen, featuring housing, a water culture centre, an international hotel, a food hall, cultural facilities, and a harbour promenade with recreational activities. The aim is to create a vibrant urban district that blends the historic city with the port environment. The Keldmedjen building is the only remaining structure from the old part of Paper Island, Christiansholm. The new development focuses on exclusive residences, food markets, events, and fine dining. Concerns arise about the area lacking character and having a limited residential presence dominated by Airbnb, corporate entities, and tourists.

Previously, the Bibiana foundation for Børnenes Byggeskole occupied the building, engaging children in discussions about architecture and planning. However, they stopped using the building this year. Efforts are underway to reintroduce "real life" to the area by establishing a satellite for The Royal Theater where school children can learn, participate in workshops, and perform on the stage, preserving the building's previous focus on children.



map of part of central Copenhagen showing (in red) on the left: The Old Stage, in the center the Playhouse, on the right the Opera and the Paper House in between the last two, own drawing

## 5. Stakeholders and strategy

We see this project as a satellite of The Royal Theatre, and have been in dialogue with Gunna Winterberg, Head of Partnerships and School, to understand their current situation and future goals. The Royal Theatre has six stages spread across three main venues: the Old Stage on Kongens Nytorv, The Playhouse on Nyhavn, and the Opera on Holmen.

### 5.1 The Royal Theatre's programme for children

In 2019, the Royal Theatre established an official strategy for its children's program, integrating it into the main program and eliminating the need for external funding. This milestone marked a significant development for the children's program, which continues to operate in this manner. The current program features four distinct activity types, with an additional program in progress and scheduled to commence in 2026.

The Royal Theatre offers various activities for children, including Pixi performances, Postyrium travelling containers, guided tours, a digital learning platform, and a future experience universe in Stærekassen. Art and inclusivity are central pillars of their program, aiming to provide accessible and enriching experiences for children of all backgrounds. This project seeks to combine these activities in a unique space that fosters creativity and exploration while promoting inclusivity. Funding could come from the Theatre itself, with potential support from the Municipality and private sponsors.

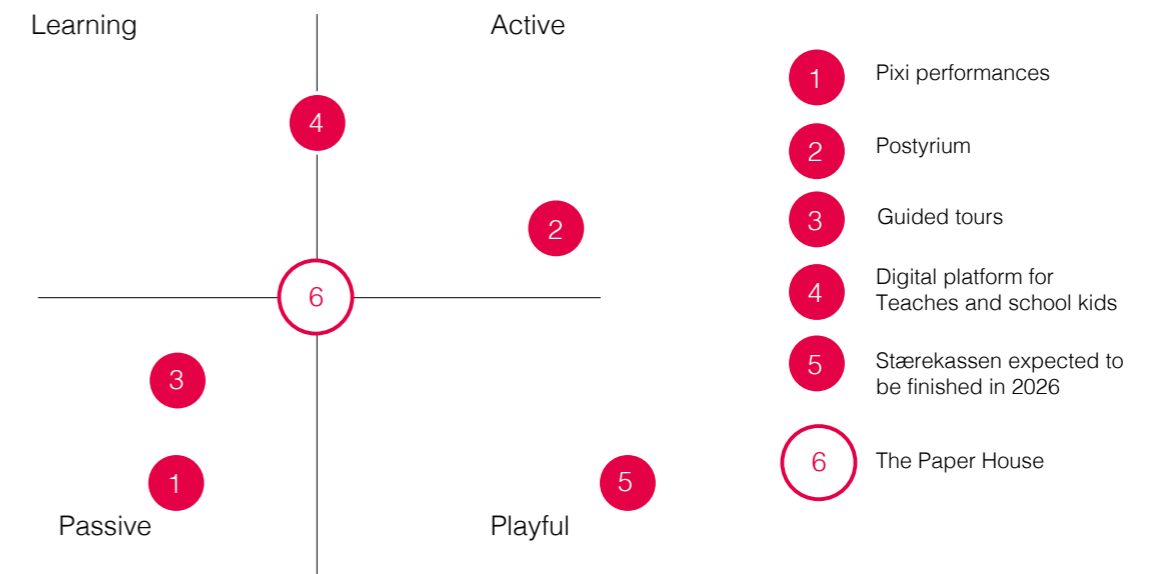
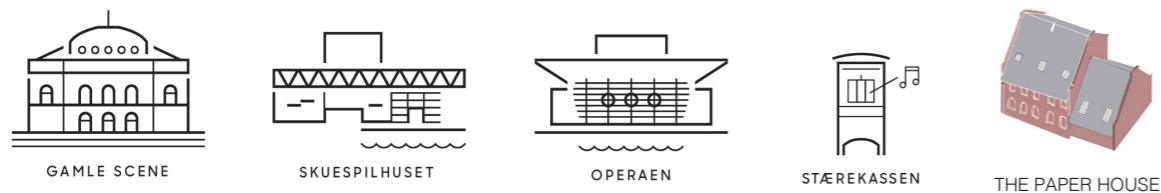


diagram with a base of how The Royal Theatre explains their current program (1-5) with our satellite "The Paper House" (6) positioned in the center of scheme

## 5.2 Cultural poverty: kids, theatre and mental health

Cultural poverty refers to children having fewer than four cultural experiences per year. Studies reveal an increase in culture-poor children, often associated with poverty. This highlights the significance of cultural activities for less privileged children, as they contribute to their understanding of the world, emotional development, and social well-being.

*For example, children and young people who actively participate in musical activities with others generally experience greater emotional well-being, better self-esteem and greater social cohesion with the other children. In short, music can give children the experience of being part of a community. (Børns Vilkår, 2022)*

We strongly agree with this statement and believe that, likewise, engaging in theatre activities can have a wide range of benefits spanning from social skills to self-esteem and feeling of belonging to a group, contributing to general well being.

Research on activities promoting emotional development in children confirms our belief. According to Gwen Dewar, Ph.D., firsthand experiences, such as group games, role-playing, and discussions about emotions, are crucial for children to develop skills like reading emotions, cooperation, and conflict resolution. Theatre activities align with these experiences, allowing children to practise facial expressions, pantomime, dialogues, and staging plays. Cooperative construction, another relevant activity, fosters communication and coordination. (Dewar, 2021) Scientific evidence supports the effectiveness of cooperative construction therapy, such as LEGO-based therapy, in developing social communication skills in children (Owens et al., 2008).



*Moominsummer Madness* by Tove Jansson

The novel's main theme is theatre, which is described as an irritating but ultimately rewarding process. Illustration shows a floating theatre for the other creatures sailing around in the flooded Moominvalley.

## 6. UN Sustainable Development Goals

### 5.3 Space and learning

Our program aims to embrace children of diverse ages and socio-cultural backgrounds. To ensure a safe and inclusive environment, we have drawn inspiration from Ringmose and Ringsted's theories on creating optimal learning spaces for children. By implementing their methods, we cater not only to younger children but also to older children of school age.

The physical environment of the theatre plays a significant role in shaping the culture and activities that take place. We strive to provide a stimulating learning environment that supports continuous learning. The spatial organisation of the theatre influences the interactions and experiences of the children, thereby impacting their development.

Zoning is a key principle we adopt based on Ringmose and Ringsted's approach. Each space is designated for specific activities, such as imagination, movement, and voice. This division helps provide clarity and prevent frustration or conflicts, especially for younger and less resourceful children.

Interior design plays a crucial role in creating a sense of security. By ensuring clarity and organizing items in their designated places, we enhance the learning and play environment. Tools and materials used in activities are readily accessible and visible to the children.

Inclusion is a fundamental aspect we consider. Recognizing that children have different participation styles, we create a flexible framework that caters to their needs. We design spaces that can accommodate various activities simultaneously, and even within the same room. This includes creating smaller, enclosed spaces to promote a sense of safety and improve concentration for certain children.

The design of our spaces aligns with the specific activities they cater to. For example, the imagination/workshop room on the ground floor utilises durable materials, adequate lighting, and the ability to divide children into smaller groups. The movement room features a raised floor and sound panels to minimise noise disturbance, while providing a soft surface for unrestricted and safe movement. The voice and rehearsal room, located higher up, allows for smaller group exercises, concentration, and close listening, facilitated by sound panels.

Overall, our design aims to optimise learning and provide a supportive framework for creative expression for both children and adults involved in the program.

This project aligns with three UN Sustainable Development Goals (SDGs):

Goal 3: Good health and well-being, as both experiencing and creating theatre contribute to overall well-being.

Goal 4: Quality education, specifically target 4.7, promoting sustainable development and lifelong learning opportunities.

Goal 11: Sustainable cities and communities, particularly target 11.4, revitalising historic buildings and preserving cultural heritage.

The project aims to enhance health and well-being through arts and culture, foster sustainable learning experiences, and revitalise a historic building to promote inclusive and resilient communities.





## 7. Approach

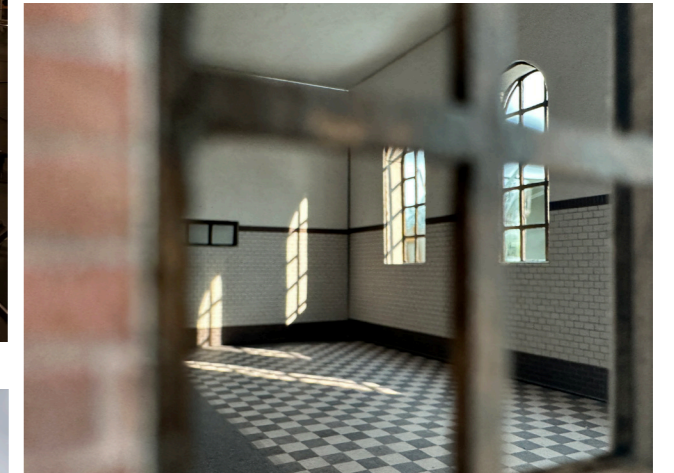
Our process consisted of two main phases: fieldwork and the design process. During the fieldwork phase, we conducted two parallel activities throughout the semester. Firstly, we conducted registration and analysis of the site, Keldsmedjen, and its context on Paper Island. This involved methods like historical analysis, photography, site visits, and desktop research. Secondly, we focused on the program of the building, specifically the theatre for children, through interviews with the children's department of the Royal Danish Theatre, references to children's learning literature, and further desktop research. In the design process phase, we employed various tools such as 3D modelling, 1:1 registration, desktop research, collages, sketches, and physical model testing.

