5.1 Design development

5.1.1 The architectural language

The building is on the corner of Whitely Road and Curve Street in the Melrose Arch Precinct in Johannesburg. The unique characteristics of Melrose Arch and the guidelines stipulated by Osmond and Lange Architects have guided the design of the building and the architectural decisions on the development of the project. The shape of the building developed out

of the footprint given by Osmond and Lange Architects. As this dissertation will be submitted as part of the requirements for the Degree of Interior Architecture, the emphasis was placed on the interior of the building rather than the facade. However, the functions and the design of the interior components have a direct impact on what is happening on the outside of the building in terms of marketing and advertising.

The building is situated to the west of the future Melrose Square and the main entrance to the building will face the square. (Fig 87) The other entrance to the building will form a axis with the public entrance from the basement parking which is situated in the future building adjacent to the south of the cinema centre. To the south–eastern side of the cinema centre a walkway is formed between the two buildings. The façade of the cinema centre will be glass all along this walkway to create awareness of the activities going on inside the cinema and for the safety of the people walking outside the building.

All along the ground floor of the building will be opportunity for retail and this will enhance the pedestrian movement and the vibrant atmosphere on the sidewalks. The building consists of three basements that run underneath the whole precinct and four storeys from which only areas in two basements and areas on the ground floor and first floor will be occupied by the cinema centre and accordingly designed. The rest of the building will house retail opportunities on the first floor and office space on the rest of the floors.

On the ground and the first floor of the building the floor area where the cinema

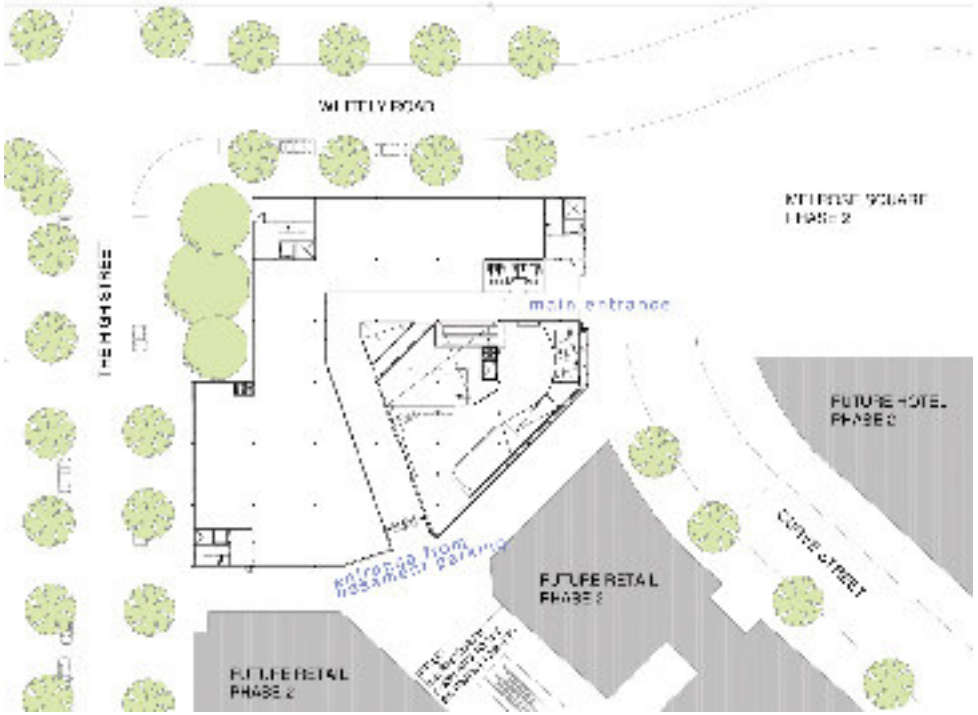

Fig 87. Footprint and site layout

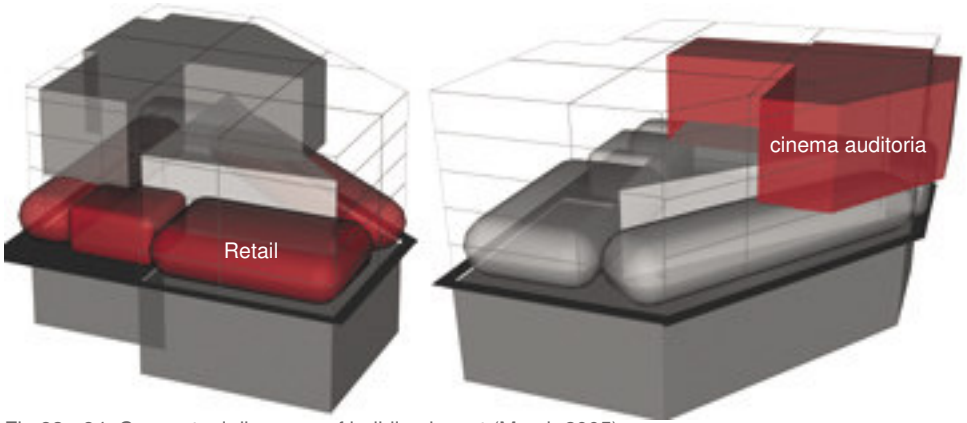

Fig 83 - 84. Conceptual diagrams of building layout (March 2005)

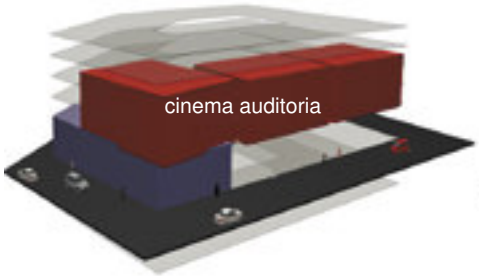

Fig 85. Concept of building layout (April 2005)

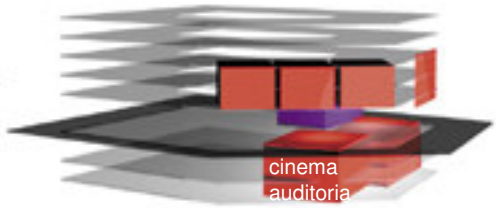

Fig 86. Concept of building layout (June 2005)

centre is situated has been cut out and lowered by 400 mm. This was done to accentuate the idea of a building inside a building – that the cinema centre is an entity on its own and functions individually from the rest of the building. Moreover, only this part and the cinema area in the basement have been taken into account is the design process.

5.1.2 Interior expression

Design concept

The cinema centre is based on the film and information technology industry especially new and future technological trends. The main focus, however, is the user's experience through the space and how it can be enhanced through the use of technology. The aim is to create a sense of voyeurism, which exemplifies the user's experience in the cinema auditoria and in the rest of the building by creating passing glimpses, which combine activity and object. The cinema centre will provide a space of invention, innovation and experience.

Zones of use

Two main zones of interaction have been established with their intermediated zones: **Public** – Semi-public – Semi-private – **Private.** (Refer to user profile and accommodation schedule in Appendix A) These zones distinguish the specific needs of the user in regard to this project.

The first zone is the public zone where visitors move freely through the space. This area includes the entrance and foyer, the digital gallery and all other retail facilities situated on the ground floor of the building. This zone acts as a point of connection between the cinema facilities in the basement and the cinema facilities on the first floor, both of which are semi-private spaces, thus linking the traditional /old with the experimental/new.

The intermediate zones are the semi-public and semi-private zones. These zones act as buffer between the private and public zone. The semi-public zone consists of the mezzanine level which includes a bar and concession stand. This is a semi-public zone because it is open for use to the public but will mostly be used by people on their way to the first floor while they wait for a movie or afterwards on their way down for some refreshment. The mezzanine level also acts as point of transition from the world of fantasy – the simulation of reality – create by the movie and reality. The semi-private zone includes the traditional cinema auditoria situated in the basement as well as the experimental booths and cinema auditorium situated on the first floor. Access to this zone is controlled, granted only to the ticket holding user.

The last zone is the private zone. This zone is under strict control and may not be accessed by the visiting public without consent from management. This sector includes management offices on the first floor as well as projection rooms and staff quarters in the basement. The management offices are situated on the first floor to the north of the building. This is away from retail facilities but close enough to the cinema centre to keep an eye on activities and easily accessible if there are any enquiries or complaints from the public. The projection rooms in the basement are connected to one another and can thus be operated by a single person or two people. Underneath cinema 1 on basement level 2 there are staff quarters as well as storeroom facilities for cleaning and maintenance equipment. The quarters also have easy access to the emergency route and access to the cinema auditoria away from the public eye.