### 7.1 Working with physical models

From the early stages of our process, we made the decision to work with a physical 1:25 scale model. This scale allowed us to delve into the interior details of the space while maintaining an overview of the building and its organisation. We are particularly pleased with our approach of building the model in parts, room by room, and testing designs within each of them. Each floor of the model was kept as a separate entity, contributing to the easier use of the model and experiments in each floor.

Throughout the registration and design phase, the model served as a valuable tool, facilitating sketching, testing, and ultimately achieving the desired outcome. Constructing such a large-scale model early on in the process enabled us to develop a deep understanding of the building, including movement within it and intricate tectonic details. It allowed us to visually and spatially understand the ideas we had and it offered a sense of scale, proportion, and spatial relationships that may be difficult to perceive in virtual or two-dimensional representations.

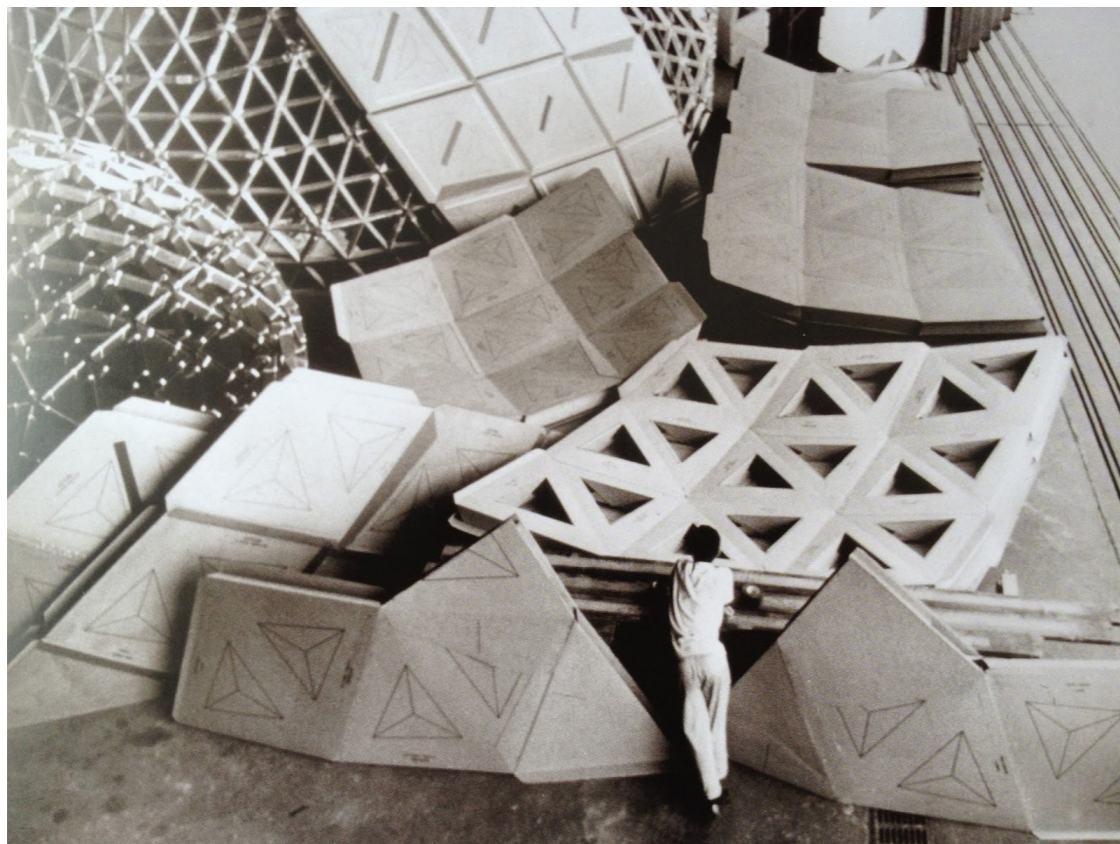
The model proved instrumental in testing ideas and translating initial sketches into functional concepts, which subsequently informed concrete design solutions in our final result. Given our project's emphasis on materials, sensorial experiences, and the interior, it felt natural for us to work on a large scale and visually express our ideas and thoughts through physical model work rather than virtual modelling.



## 8. Design process

### 7.2 Paper as leitmotif

The recurring theme of paper has been integral to our project from the very beginning. Inspired by the goal of creating a space where children can explore the magic and simplicity of theatre making, we recognized that paper, with its lightness and playful nature, embodies these qualities perfectly. Our exploration of paper models of theatres and the impressive realism achieved in set design models, despite being primarily constructed from paper, further reinforced the significance of this material. We also find it meaningful because paper is often one of the first materials we encounter in our creative journey as children, using it for drawing, crafting, and exploring our imagination. Moreover, we chose paper for its potential to be sustainable and reused multiple times. In the subsequent sections, we will delve into our process of studying and utilising this symbolic material, which also holds a connection to the nickname of the site: Paper Island.



Buckminster Fuller, 1954 Triennale in Milan, a geodesic dome structure made of corrugated cardboard. In Montreal in 1957, built a construction featuring a geodesic division of space. A diameter of 9.5m and was constructed from only two different standard elements. Those elements, a total of about one hundred pieces, were made of flat cardboard boxes covered on the outside with an aluminium sheet.

This chapter will guide you through the various phases of our design process and the tests that led us to our final result. The design process encompassed two main phases, which ran concurrently: spatial planning and paper experiments.

### 8.1 Spatial hierarchy (Imagination, Body and Voice)

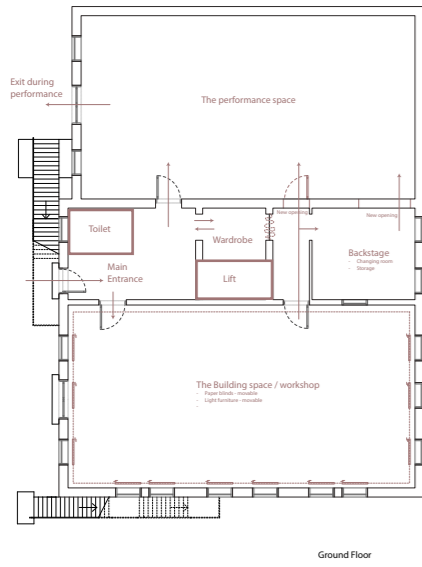
Our approach to the building aimed to preserve the original exterior and interior by making minimal structural changes. We envisioned our interventions as a set of elements that could be installed and removed without leaving significant traces.

The spatial planning began with the placement of the main stage in the southeast space, naturally fitting within the black room with an open roof structure. We positioned the construction workshop on the same floor, featuring ample natural light and an industrial ambiance with tiled walls and high ceilings. To create a smoother transition between the stage and the workshop, we introduced new openings in the building's core and included a small backstage area.

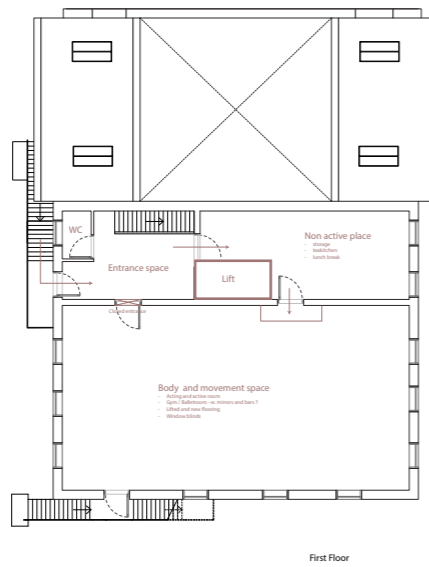
In considering the process of creating and staging a theatre play, we identified three main stages: building and performing, physical training, and vocal training. To accommodate these stages, we allocated symbolic names to the floors: Imagination, Body, and Voice. Analysing the spaces, the second floor, with its dividing wall and various areas shaped by the building's structure, appeared suitable for the voice and acting room. The presence of a tribune in that space further inspired our choice for the rehearsal area. On the first floor, we envisioned a spacious room for movement training, which featured regular ceiling height and open space conducive to running/walking exercises and larger group activities. Adjacent to the movement room, we allocated space for a tea kitchen and storage area for jackets and backpacks.

In terms of accessibility, we recognized the need to install a lift due to the external staircase being a potential obstacle. After exploring various positions and sizes, we settled on the smallest sized lift that served the purpose while minimising alterations to the original layout. We aimed to enhance the existing division of spaces rather than disrupt the building's structure and hierarchy. Additionally, we introduced a wheelchair-accessible toilet on the ground floor to cater to visitors and ensure ease of access from the entrance without disturbing the working spaces of the children.