The visual tour

Ground floor:
The orientation as well as the location of the public square had an impact on the placement of certain functions inside the building. As one enters the building from the entrance facing the public square, which is the main entrance for the cinema centre, one notice the double volume space with a glimpse of the mezzanine level and a concrete column grid with steel I-beams that support the floors above. The cinema

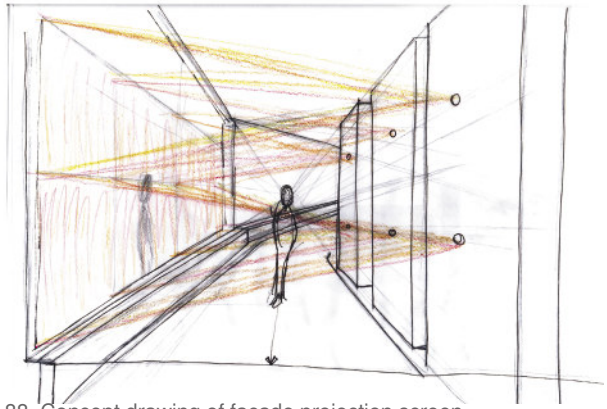

Fig 88. Concept drawing of facade projection screen

centre is then entered by a laminated wood ramp, which is one of the prominent features of the ground floor. The ramp lets visitor walk behind a Plexiglas (RP) rear projection screen that faces the walkway. The Plexiglas screen is especially designed for rear projection with a special gray-transparent colour and moulding compound that provides brightness and sharp contrasts. The screen is also glare-free due to its antireflective surface and is available in 3mm thickness. Because the ramp runs between the six rear projectors housed in aluminium and Plexiglas boxes and the projection screen, the silhouettes of visitors appear on the outside of the building as they walk down the ramp. (Fig 88) The idea of a large screen facing the public was rooted in the idea of the open-air cinema and its philosophy discussed in chapter 2.1.2. At the bottom of the ramp the visitor can enter the cinema centre or go up another ramp that extends from the first to the Digital Gallery. The Digital Gallery is situated along the glass façade. By doing this an interesting and lively display front is created which attracts people, walking along the outside, into the building. The display of the gallery is also adjustable and this adds to its intriguing appeal. From the outside of the building the ramp with the interactive screen display can be seen as the first technological glimpse of a set of glimpses throughout the building and the digital gallery as the second. By entering the cinema centre from the ramp, one faces a glass lift in a steel I-beam structure and the escalators that lead to the basement level. This area has a natural concrete floor finish with a clear liquid epoxy coating. The coating has a texture to make the surface slip resistant.

Another entrance is situated on the south side of the building. This entrance is to accommodate people that come from the public parking basements. The entrance and exit to and from the basement are situated in the adjacent future building on the south-east of the cinema centre.

As the cinema centre shows different movies at different times according to the demand and the design idea is to create a technological advanced centre, the visitor is encouraged to book a screening over the Internet and collect their tickets on arrival at a manual ticketing machine. For visitors who do not have access to the Internet or have not booked in advance, an information kiosk with assistance is available. The manual ticketing machines as well as the information kiosk are situated next to the staircase that leads to the mezzanine level. Both of these are easy accessible and visible from the ramp and the south entrance.

Natural light floods the ground floor of the cinema centre through the southeast glass façade. This significantly improved the light quality of the space and the use of artificial light sources are kept to a minimum. Through the orientation of the glass façade the amount of direct lighting and glare is controlled as the space houses digital display screens especially the digital gallery that runs along this façade. Problems may occur during early morning with the bright easterly sun but the cinema centre will only operate from 10:00 and direct lighting from 10:00 to 12:00 will be blocked by the screen structure facing the public square and the adjacent building to the south east. Power surface-mounted downlights with acrylic glass reflectors are to be used with compact fluorescent lamps for night time illumination and extra illumination during the day if needed. These compact fluorescent lamps are more environmentally friendly than tungsten lamps because they use less electricity and have a longer life. The stainless steel air conditioning ducts are exposed and suspended from the concrete soffit. (Refer to Technical resolutions p 50 for information on the air conditioning system.)

Basement:

From the ground floor one takes the escalators located next to the glass lift to the basement level where the traditional cinema auditoria are situated. As the design developed, certain functional spaces were moved to adapt to a more informed design. The large scale of the auditoria and their shape made these spaces hard to place. Initially these traditional cinema auditoria were situated on the first floor of the building. Further examination, however, showed that they can be seen as dark space, do not make use of natural lighting, are zoned as semi-private spaces and are not used by the general public but by ticket holding users as mentioned above. This made placement of the auditoria in the main building on the first or ground floor inappropriate as these spaces have retail potential and make use of natural lighting. After consulting David Curry of Osmond and Lange Architects on the use of the precinct's basement and the amount of parking bays that have to be accommodated, a decision was made to move these auditoria to basement level one. The foyer in the basement houses a concession stand as well as toilet facilities for men, women and disabled people.

The traditional auditoria also comply with the SABS National Building Regulations 0040 on fire safety. Because both of these cinema auditoria can accommodate more that 25 people, two emergency exits apart from the main entrance to each cinema had to be added as well as two separate emergency routes from the basement to the outside of the building. An emergency exit from the foyer has also been added.

Natural light that filters through the atrium during the day illuminates the basement foyer with the added help of downlights with acrylic glass reflectors and compact fluorescent lamps.

Mezzanine:

From the ground floor level there is a concrete staircase next to the manual ticketing

machines that leads to the mezzanine level. The last six steps of the staircase extend to form seating with cushions sunken into concrete, which faces a screen. (Fig 89 - 91) This level extends over the part of the atrium and part of the hallway at the main entrance thus creating a glimpse as one enters the building as mentioned above. The mezzanine level houses a bar and concession stand with informal tables where one can stand and have a drink. One of these tables is lower to accommodate people in wheelchairs. The mezzanine is also reachable by taking the glass lift making it accessible for all users. The mezzanine level's floor finish is the same as on the ground floor level with concrete and epoxy finish.

The concrete staircase that leads to the first floor from the mezzanine level is situated next to the glass lift and air-conditioning shaft. A Plexiglas RP screen cuts thought this staircase and acts as another projection screen according to the same principles that apply to the screen at the entrance of the building. This screen is rotated on an angle to allow a visitor that enters the building to have a glimpse of the silhouette of the people ascending to the first floor through the moving image.

Natural lighting from the glass façade as well as the atrium roof illuminates the mezzanine level. The artificial light sources used are specialized lamps that are incorporated in the bar design well as the design of the tables. (Discussed more in detail in part 5.2.2)

First floor:

As one enters the first floor from the staircase and the lift one is faced with a series of booths for the viewing of individual screenings. These booths are situated along the glass façade of the cinema centre. From the outside of the building people get a glimpse of these booths between the screens, which penetrate through the glass façade to the outside of the building and this creates awareness that something interesting and new is happening on the inside. The booths form a rhythm through the space vertically and horizontally. This has been done by their difference in sizes, by raising some from the floor and by the way they have been constructed. The first one has just the bare essentials of the structure moving to the complexity of the double booth, the last in the sequence. (Fig 92) This accentuates the idea of the movement through the space, which correlates with the movement of images in a movie. Lights that are levelled with the finished concrete floor with epoxy finish leads the visitor's eye from one booth to the next.

A laminated wood step and a concrete ramp leading to public toilet facilities and an emergency route is situated on the left as one enters the first floor and are clearly visible and accessible to all.

In the middle of the first floor extending over the atrium is the experimental cinema connected to the first floor by bridges. This light box consisting of a translucent corrugated fibreglass shell can be seen throughout the cinema centre. It is isolated from the rest of the functions giving the idea that it is floating in the air, an entity on its own and it acts like a beacon in the space. Entering the experimental cinema one has to enter through a fog screen. The visitor then walks through the image projected onto this vapour screen. This creates an interesting experience, acts as threshold for the auditorium and substantiates the idea of integrating the user with the moving image. This cinema auditorium only houses 20 people and requires

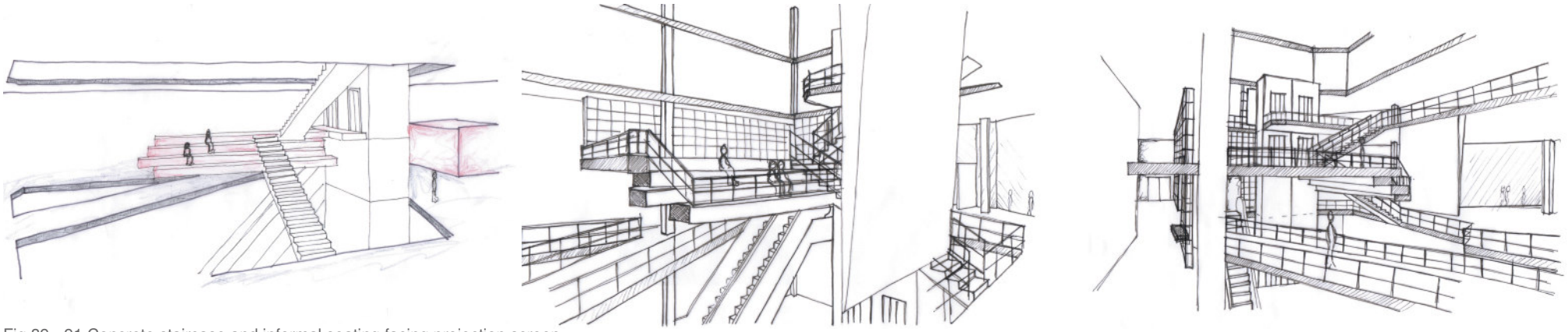

Fig 89 - 91 Concrete staircase and informal seating facing projection screen

only one emergency exit apart from the main entrance. The exit is situated close to the door that leads to another emergency route opposite the one at the entrance of this level.

Apart from the specialized lighting of the experimental cinema and the individual booths, natural lighting from the glass façade illuminates the first floor by day and power surface-mounted downlights with an acrylic glass reflector are used with compact fluorescent lamps by night. To prevent glare on the screens of the individual booths, screens that project through the glass façade have been incorporated in the design. These screens create the opportunity for marketing and advertising on the façade of the building. Again exposed stainless steel air-conditioning ducts were used to control the temperature on this floor.

Colour and Texture

The heavy concrete of the architecture is accentuated by the lightness of the design elements like the screens and glass balustrades. By adding richness and contrast in texture the user's sensory experience through the space is enhanced. In contrast with the building's monochromatic grey palette - concrete, stainless steel and glass – the interior components are bright colours and a rich wood colour. This contrast improves the use of a contrasting architectural approach, making use of design elements to create a sense of juxtaposition playing light against heavy and removable against permanent. The lustre and grain of the surfaces together with the tones of grey and splashes of colour exemplify a sense of film.

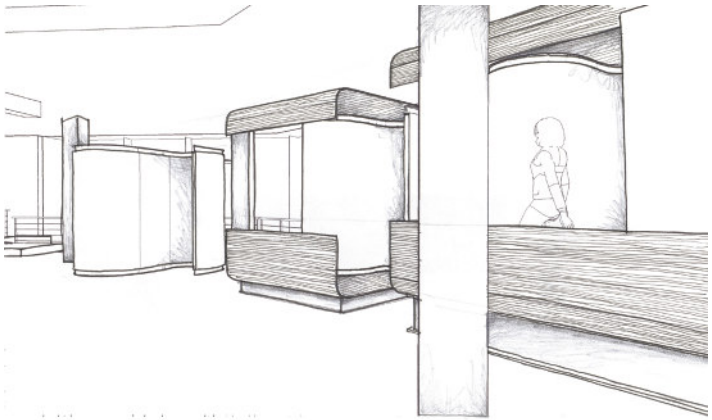

Fig 92. Cinema booths on the first floor

5.2 Design interiors

5.2.1 Ramp and digital gallery

The ramp at the entrance of the building consists of a wooden structure, a laminated wood floor finish and stainless steel edging to accommodate the balustrade on the side facing the window. The floor finish is coated with a textured clear epoxy to make it slip resistant and to keep its light dark wood colour and texture. Laminated wood has been chosen for the ramp, as it is a light material and contrasts with the heavy permanent structure of the building as mentioned above (Colour and texture). Technology and materials change as well as the use of building and these interior structures are not meant to last fifteen to twenty years but have a life span of five to eight years. Thus, the laminated wood flooring is durable for the ramp's life cycle. The ramp curls around the stainless steel and Plexiglas boxes that house the projector. It is wide as one enters and then narrows as one descends. This invites people to enter the space and to experience the ramp rather then entering with the step. Where the ramp curls around the boxes as well as some concrete columns it is cut away from them with a shadow line to create a crevice between the ramp and the column. Miniature fluorescent tube lamps are placed in these crevices to accentuate them. The wooden ramp is sunken where it meets with the concrete floor to make it level with the finished floor level. Where these two floor finishes meet, a thin aluminium strip has been applied to create a neat and clean transition line. The same aluminium strip will also be used where the ramp and the floor meet at the entrance.

The Digital Gallery extends out of the entrance ramp and forms another ramp as one enters the gallery. The ramp rises to 400mm above the finish floor level where it levels out to a horizontal plane and creates the gallery area. The second ramp as well as the digital gallery's floor is constructed the same way as the entrance ramp with a wood beam structure and a laminated floor finish. At the far end of the gallery the laminated wood structure curls up to form a wall and ceiling structure for the gallery. The two ramps and with the digital gallery give the idea of a piece of film that has been curled up and inserted into the space. This same idea had an influence on the other interior components designed in the cinema centre. (Fig 100)

The Digital Gallery has nine white translucent Plexiglas 1000 x 2500 mm movable box panels and in each of these panels is a set of LED lamps that can change colour. These panels are used on which to project clips and images from projectors fixed on a tract system above the panels. If the panels are not used for projecting images, the LED lamps are turned on and the panel changes into a specific colour.

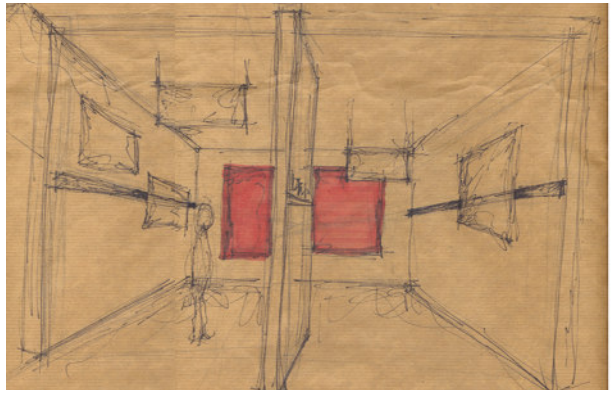
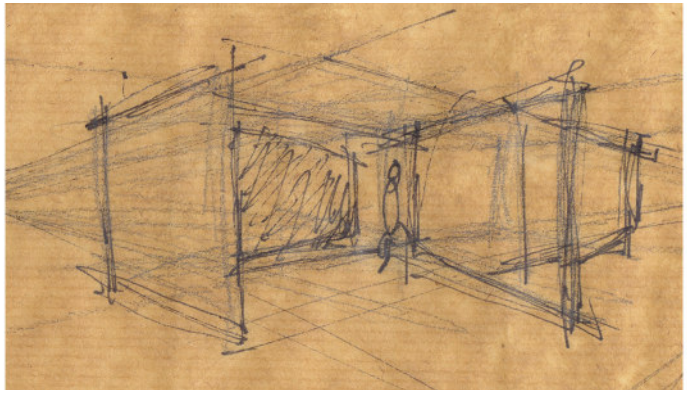
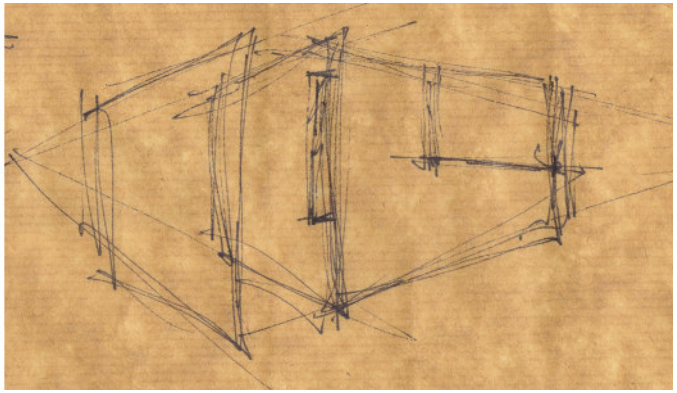

Fig 93- 95. Conceptual drawings of the digital gallery (Mei 2005)

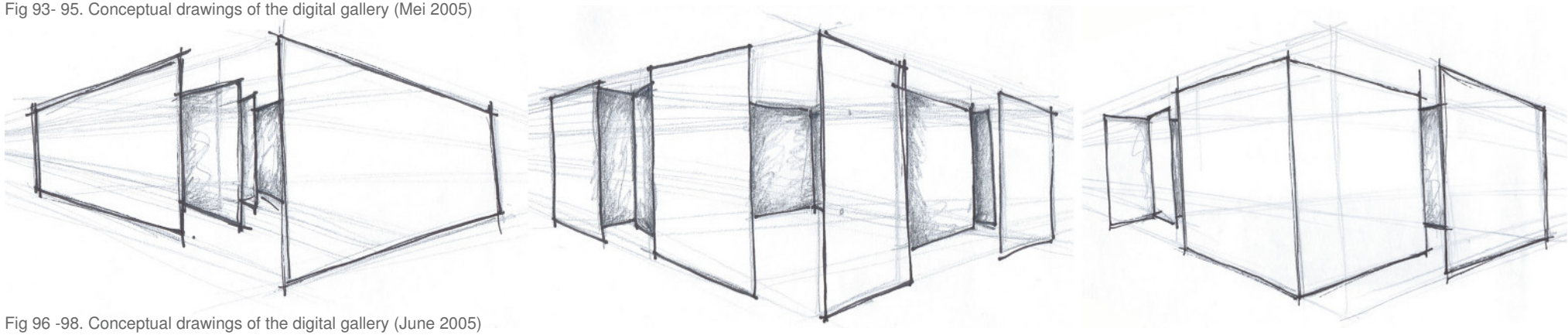

Fig 96 -98. Conceptual drawings of the digital gallery (June 2005)

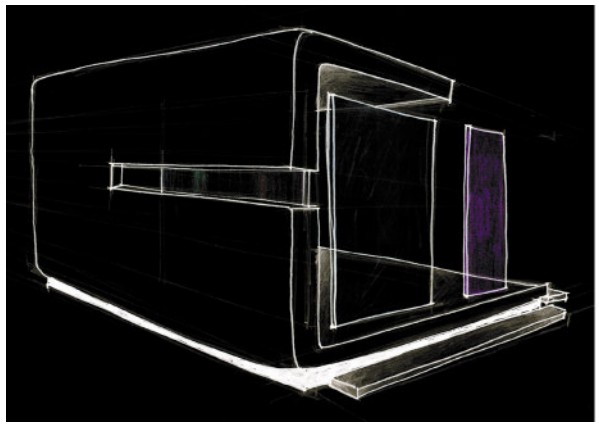

Fig 99. Conceptual drawing of gallery (August 2005)