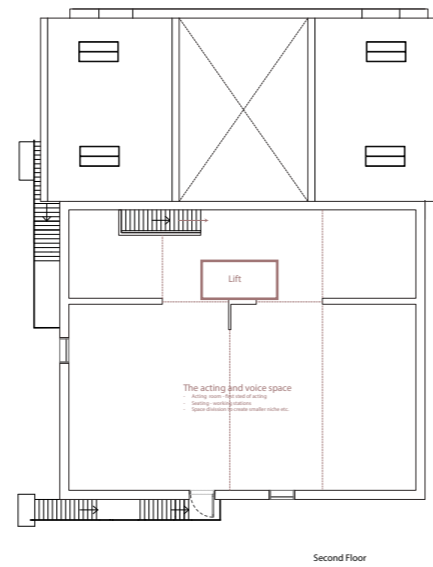
### Imagination



### Body



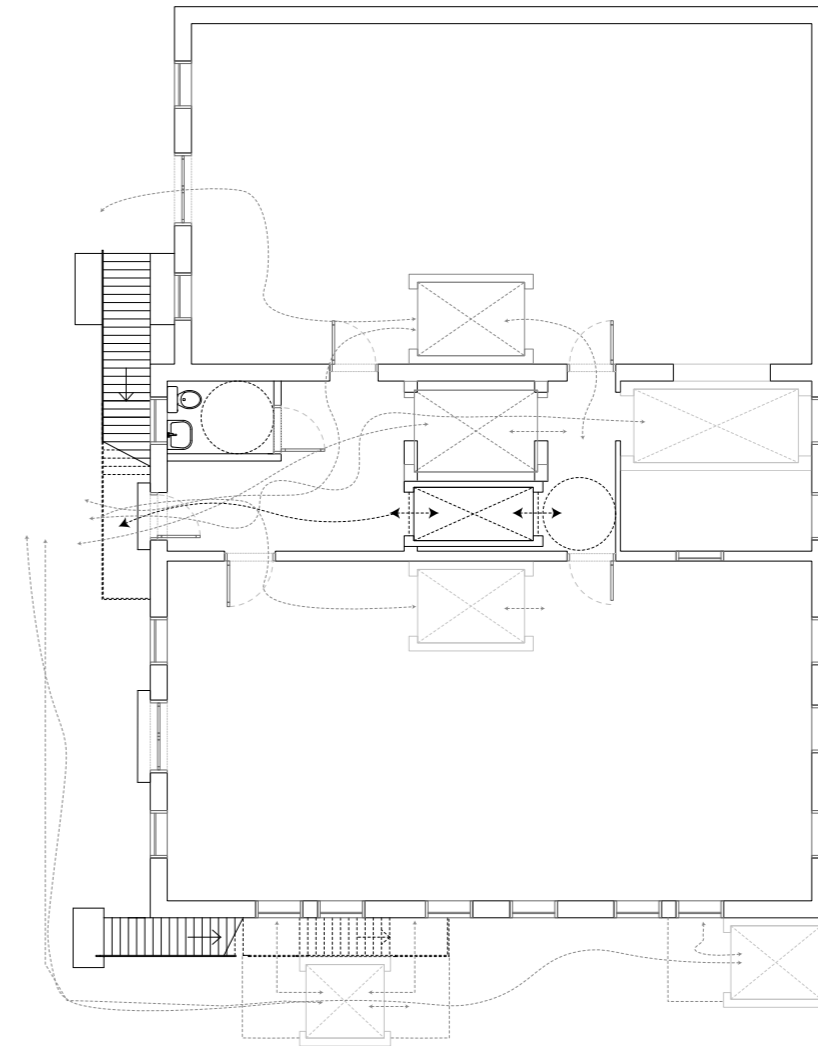
### Voice



- main stage in the SW space - open roof construction calls for hanging scenic elements and lights; separate entrance for audience
- workshop in the NE - transport of set elements to the stage simple; plenty of light; size, materiality (industrial floor and tiled walls)
- openings to facilitate transition

- room for movement training - more intimate compared to ground floor
- new flooring to improve tactility (training in socks or barefoot), blinds for adjusting light, shoe station at the entrance
- tea kitchen/break space

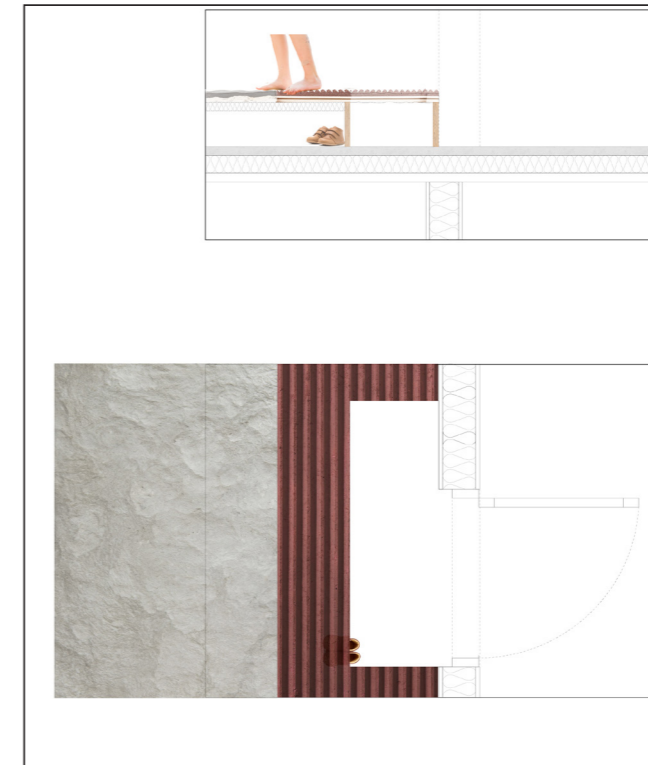
- voice and acting room - the most intimate of all floors (ceiling, wall partitions, different areas and corners)
- acoustic panels
- space dividers for smaller areas
- small tribune for improvised stage for dialogue and monologue rehearsals



sketch of the process of positioning the lift inside the building, testing various paths and accessibility scenarios



ground floor - workshop - filtering light  
(Imagination)



first floor - room for body training and movement -  
meeting between floor and feet  
(Body)