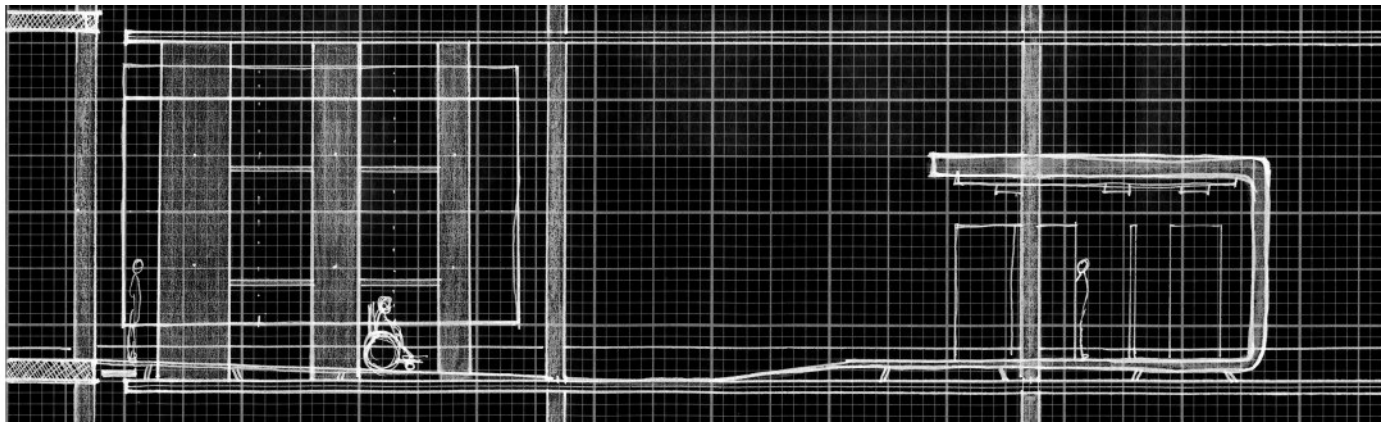

Fig 100. Elevation of final design of Digital gallery and ramp

Fig 101. 3D rendered presentation of the ramp and projection

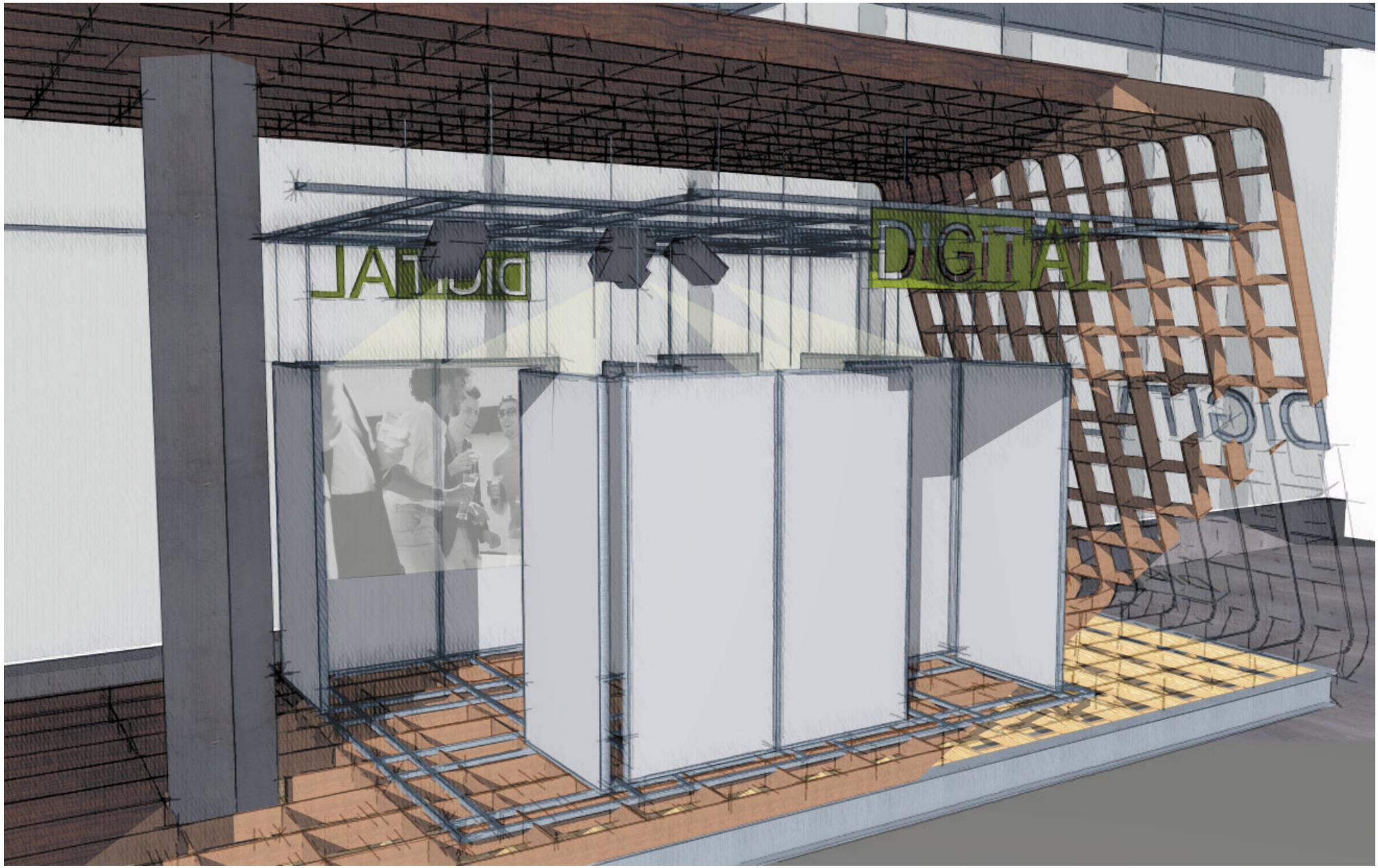

Fig 102. 3D rendered presentation of the digital gallery and structure

The idea of these movable panels is to create an every changing display, which attracts viewers again and again because the experience feels new each time they visit. The panels can be moved and rotated by a track system level with the floor finish and at the top of the panels.

The illumination caused by the natural light that enters the building from the glass façade is sufficient for the gallery during the day and at night the light from the panels creates a colourful glow in the space that will be spoiled if extra light sources were installed in the gallery. The same idea of exposed service like the exposed air/conditioning ducts applies here where the track systems and projectors are open and exposed for public viewing.

5.2.2 Elements on the mezzanine level

The counter of the bar on the mezzanine level is designed according to the traditional cinema entrances of the 1940's with the white illuminated box and the black lettering. (Fig 102) The design language of the bended filmstrip is also applied in the counter top as well as the design of the tables. The tables extend over the edge of the mezzanine level in different sizes and lengths and are connected to the underside of the soffit. This imitates the screens that penetrate through the glass façade on the first floor. (Fig 101)

The material used for the tables are colourful translucent Plexiglas *satinice* sheets that were bent. Plexiglas is a Polymethylmethacrylate (PMMA) polymer. According to Ashby and Johnson, PMMA is a thermoplastic that is hard and stiff, and can be thermo-formed and joined with epoxy, polyester or nitrile-phenolc adhesive. PMMA is usually a clear transparent polymer and resembles glass but new types have been introduced like the Plexiglas *satinice*. The *satinice* has a sandblast translucent look and this matte surface is retained after thermoforming. These sheets are available in a wide variety of colours, in sheet sizes of 3050 x 2050 mm and from 2mm to 20mm thick. (Ashby & Johnson 2004: 193) Plexiglas satinice was the material of choice for its bending properties, optical appearance and because it is insensitive to abrasion and resistant to finger marks. The last two points makes this material low in maintenance.

These 'boxes' that are created by the tables are illuminated with miniature fluorescent tubes where they connect with the concrete soffit. From the entrance on the south of the building these illuminated colourful 'boxes' are visible.

5.2.3 Cinema Booths

The cinema booths consist of a laminated wood floor that extends upwards to form balustrades and a laminated wood ceiling that is suspended from the soffit with a steel structure. (Fig 104, 105) A gypsum board box, painted a dark colour, hides the steel structure and a crevice is formed where it meets with the wood ceiling. The laminated wood floor finish, raised from the floor, rests on a tongue and groove plank floor supported by a wood beam structure. I-beams all along the edge of the wood structure add support and hide the wood structure from the public eye. Fluorescent tube lamps are positioned inside the crevices as well as fixed to the I-beam supports that carry the floor. This creates the illusion that the booth is floating

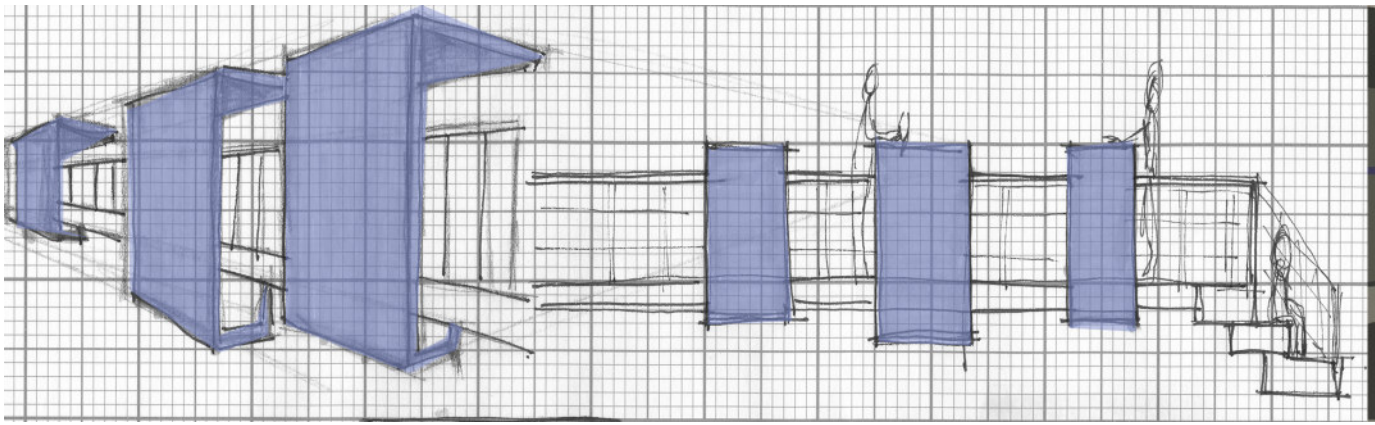

Fig 103. Drawings of the Plexiglas tables on the mezzanine level

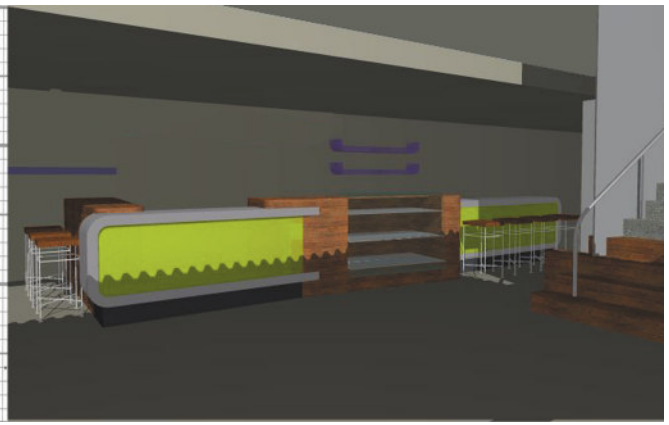

Fig 104. Bar counter

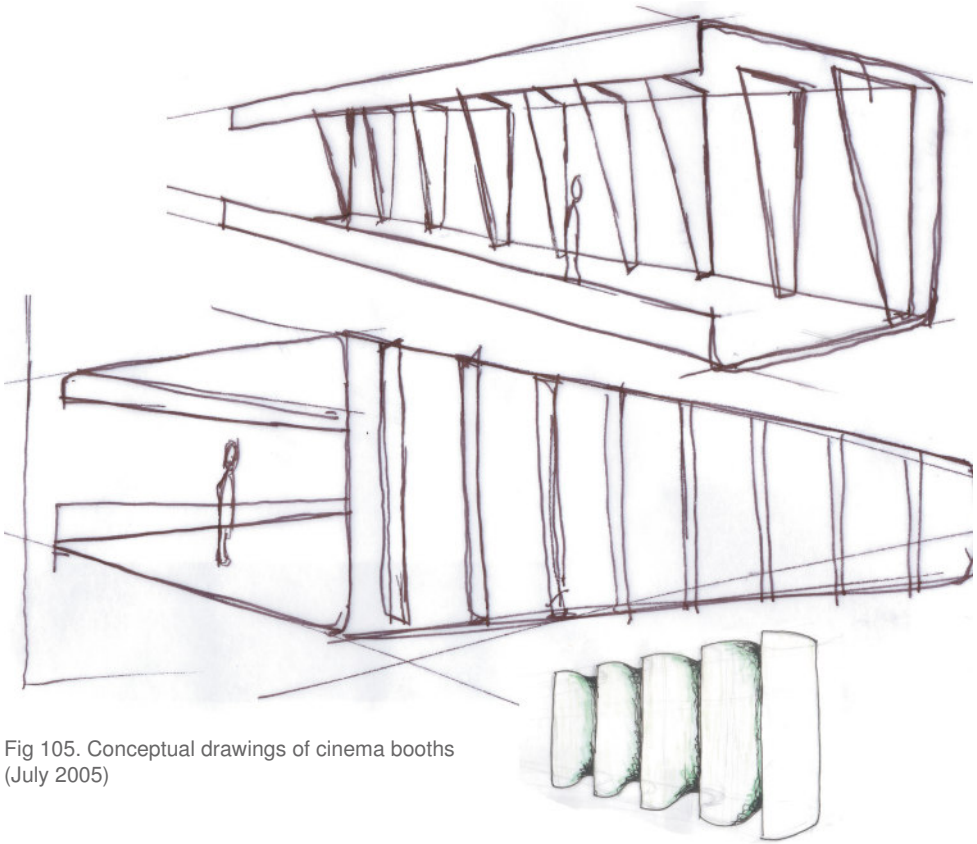

Fig 105. Conceptual drawings of cinema booths (July 2005)

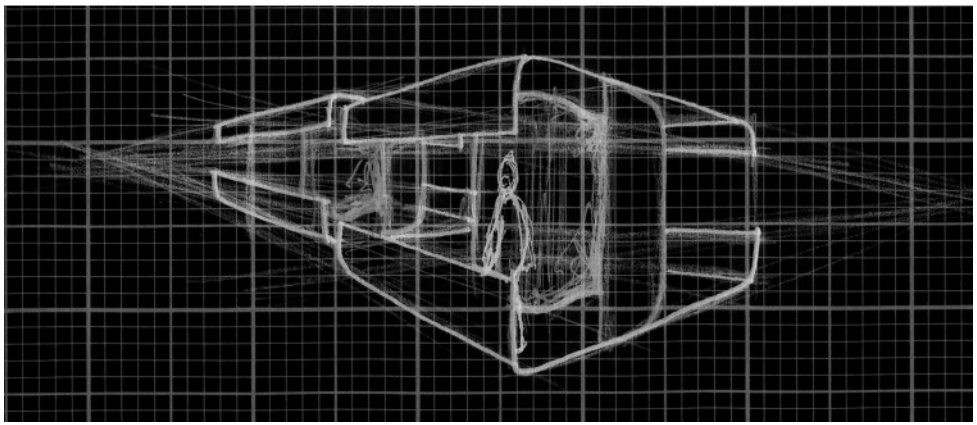

Fig 106. Prespective of cinema booths

in the air.

The floor and ceiling are connected to one another by a curved partitioning made from two layers of Plexiglas *satinice*. The Plexiglas partitioning is fixed to the laminated wood floor and ceiling by a steel structure that is bent according to the curve of the partitioning. The steel structure rises the partitioning from the floor to create a crevice. This is repeated at the connection with the ceiling. Miniature fluorescent tubes lamps are positioned inside the crevices, out of view. The curved partitioning creates private cubicles on opposite sides of each other. Each of these private cubicles is equipped with an adjustable seat and screen.

To make sure the visitor's attention is on the movie and not on people walking by the cubicle, a screen has been fixed to the laminated wood booths. These screens are positioned on the sides of the booths facing the atrium. This is to isolate the cubicle from the visitors on their way to and from the experimental cinema or the other booths. A track system makes these screens movable for the visitor's convenience.

The first booth as one enters the first floor does not have a laminated wood floor or ceiling. The partitioning component is directly fixed to the finished concrete and epoxy floor. These cubicles are not equipped with a seat and are bigger than the other cubicles. This is to accommodate people in wheelchairs. They do not have to leave their chair to enjoy the private screening. The screen is placed level with a person in a wheelchair's eye height or the eye height of a child standing.

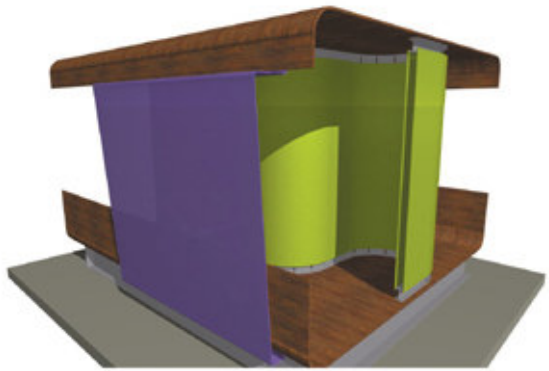

Fig 107. Rendering of Cinema booth

The last booth in the sequence houses cubicles that are designed to accommodate two people and not just one and are equipped with two adjustable seats and a larger screen. As with the other laminated wood applications the floor finish is coated with a textured liquid clear epoxy to make it slip resistant. The general air-conditioning unit for the first floor will also provide the booths with controlled temperature air.

5.2.4 Experimental Cinema

As one enters the experimental cinema a floating wood-clad organic inner shell is revealed. (Fig 108) This wood shell extends from the wall where the screen is positioned to the floor surface, grows into steps, then curls up against the wall in the back and splits into five different size fingers and forms a sinuous wood ceiling where it connects to the started point. The sinuous ceiling assist in the transmission of the sound throughout the space. The two other side walls do not have a wood clad but is finished with a thick, dark colour carpet for acoustic purposes. The carpet aids in the absorption of sound. This gives the impression that the wood shell has been sliced at the sides.

A wood beam stepped structure supports the laminated wood finish on the floor of the experimental cinema. (Fig 109)At the entrance the wood floor finish is level with the concrete and epoxy floor finish of the first floor and this was made possible by lowering the concrete slab of the experimental cinema. The wood floor surface does not extend to connect with the carpet wall but is set back. Where it is set back the wood beam support structure has been covered with gypsum board painted dark. This creates a crevice all along the sides of the wood shell floor.

Where the wood finish curls up against the wall, it is set back again and connected to the wall with steel channels. Thus, the same principles apply as for the floor finish with crevices created at the sides. Miniature fluorescent tube lamps are fitted into these crevices and the indirect light filters into the auditorium and emphasises the illusion that the wood shell is floating in the space.

The air-conditioning duct is positioned in the void between the back wall, roof of the box and the wood shell and ends in ventilation grills at the sides of the wood shell out of sight. The screen used in this cinema is a large plasma screen and no projection or projection facilities are needed. Although plasma screens the size needed for the space are not currently available on the market, it is safe to say with the growth rate of new technology that it will be possible to equip the auditoria with one in the near future. As for the purpose of this dissertation the use of a LED screen has also been considered. The disadvantage of the LED screen is that the user cannot be too close to the screen because of the very high brightness and sizes of the LED lamps used. It causes uncomfortable strain on the user's eyes as well as glare. It is thus not the most appropriate choice for the application in the cinema auditorium but has been used successfully for public billboard-like screenings where it is viewed from a distance away.