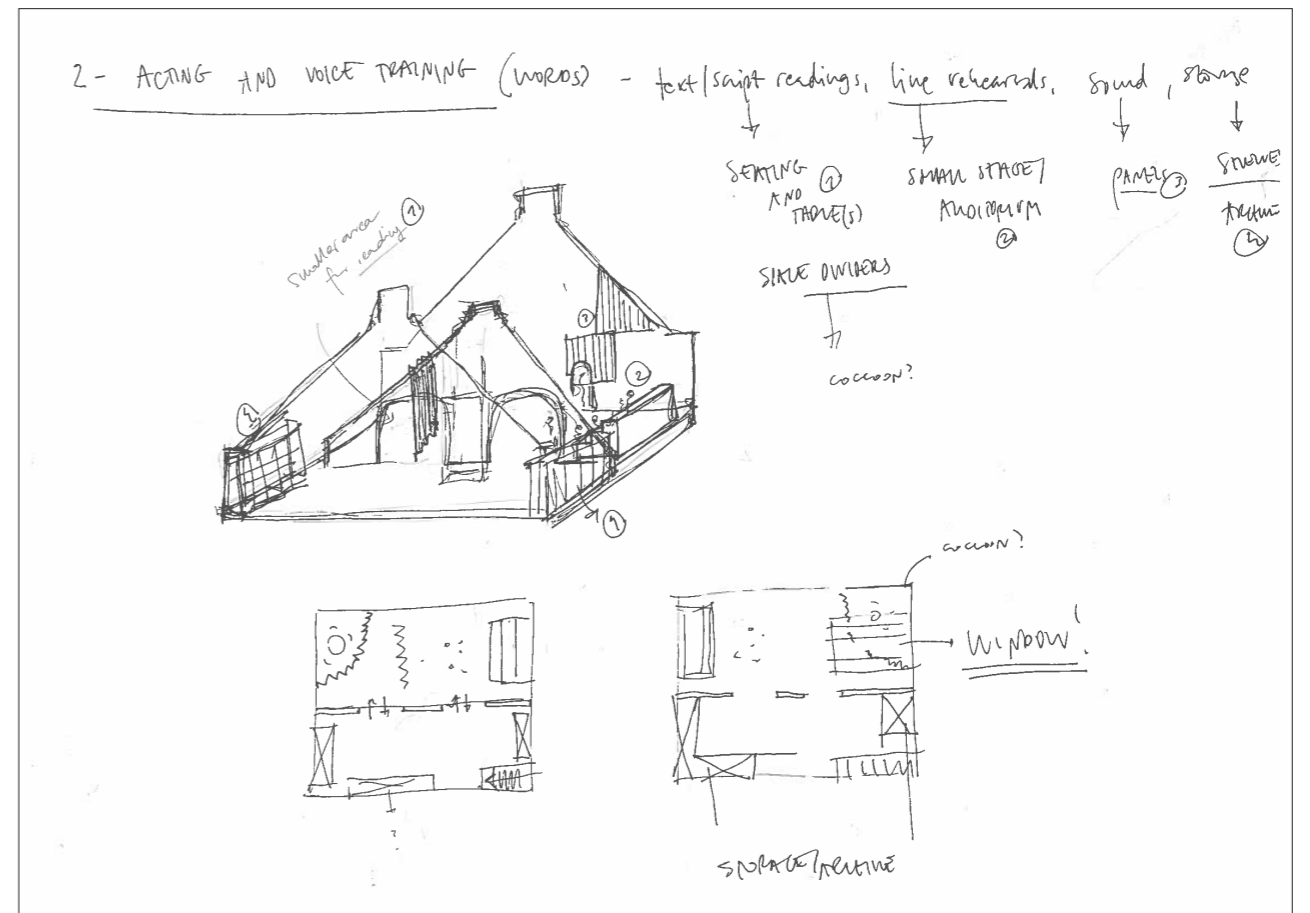
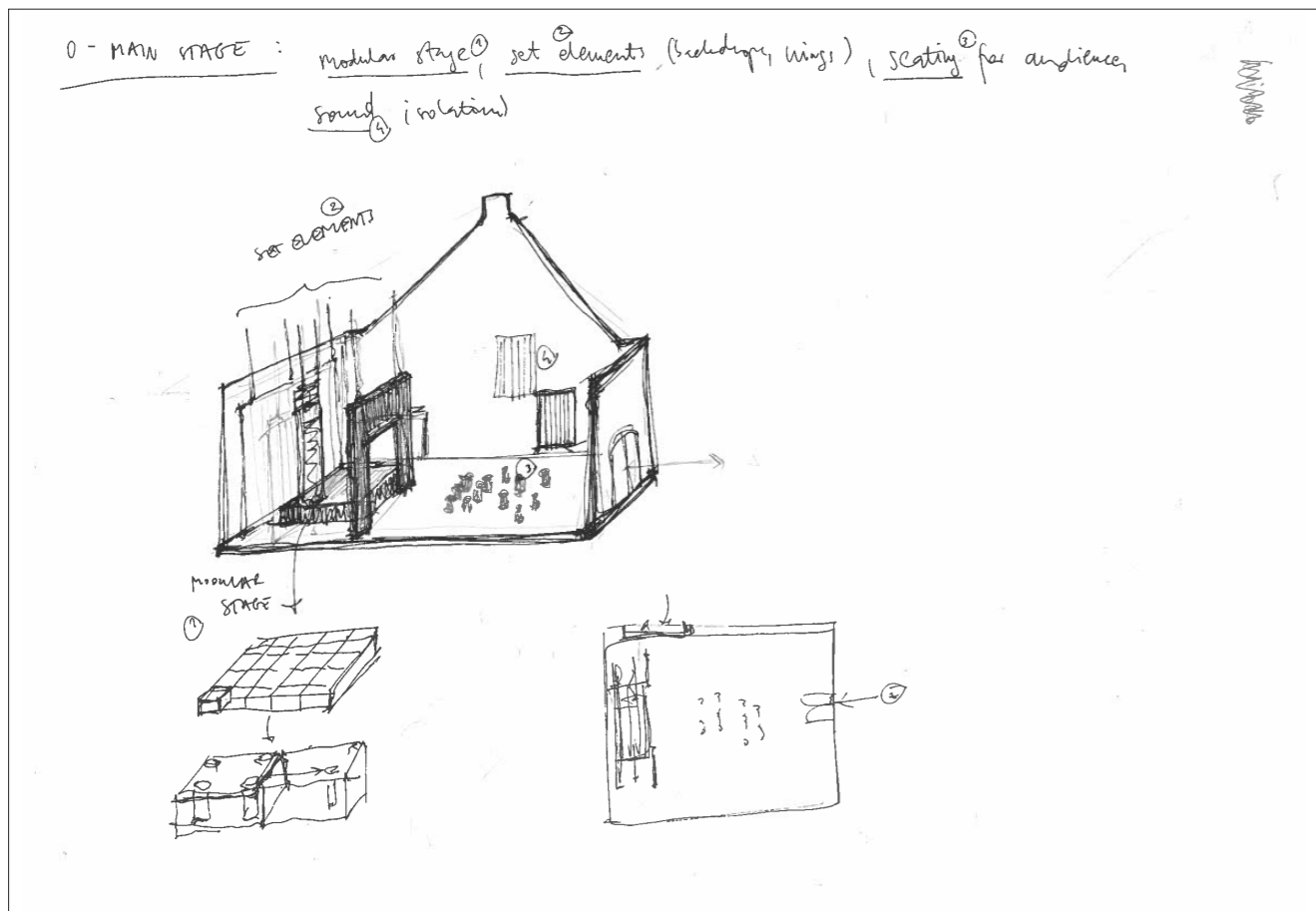
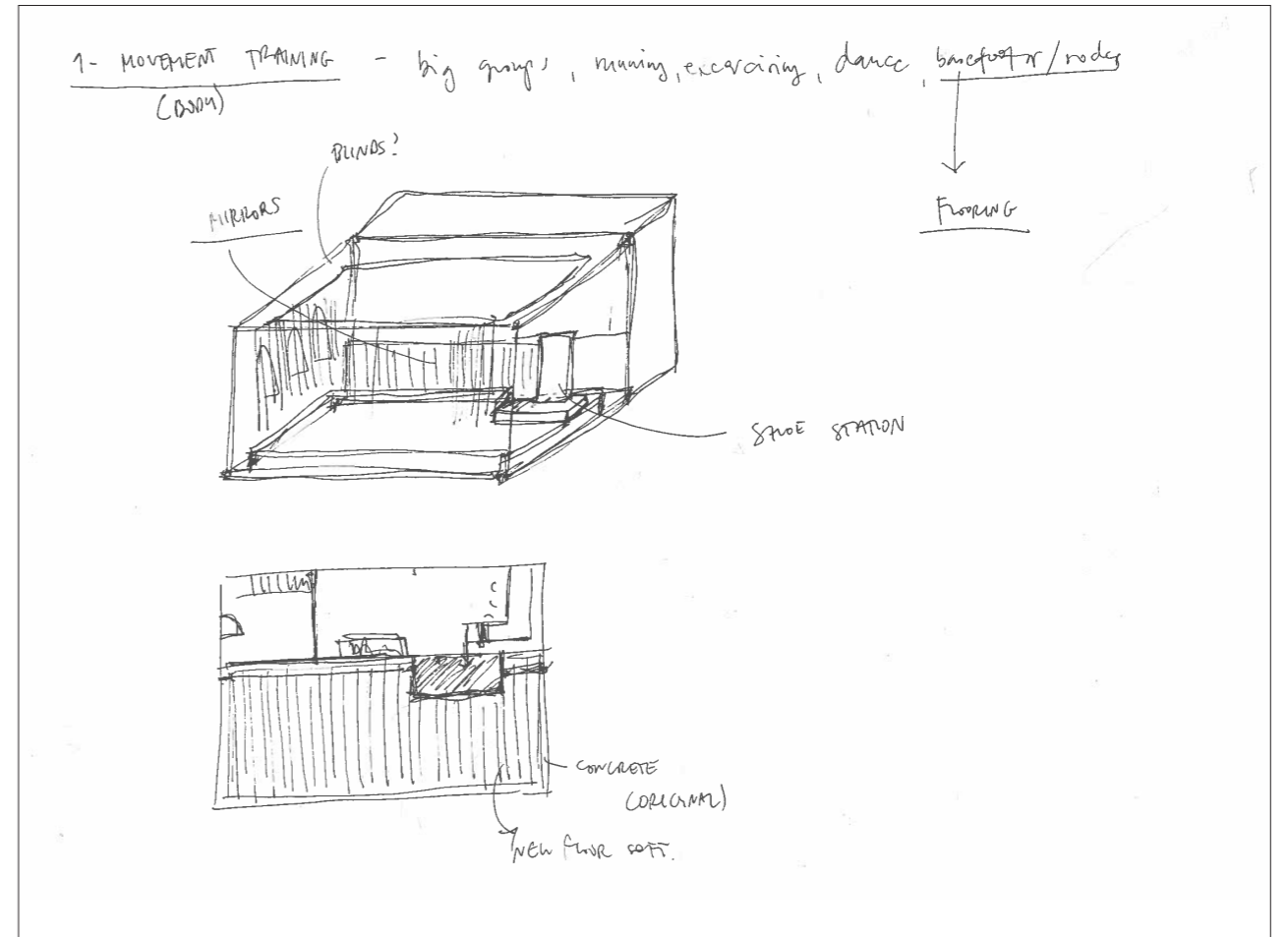
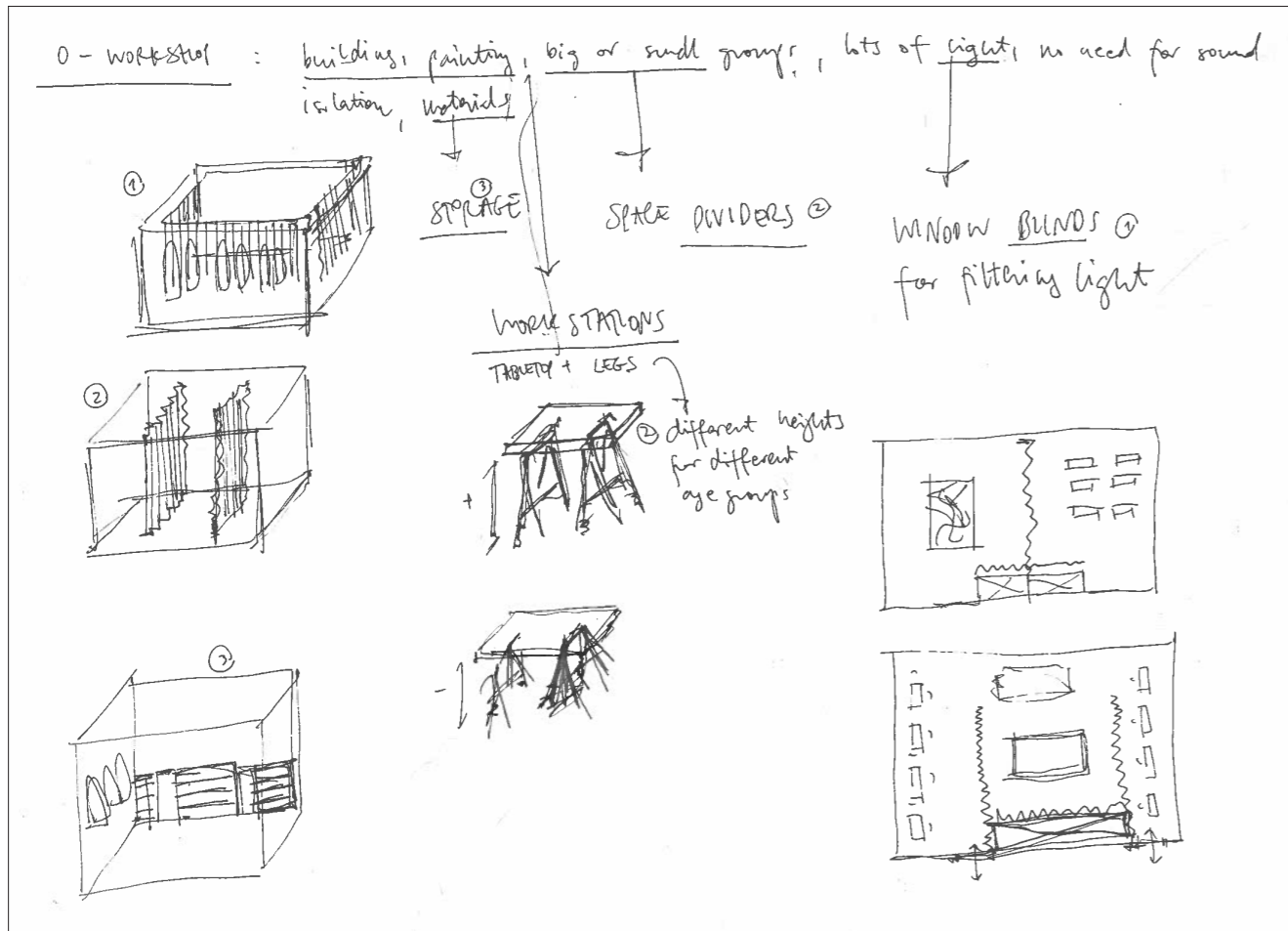
ground floor - stage and backstage - wall cladding and coulisse, parti-  
on wall  
(Imagination)



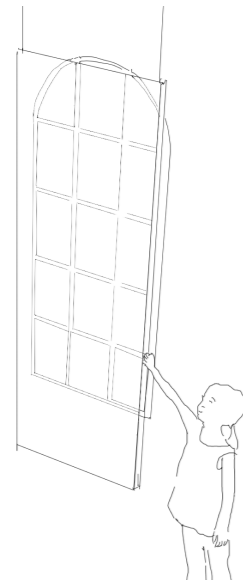
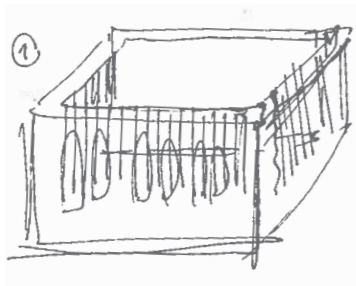
second floor - room for voice exercise, acting and rehearsal - acoustic panels  
(Voice)

Some of the earliest drawings were concept collages exploring one spatial experience, or situation, on each floor. The moments we chose were: a working station in the workshop, the transition between stage and backstage, ...