The seating in the experimental cinema is designed in three different stages. The first stage is the front row seats. These seats are mere upholstered cushions on the ground and encourage informal seating. These cushions are removable for cleaning and maintenance. The second stage is the middle row seats and are more

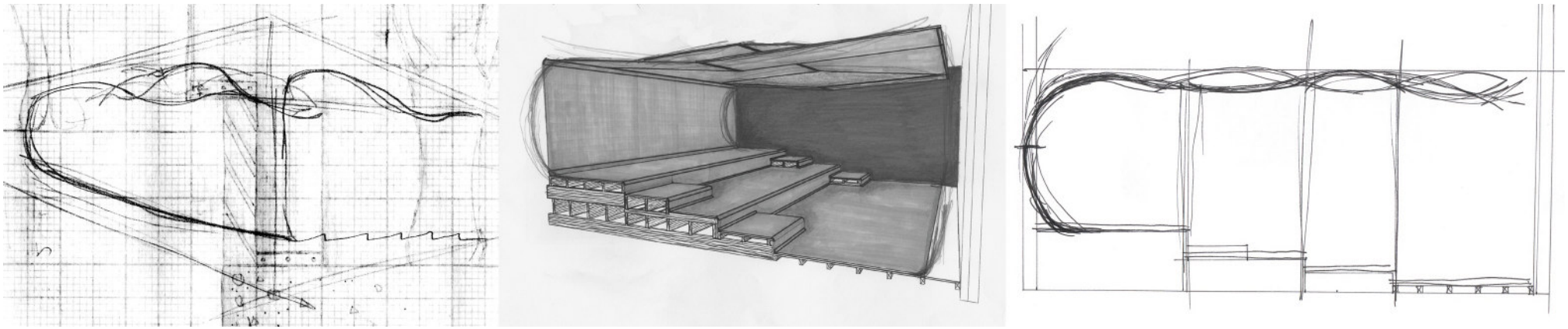

Fig 108 - 110. Conceptual development of the interior of the experimental cinema

Fig 111. Experimental cinema wood clad interior

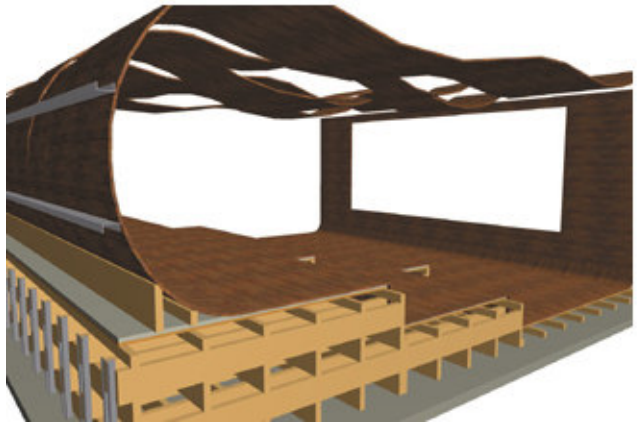

Fig 112. Laminated wood structure inside the experimental cinema

formal than the front row. The idea here is to create upholstered couch like seating. The last stage and top row seating are multi-purpose seats that can be adjusted to a day bed or to normal couch like seating. Material specified for this seating should be a strong weave that is durable, dark in colour and does not to show stains easily, because people are likely to spill especially on the front row cushions and if spills occur, the material should be easily cleanable.

People in wheelchairs as well as mothers with small children in baby strollers are accommodated in this auditorium by taking out part of the front row cushions. The cinema has been designed that such a person or stroller will not obstruct the view of the viewer behind. There is also no difference in level from the entrance of the auditorium to where these spaces are positioned.

As the word light refers to conditions of weight and illumination, so the design of the experimental cinema explores both of those qualities. Although the ambient inside of the experimental cinema is in contrast with its bright illuminated outer shell, both of them share the feeling of lightness of mass. This has been accomplished by the outer shell with its translucent illuminated surface and the inner shell by the feeling it creates, the feeling that it is floating.

5.2.5 Seating

According to Charlotte and Peter Fiell, authors of ‘1000 Chairs”, the success of a particular chair has always depended on the quality and range of the connections it makes, or which the designer is able to make through it, while addressing a specific need. They also stated that at the functional level, a chair makes physical and psychological connections with the individual sitting in it through its form and use of materials. At the same time, it may embody meanings and values, which connect with the user at an intellectual, emotional, aesthetic, cultural and even spiritual level. To them a chair can also connect visually and/or functionally with the context in which it is to be used, including other objects and styles. (2005:6)

“Achieving a good solution to the problems posed by the chair is a complex and challenging proposition, even though, over its long history, its function as an aid to sitting has remained virtually unchanged. Chairs support people of all different shapes and sizes for different lengths of time and different purposes. While the facility of correct lumbar support is important it is not crucial as the chair allowing the user to move their legs freely and to make frequent adjustments of posture. For more healthful sitting a chair should thus facilitate freedom of movement and encourage a variety of postures while providing flexible continuous support.” (Feill 2005:7)