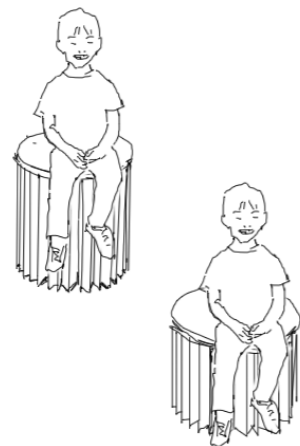
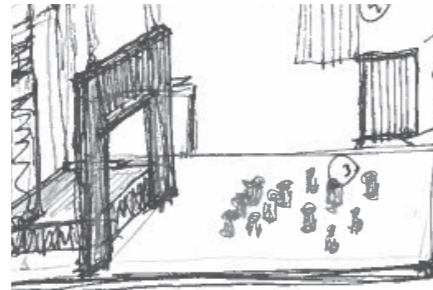
... the meeting between bare feet and a floor texture in the room for movement training, and a reading exercise in the voice room.



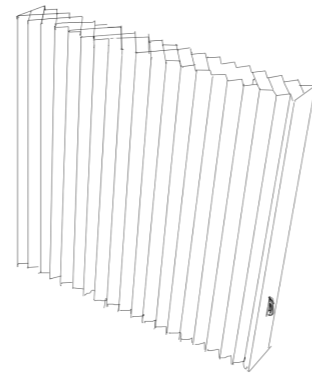
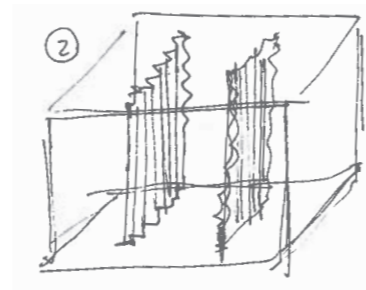
window blinds



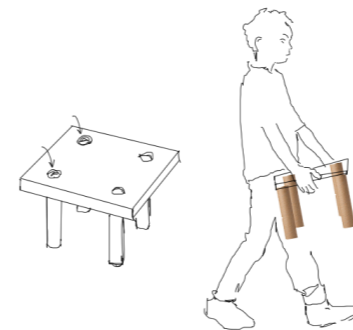
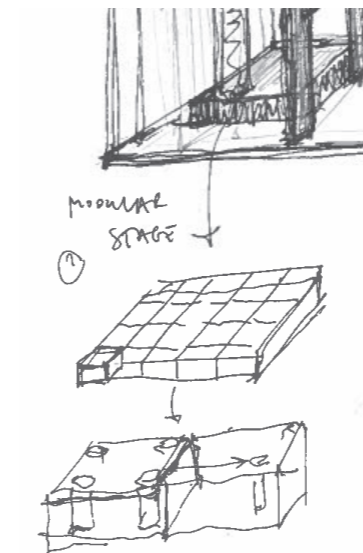
seating



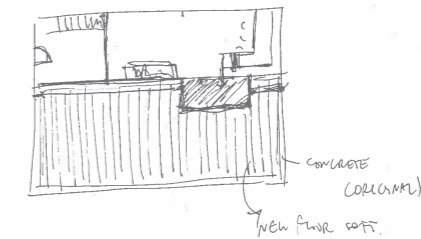
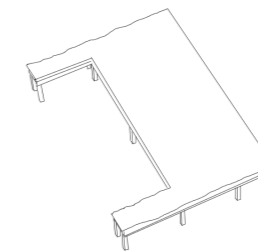
partition wall



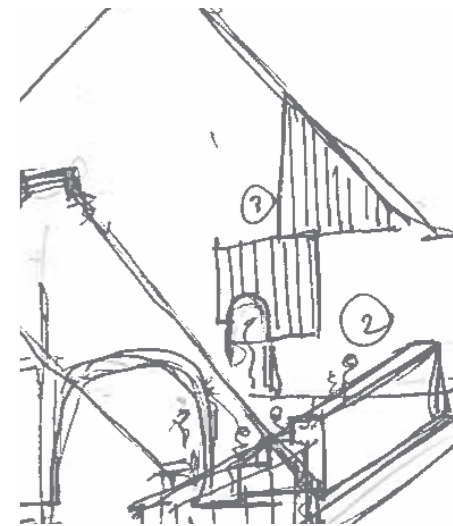
modular stage



floor panel



acoustic wall cladding



Those sketches of spatial situations gave us useful insight for individuating what the main spatial elements of our project were. Each of them contributed to the spatial experiences we imagined and facilitated the use of the space.

## 8.2 Paper as building material, light filter, stage element

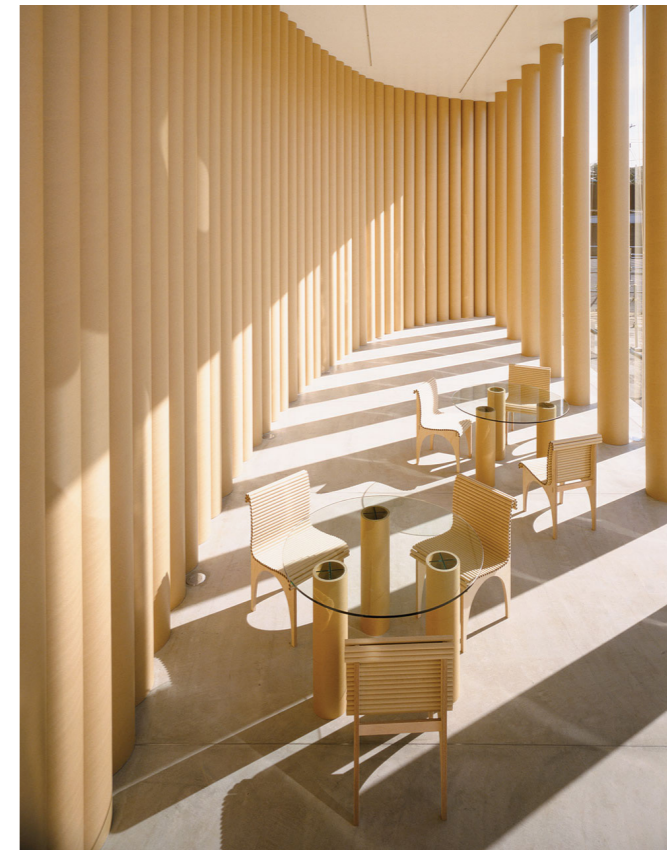
We have carefully selected specific categories of paper usage that are most relevant to our project, narrowing down from the countless possibilities. Our initial exploration focused on three major themes: paper as a construction material, paper as a medium for filtering light, and paper-based set elements. During this phase, we extensively researched various references and extracted valuable insights from the most inspiring sources.



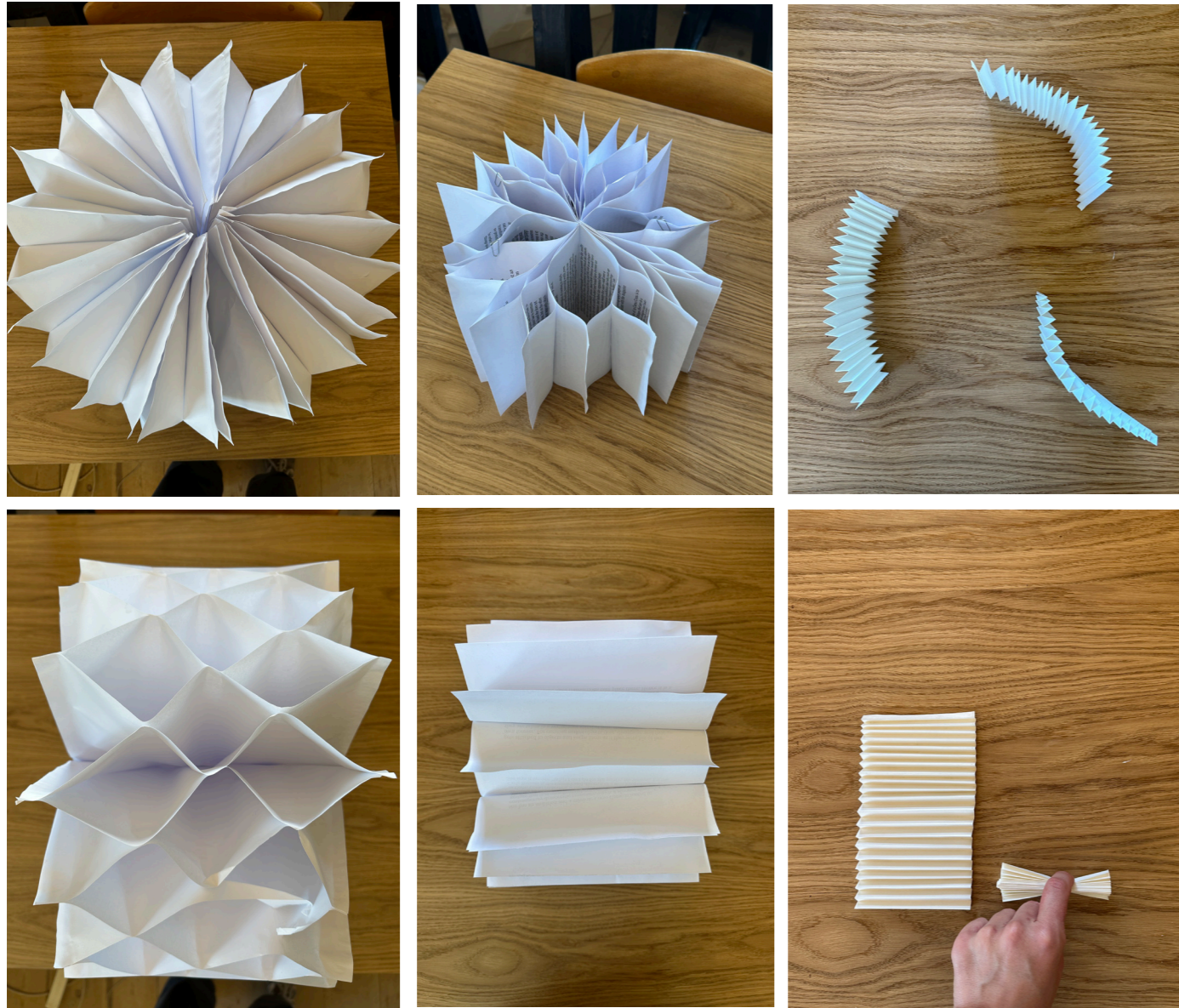
ASSEMBLE STUDIO, Theatre on The Fly



HERMÈS at Milan Design Week, 2021



Shigeru Ban, Paper House  
This was the first project in which paper tubes were authorized for use as a structural basis in a permanent building.



### 8.3 Folding paper: Mock-ups

One particular technique that resonated with us and captured our interest was paper plisse, also known as paper folding. An iconic example of this technique is the famous Le Klint lamp, which showcases the beauty and versatility of folded paper. We discovered inspiring references that highlighted the convenience of creating foldable elements that can be easily stored, requiring minimal space. This aspect aligns perfectly with our proposed scenario, where elements can be utilised as needed and efficiently stored when not in use. During this stage, we have developed mockups of various folding patterns for potential seating solutions and created sketch models of mobile walls.



Le Klint wall lamp, 1950s



### 8.4 Recycling: Paper making

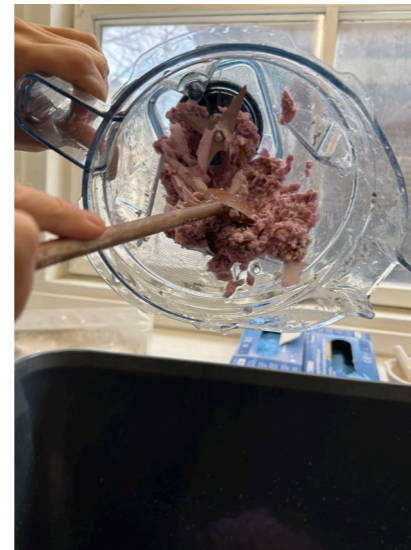
During the initial phase of our material research, we embarked on the journey of creating our own paper to gain a deeper understanding of the process and explore its potential. Although we achieved a satisfactory result, the properties of the homemade paper did not align with the requirements of the objects we were designing. Nevertheless, this experience served as a valuable test and allowed us to delve into the process of producing recycled paper.



tearin the paper in pieces and soaking it in water



after 2 hours, blend the soaked paper with more water



transfer the pulp into a long container



add water so that the pulp is covered



extract a layer of pulp on a flat drain/net and place on towel, drain as much water as possible out and let dry

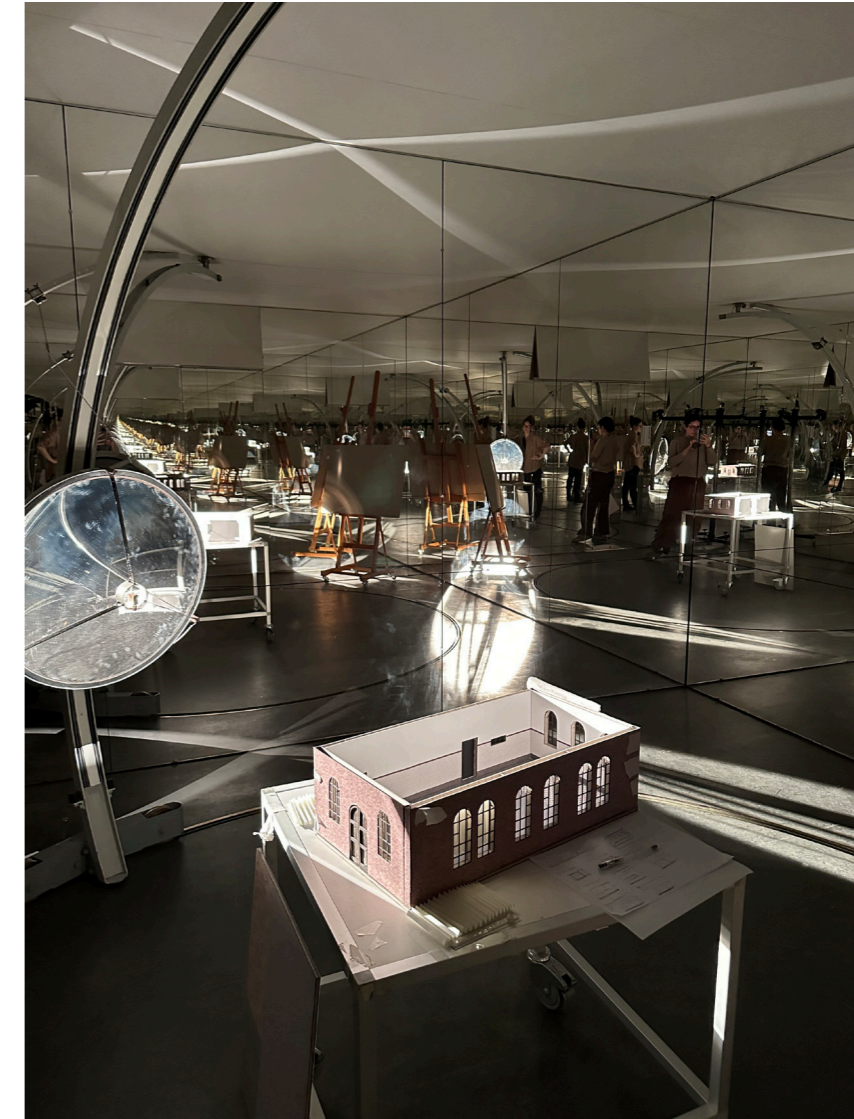
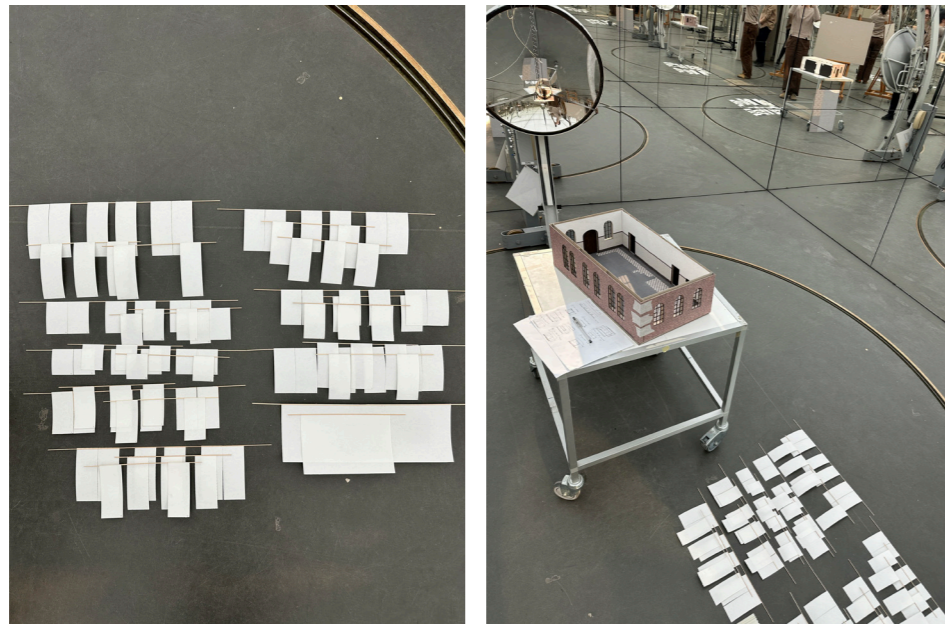


the final result after it has been dried. the pink shade is due to some residues of red paper that was among the paper waste we used

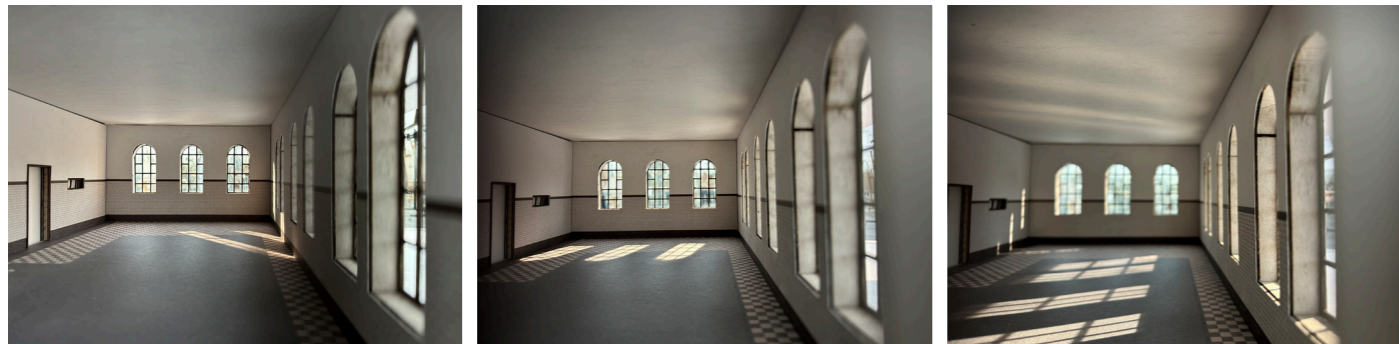
### 8.5 Light study: Blinds

Light plays a crucial role in establishing an optimal working environment, and with numerous expansive windows facing south/west, the space receives ample sunlight throughout the day. Therefore, it was essential for us to design blinds that effectively and comfortably filter the light. To determine the ideal dimensions and positioning, we conducted tests in the daylight lab using our 1:25 model, exploring various options.