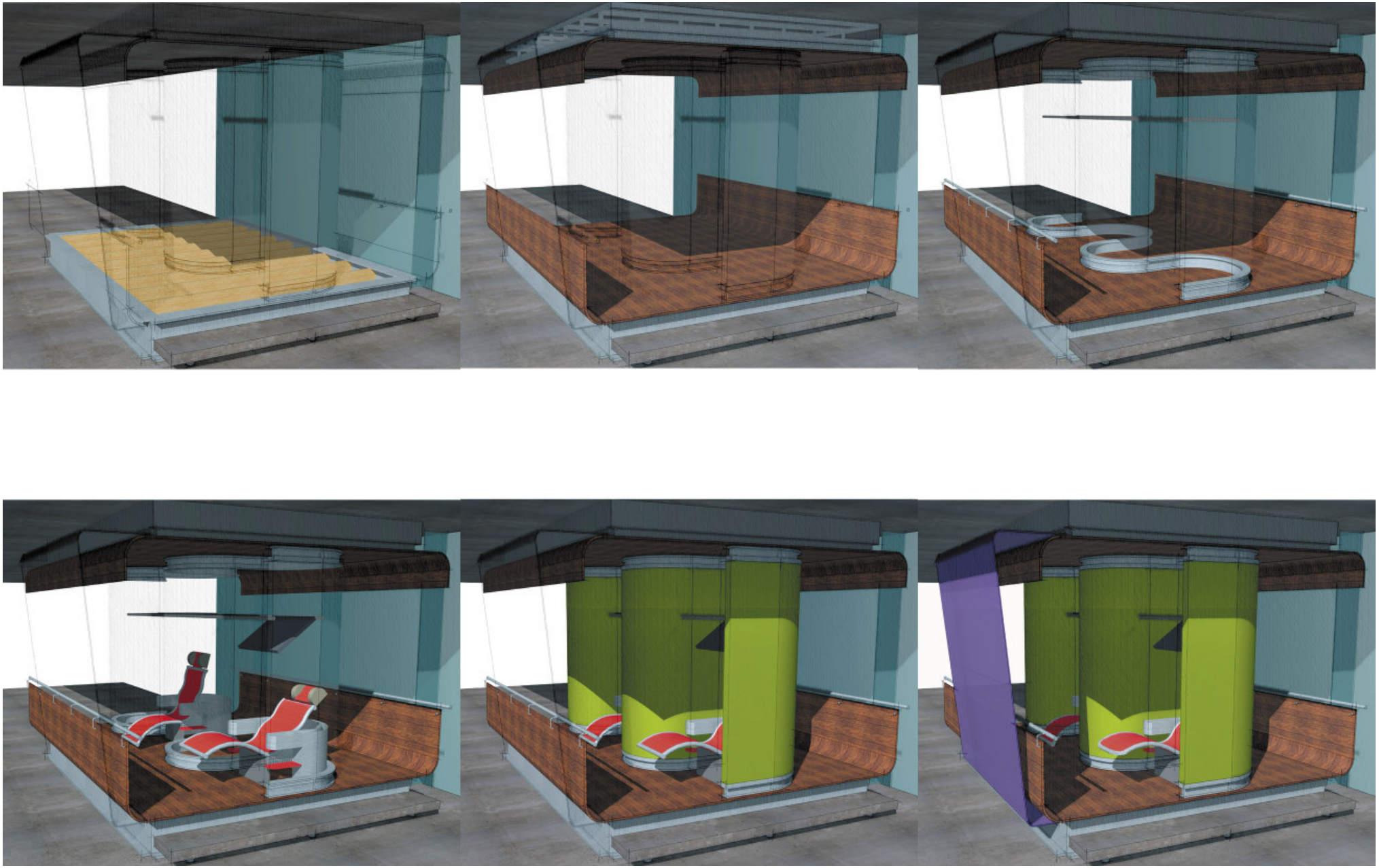

Fig 113. Rendered film strip - construction of cinema booth

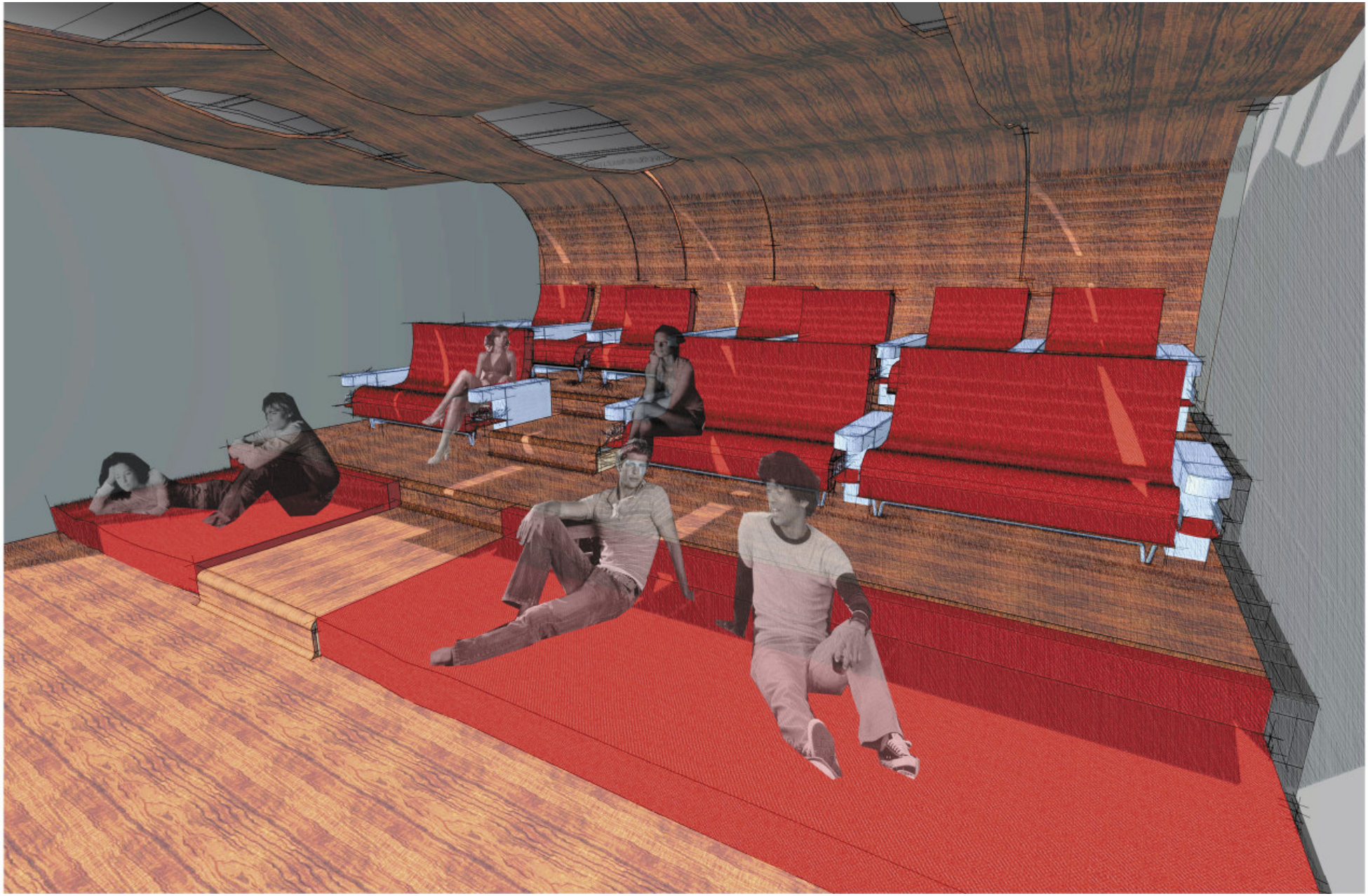

Fig 114. 3D rendered presentation of the experimental cinema

Chair design considers intended usage ergonomics (how comfortable it is for the occupant), as well as non-ergonomic functional requirements such as size, stackability, foldability, weight, durability, stain resistance and innovative design. Intended usage determines the desired seating position.

The following design principles will guide the design of the cinema seat and will be divided into general principles and specific principles.

General principles:
- Ergonomic
- Minimum maintenance
- Durable
- Sufficient leg room
- Arm rests
- Use of state of the art materials
- Differentiation – the seat contributes to the personality of a movie theatre

Specific principles:
- Comfortable (at least 2 hours) by having enough room on the seat to move and by using a reclining back.
- Easy adjustability (if adjustable)
- Safe place for handbags and other belongings
- Place for cooldrinks and confectionary items

Precedents

Traditional cinema seating
The Kimberley chair – model 5300
Figueras International seating S.A
www.figueras.com

Design influence

The Kimberley chair is a typical cinema chair and has been around, maybe not in the exact shape and sizes, for at least the last decade. This specific chair has some added features like the adjustable back and leg support, it is also bigger than the average cinema chair and is used in more prestige cinema auditoria but the same principles apply to this chair as for the average cinema chair. These include the bulky, heavy design and the use of upholstery.

As this dissertation focuses on new technology and innovation, the bulky and heavy feel of the traditional cinema chair has been removed from the design idea and more emphasis has been placed on the use of new technological materials and lightness of design.

Dentistry seating
Planmeca chair – model 510 & 610
Planmeca OY
www.planmeca.com

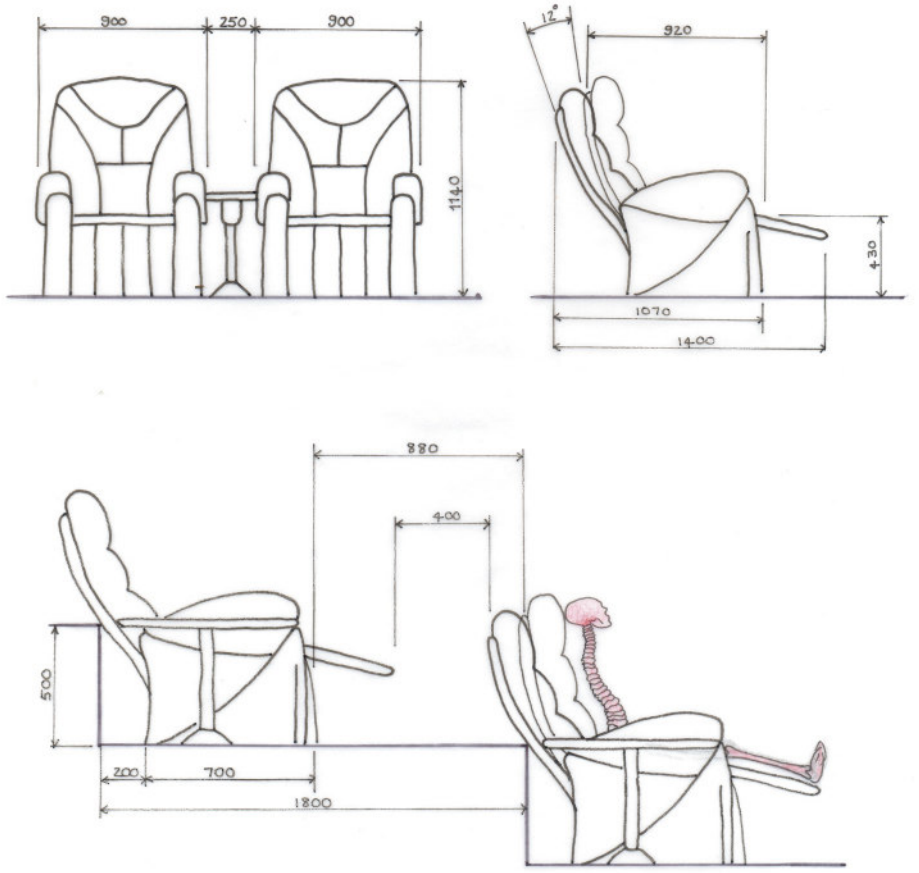

Fig 115. Elevations of the Kimberley chair

Design influence

In contrast with the traditional cinema seat the dentistry seat is lighter in appearance and can be adjusted on more levels that the cinema seat. It is this idea of lightness and slimness that had an influence on the design of the booth seat. A dentist seat has to be comfortable for a period approximately the same length as the screening of a movie but these seats have very little room in which to move or to change position because of their use.

Designing the cinema seat

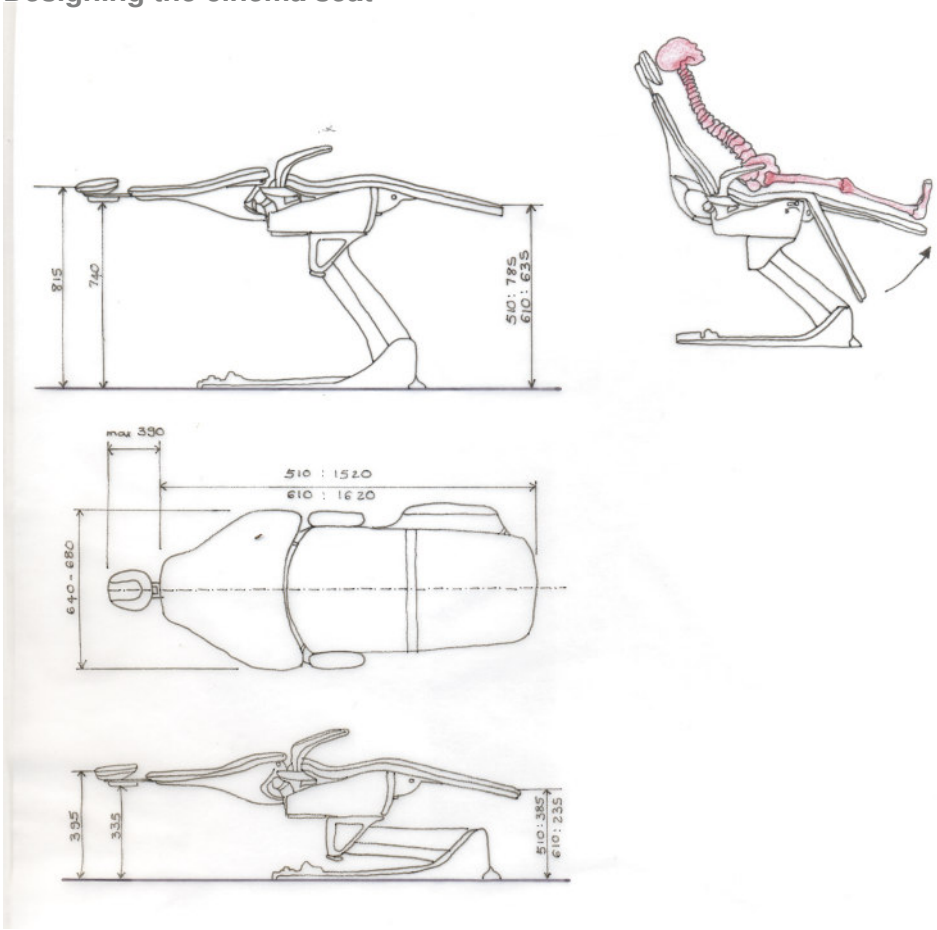

Fig 116. Plans and elevations of the Planmeca chair

Anthropometric data and ergonomics have guided the design of the booth seat. As mentioned above the idea behind the booth seating was lightness, slimness and the use of new technological materials. (Fig 112 - 115)