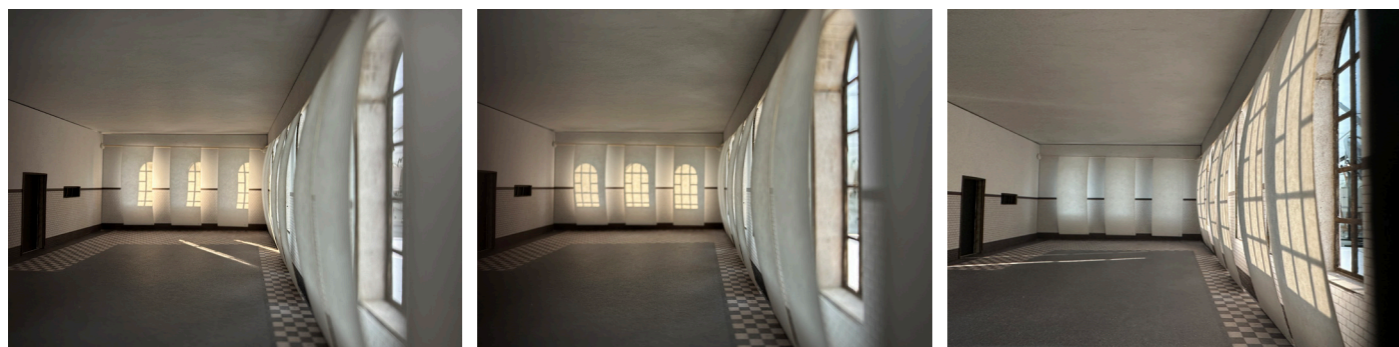
We considered different blind configurations, each following distinct lines and sizes within the space. Ultimately, we selected the blind that covers the entire window while aligning with the brown tiles on the wall. This choice not only ensures optimal light filtering but also maintains a visually balanced appearance without touching the floor, offering both hygienic benefits and aesthetic harmony.



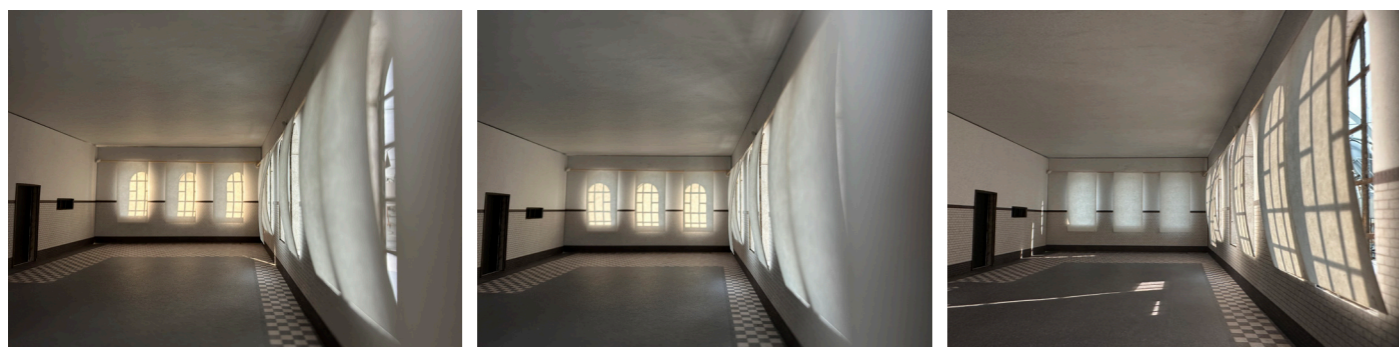
no blinds - March - 09h/12h/15h



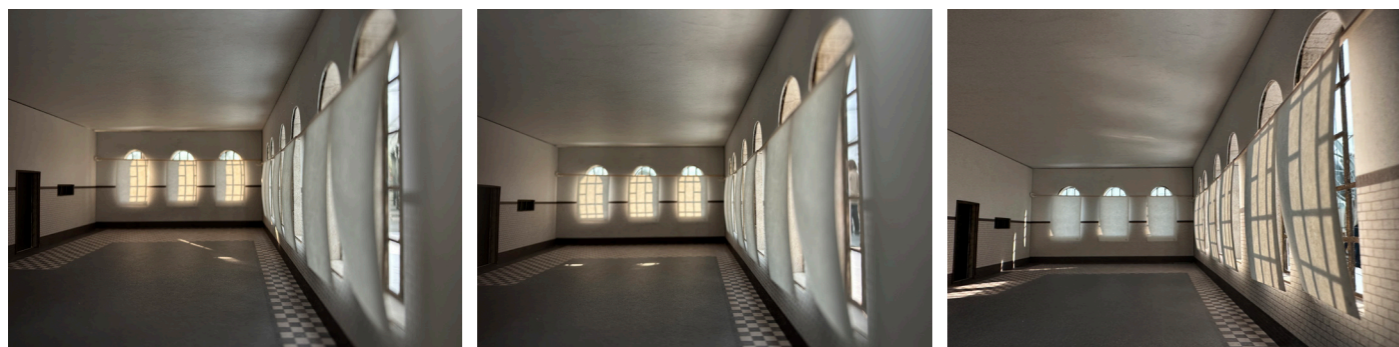
type 0 (full coverage) - March - 09h/12h/15h



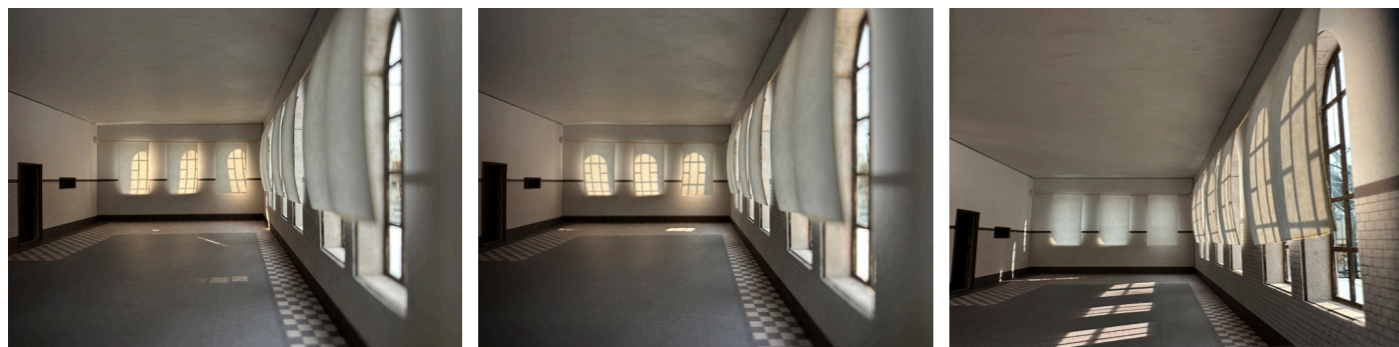
type 1 (80cm from the floor) - March - 09h/12h/15h



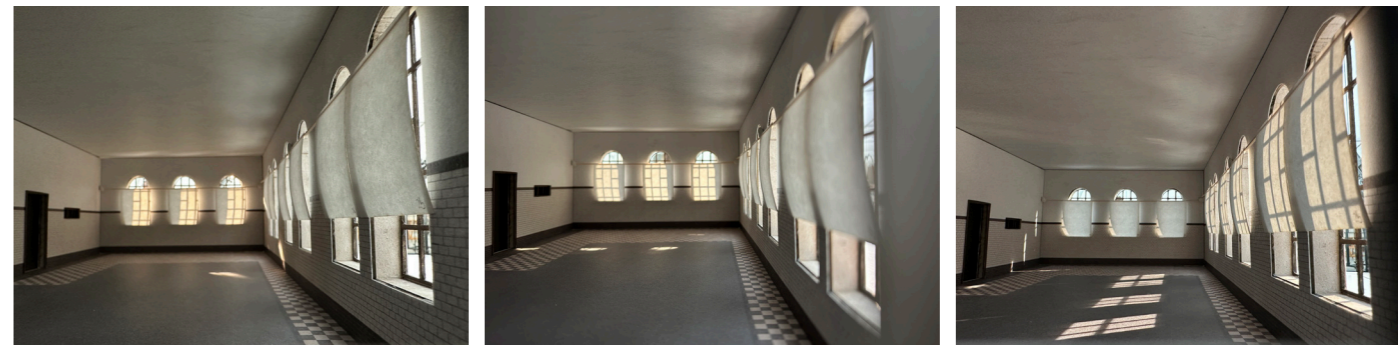
type 1b (80cm from the floor, 1 row on top open) - March - 09h/12h/15h



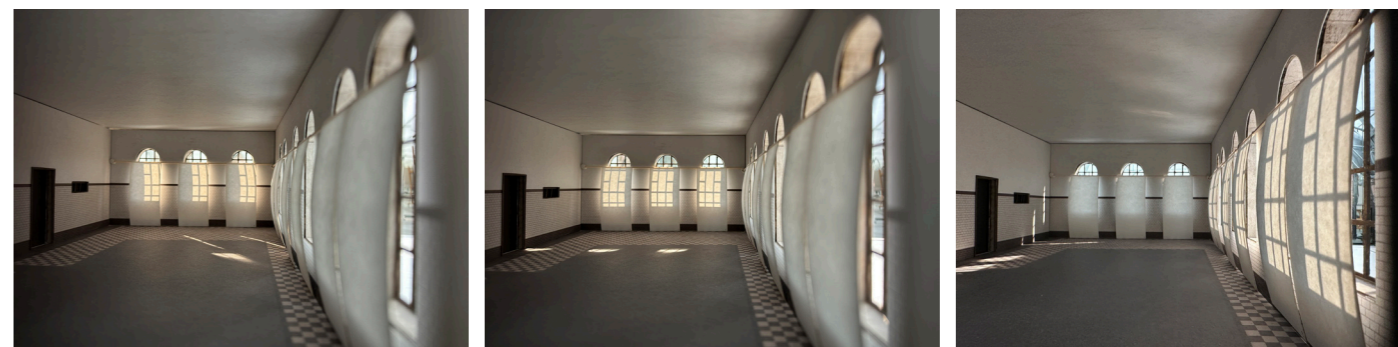
type 2 (125cm from the floor) - March - 09h/12h/15h



type 2b (125cm from the floor, 1 row on top open) - March - 09h/12h/15h



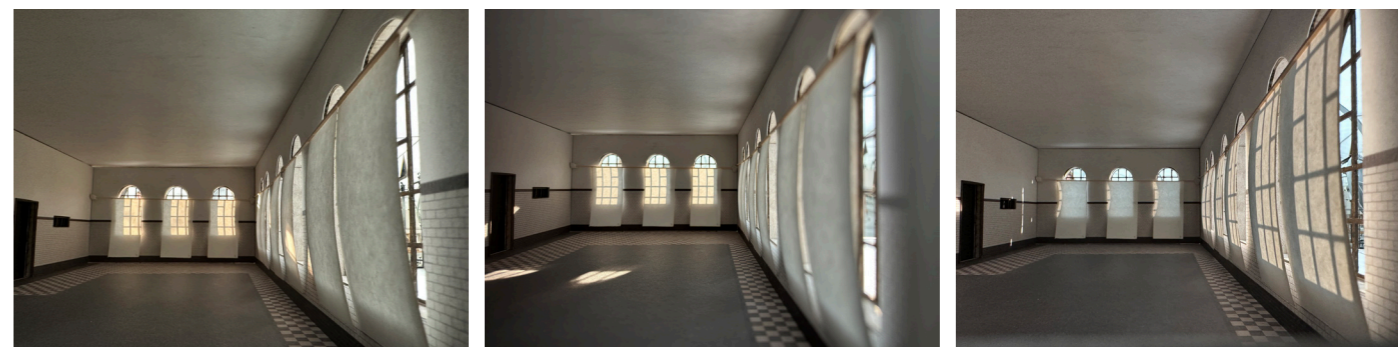
type 3 (from the floor, 1 row on top open) - March - 09h/12h/15h



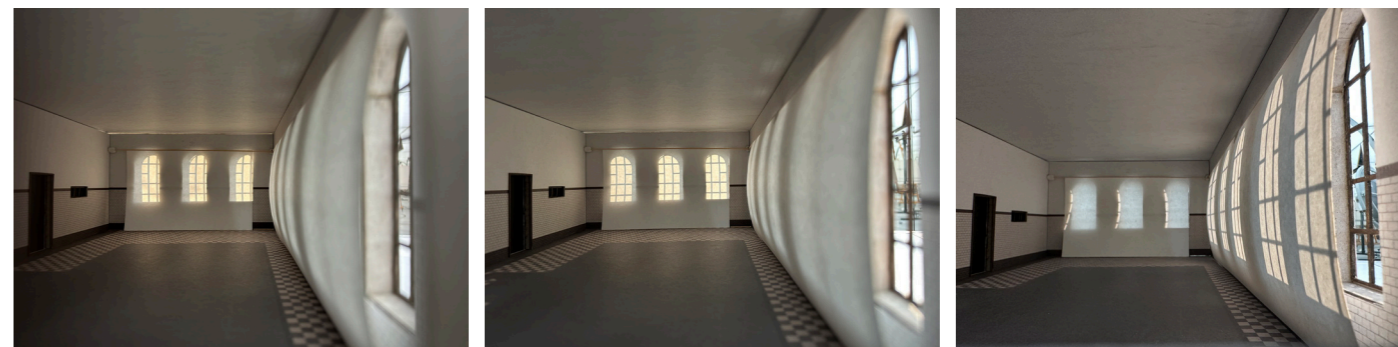
type 4b (from top until the row of brown tiles) - March - 09h/12h/15h



type 4 (from the row of brown tiles, 1 row on top open) - March - 09h/12h/15h



type 0/c (full coverage, one piece) - March - 09h/12h/15h



## 8.6 Waterproofing paper and alternatives

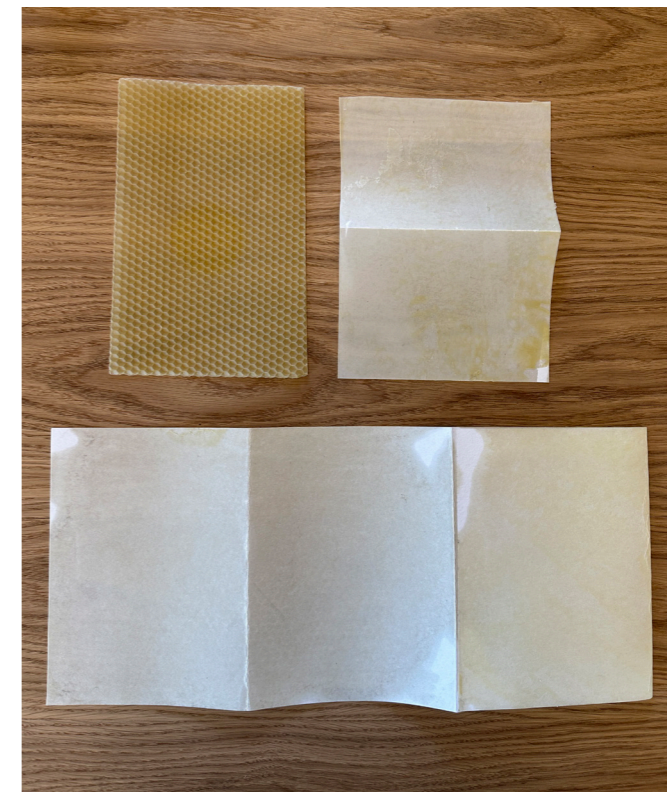
When it came to selecting the suitable paper for our design, we faced a significant challenge: finding a way to make the paper easy to clean, considering its frequent use in the building workshop and the importance of maintaining hygiene. We explored various options, including Tyvek (a synthetic material made from high-density spun bound polyethylene fibres) and modelspan (a robust paper tissue commonly used for aeroplane models), as well as a waterproofing fixative spray. Although these options showed promise, they didn't fully align with our commitment to sustainability and the use of natural materials. This led us to consider using wax as a solution.

We conducted trials with different wax coatings, starting with beeswax, which proved to be slightly too yellow and had a noticeable scent. We then focused on exploring soy wax as a standalone coating. Soy wax coatings on paper typically have a transparent or slightly off-white appearance. This made soy wax a suitable choice for our design, as it offered a natural colour and provided a protective barrier against liquids. Soy wax is a 100% vegetable plant wax, which when burned does not emit more CO<sub>2</sub> than the plant has absorbed in its lifetime, in addition it is biodegradable, GMO-free and fully traceable.

Coating the paper with a thin layer of soy wax creates a protective barrier that repels liquids and makes it easier to wipe off spills or stains. While the extent of colour change depends on factors such as paper type, wax coating thickness, and paper absorption properties, soy wax generally preserves the original color of the paper while adding a subtle sheen and a touch of warmth. It's worth noting that paper coated with soy wax may have a mild scent, although it is typically less pronounced compared to other waxes or scented products. Through our testing, we confirmed these details and found that the soy wax coating alone provided the ideal solution for making the paper easy to clean and maintaining its natural appearance



upper left: washable paper; upper right: Modelspan, a tissue paper usually used for airplane models; lower left and right: Tyvek



a tryout of using beeswax to coat paper and make it washable

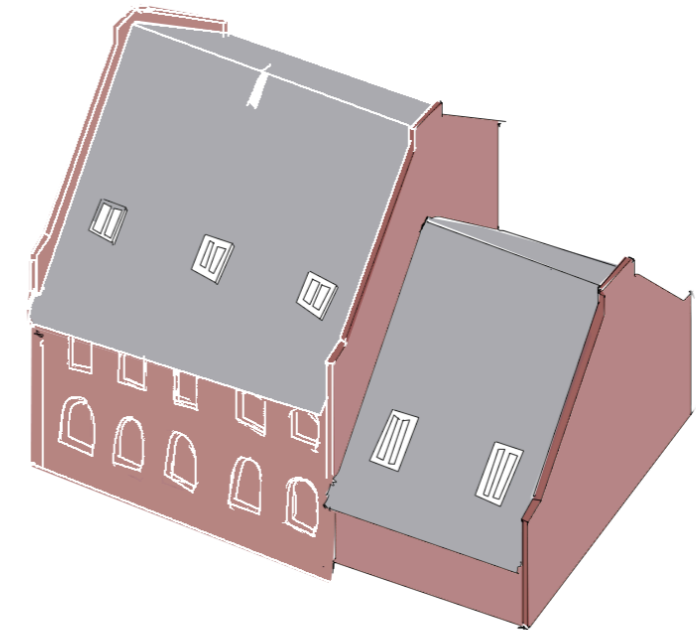
## 9. Conclusion and reflection

Our project began with the intention of creating a space focused on the art of theatre for children. We envisioned a house that would accommodate classes, play, and workshops, serving as a satellite of the Royal Theatre. However, we faced a significant challenge in reconciling the exposed nature of Kedelsmedjen's location and its large windows with the need for intimacy in our program. Despite being an industrial building with spacious open-space rooms, we aimed to create more intimate areas where children could feel comfortable.

The envisioned house would be a dedicated children's space centred around the theme of theatre. It would serve as a place for creating, watching, and engaging with theatre, as well as working with props and staging. To address this, we divided the house into three main areas: the Imagination, the Body, and the Voice, drawing inspiration from the process of creating a theatre play. The primary users of the space would be children and their schools/institutions, while parents, friends, and passers-by would also be invited to experience the activities taking place. Throughout the project, our focus has been on exploring the use of paper as a material and paper models as a primary tool. We sought to translate our understanding of the semiotics of theatre spaces into spaces where children can thrive and fulfil educational purposes. Designing furniture and objects that are child-friendly and easy to handle has been an essential aspect of our decision-making process.

In conclusion, our goal has been to transform Kedelsmedjen into a space that teaches children stagecraft and provides a meaningful and socially productive environment. We aimed to create a dialogue between the building's architecture and the spatial requirements of the new program. The physical model played a crucial role in our work process, allowing us to explore ideas, make sketches, and better understand spatial qualities and the play of light. Material experimentation and careful documentation of the process have informed our site-specific solutions.

Throughout the project, we maintained a constant dialogue between the existing architecture and the spatial functions needed for the program. Our approach involved preserving as much as possible while making necessary changes to achieve the best possible outcome. The interdisciplinary collaboration between the architect and scenographer has enriched our respective practices and taught us the value of working together. We have overcome obstacles, learned from each other, and developed our skills as architects and designers in the process.



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