The seats for the booths were designed with the occupant's comfort in mind. The occupants will differ in size and shape and the seat should be comfortable whether the occupant is short or tall, thin or not so thin. The shape of the designed seat accommodates a wide variety of occupants especially in collaboration with the Levagel cushions. Levagel is a new patent class of highly elastic polyurethane gels. The gel represents a physical state whose properties lie between liquid and solid and is transparent in colour. This material has a flexible and elastic quality. "The gelatinous mass of the gel can deform up to values above 800%. It can also return to its original state once the pressure has ceased. Compared to foams used in upholstery, this gel has a notable capacity to absorb and distribute weight." (Pacchi 1998: 58) This characteristic of the Levagel makes it ideal for the application of the booth seat because each individual person will be supported ergonomically to their weight and sizes and once they leave the seat the Levagel will go back to the original form it was moulded in.

The seat has been designed that the whole structure reclines with 30º by the push of a button and the screen moves in places for viewing simultaneously. This position is naturally more comfortable for long periods of sitting - the case in this application – because some of weight is shifted form the seat area to the back distributing it more evenly. The control panel is designed separately from the seat because of the

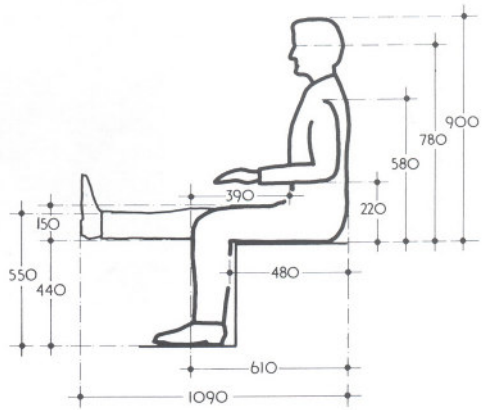

Fig 117. Anthropometric data of male sitting

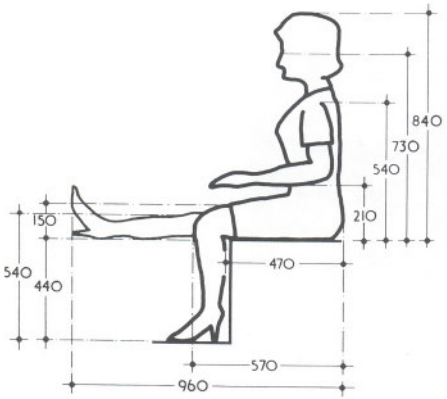

Fig 118. Anthropometric data of femal sitting

mechanical difficulty of the mechanism and for the seat to keep its lightness. The control panel will be positioned on a thermoplastic armrest on the right hand side of the seat. There will be an armrest on the left of the seat as well and it will have place for the storage of handbags and the placement of confectionary items.

The seat's structure consists of an aluminium round tube frame with bended thermoplastic backing that supports the Levagel cushion. The thermoplastic backings can be different in colour and are be used for advertising purposes because of the transparent nature of the Levagel. A specialised person will design the mechanism that will allow the seat to recline but an idea of the proportions and style has been supplied.

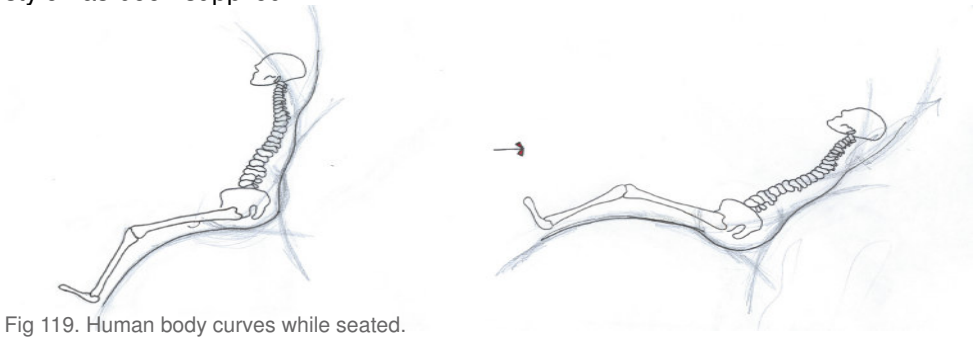

Fig 119. Human body curves while seated.

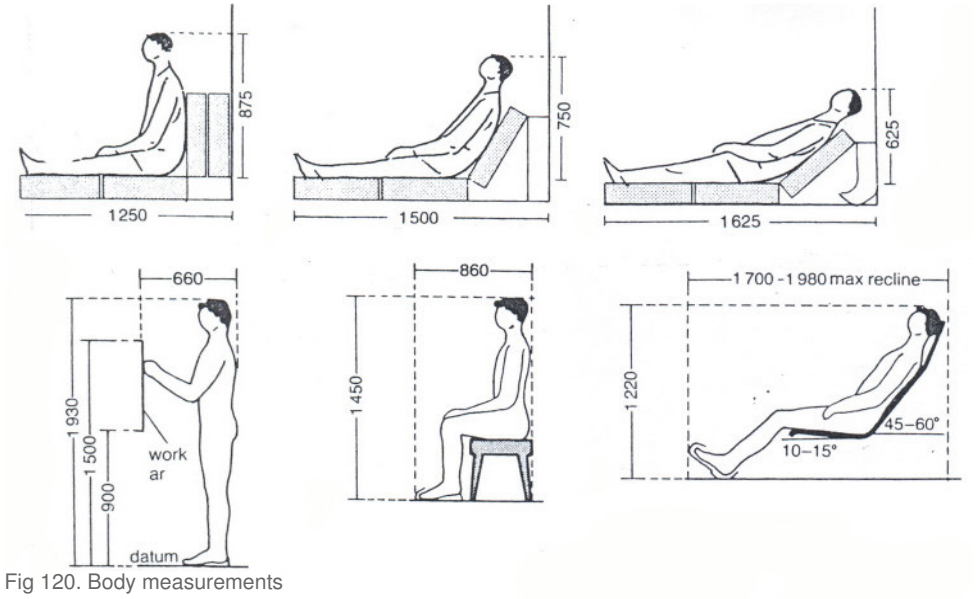

Fig 120. Body measurements

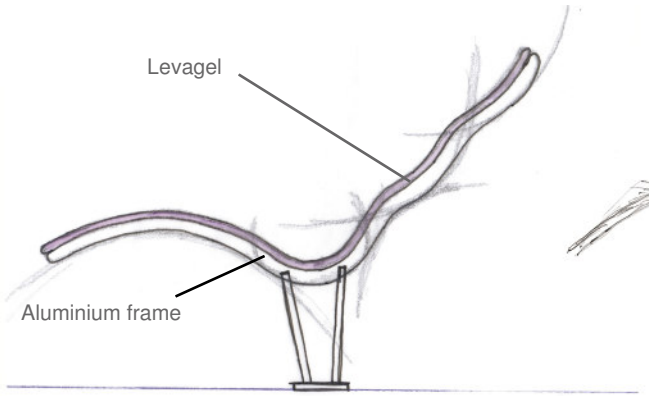

Fig 121. Conceptual drawing of cinema booth seat

Fig 122. Head rest and ear phones

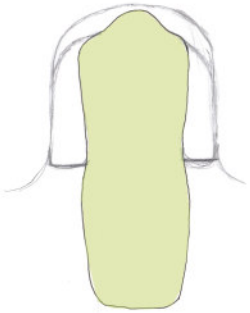

Fig 123. Plan of cinema booth seat

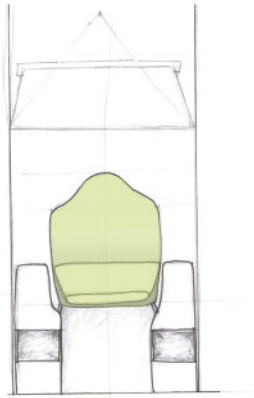

Fig 124. Elevation of cinema booth seat

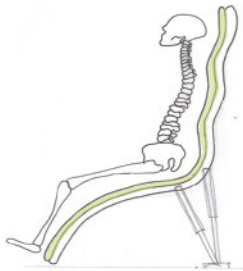

Fig 125. Seat in upright position

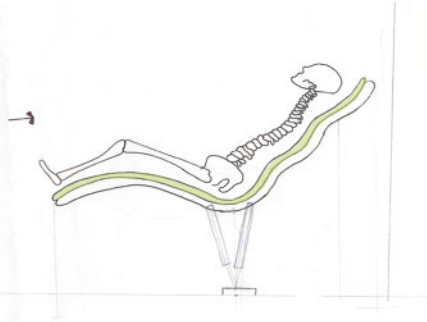

Fig 126. Seat reclined