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WARP + WEFT

Translating Textiles into Interior Architecture.

In Search for Inspiration and Continuation of African Textile Traditions.

Submitted in part fulfilment of the requirements for the degree Magister in Interior Architecture (Professional) to the Faculty of Engineering, Built Environment and Information Technology.

University of Pretoria
Department of Architecture
November 2012

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DECLARATION:

In accordance with Regulation 4(e) of the General Regulations (G.57) for dissertation and theses, I declare that this dissertation, which I hereby submit for the degree Master of Interior Architecture (Professional) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

I further state that no part of my dissertation has already been, or is currently being, submitted for any such degree, diploma or other qualification.

I further declare that this thesis is substantially my own work. Where reference is made to the works of others, the extent to which that work has been used is indicated and fully acknowledged in the text and list of references.

This dissertation is 32 368 words long (Chapter 1 - Chapter 8, including appendixes).

Hendrieka Raubenheimer

"The increasing 'architecturalisation' of textiles and the increasing 'textilisation' of architecture are, more simply, architectural ways of thinking and doing in textile design, and a textile way of thinking and doing architecture." (Garcia, 2006A: 7)

Project Summary:

FULL DISSERTATION TITLE: .	Warp and Weft: Translating Textiles into Interior Architecture. In Search for Inspiration and Continuation of African Textile Traditions.
SUBMITTED BY:	Hendrieka Raubenheimer (26023084)
STUDY LEADER:	Prof. Barbara Jekot
COURSE COORDINATOR:	Dr. Jacques Laubscher/ Dr. Arthur Barker
DEGREE:	Master of Interior Architecture (Professional).
DEPARTMENT:	Department of Architecture.
FACULTY:	Faculty of Engineering, Built Environment and Information Technology.
UNIVERSITY:	University of Pretoria.
PROPOSED PROGRAMME:	A textile making guild which is concerned with preserving the traditional African Textile making process and interpreting it into contemporary textiles.
SITE/ HOST BUILDING:	The proposed UP Clothing and Consumer Science Department building, situated in Hatfield.
ARCHITECT OF BUILDING:	Korine Stegmann (2008) in fulfillment of the degree Magister in Architecture (Professional) in the Faculty of Engineering, Built Environment and Information Technology.
CLIENT:	Pretoria Weavers Guild in collaboration with the University of Pretoria.
THEORETICAL PREMISE:	Celebrating African textiles through interior architecture by weaving a textile making guild into an unbuilt building with a fixed programme. Exploring the fascinating aspects of textiles, through the use of actual textiles and through the translation of textiles into interior architecture, to create an enriched interior environment.
RESEARCH FIELD:	Environmental Potential. (Housing and Urban Landscapes. Heritage and Cultural Landscapes.)

Abstract:

Warp and Weft is a textile making guild, intricately woven into KNOOP, the proposed Clothing and Consumer Science building for the University of Pretoria. This building is situated in Hatfield next to the railway line, in close proximity to the Gautrain station and Rissik Station. KNOOP was designed in 2008 by Korine Stegmann in fulfilment of her MArch(Prof) at the University of Pretoria. Therefore, the building in which the intervention is proposed is, to date, only an architectural proposal and has not yet been built.

The project was initiated due to a fascination with textiles and the relevance of textiles in interior architecture. This fascination with textiles is ascribed to the following: The first intriguing aspect of textiles is the **structure** and the underlying **construction principles of textiles**. The second aspect is the unique **character of textiles** compared to other building materials. Another interesting notion is the current international textile trend and current re-focus on textiles as a **construction material** after a long period of being neglected. The current hype about textiles is ascribed to the **tactile qualities of textiles,** which opposes an increasing movement towards virtualism. The raw and organic production process **of handmade textiles** is desirable and opposes automated production. Similarly to the Arts and Crafts movement, designers are once more interested in handmade products. Fourthly, textiles used in architecture has the intriguing ability to create an architecture which better relates to fashion in terms of fashion's **ability to easily change and adapt;** fashion's fleeting nature. Lastly, handmade textiles of a specific region have the ability to **convey the identity** of that specific region. This is a crucial ability to resist globalization and monotony in cultural identity. Appropriately, the fascination of this dissertation is with traditional African handmade textiles and its relevance in interior architecture.

The contemporary unbuilt building was selected to demonstrate the **value of a collaborative approach** between an architect and interior architect prior to construction. The **analysis** of the architectural proposal shows that the interior architect can effectively recognize the strengths and weaknesses of a building from an **interior perspective** and enhance and improve these aspects. The aim is also to show that **two programmes** can function **collaborative** in one building and that **intervention is possible** within a building with a fixed programme.

The site was selected due to the location and framework it falls within. The location of the site allows for **exposure** due to the pedestrian demand on the site. Also, the site is advantageously located within close proximity to **main transportation nodes**. The site falls within the extended **Arcadia Arts and Cultural Corridor**. The vision for this **corridor is a lively and multicultural precinct** which hosts a variety of arts and cultural facilities. The vision for these facilities is to portray the zest of local culture, especially to those disembarking the Gautrain.

The textile making guild, *WARP + WEFT* is an important project within this precinct, due to the core concept of the guild to **celebrate African textiles**. The aim of the guild is to produce contemporary woven textiles which **portray the identity** of traditional African woven textiles. The vision for *WARP + WEFT* within the precinct is to exhibit textiles, expose the textile making processes and to create a **unique African textile experience** for both the public and the users of the guild.

The interior intervention will celebrate African textiles by demonstrating how **textiles** are used to **solve and embrace** aspects identified through the analysis of the architectural proposal. These aspects include **acoustic absorption, solar screening, adding softness, texture and colour** to an environment predominantly defined by cold, hard, smooth and monotone surfaces, as well as providing **versatile branding elements**.

The use of textiles in the interior intervention introduces the unique design question of how to design with textiles for a textile related programme, opposed to textiles being used for another programme, such as a theatre or a hotel. It is a matter of **"textiles for textiles"** instead of "textiles for music" or "textiles for sleeping". The solution to this unique design problem is to differentiate between **spaces which celebrate textiles by acting as a background or blank canvas** for the exhibition and production of textiles and **spaces which celebrate textiles by becoming textile-like.** To create these spatial variations, the exclusive use of textiles is not sufficient. Textiles need to be **translated into interior architecture** which will be achieved through the following five me thods: Translation through **metaphor**, translation through **structure**, interpretation of **actual textiles**, engagement through **text** and the translation of the **unique qualities** of textiles. Thus, the aim of the investigation is to celebrate textiles through the application of textiles and through the translation of textiles in interior architecture.

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INTRODUCTION:

This chapter serves as an introduction to the dissertation for the programme, Masters in Interior Architecture (Professional) in 2012. Firstly, the terms **'textiles'** and **'warp and weft'** are explained as an introduction to the project. The chapter further introduces the project by discussing the **fascination with textiles**, which led to the investigation of **celebrating textiles** in interior architecture. This fascination derives from the **history of textiles** in interior architecture. The fascination is further propelled by aspects such as textiles' ability to create architecture which has **similar qualities to fashion** and handmade textiles' ability to oppose virtualism, automation and globalization. The intriguing nature of the structure of textiles, as well as its **unique characteristics**, is also discussed. Lastly, the **research methodology** used to conduct this study is discussed.

Introduction_ Terms:

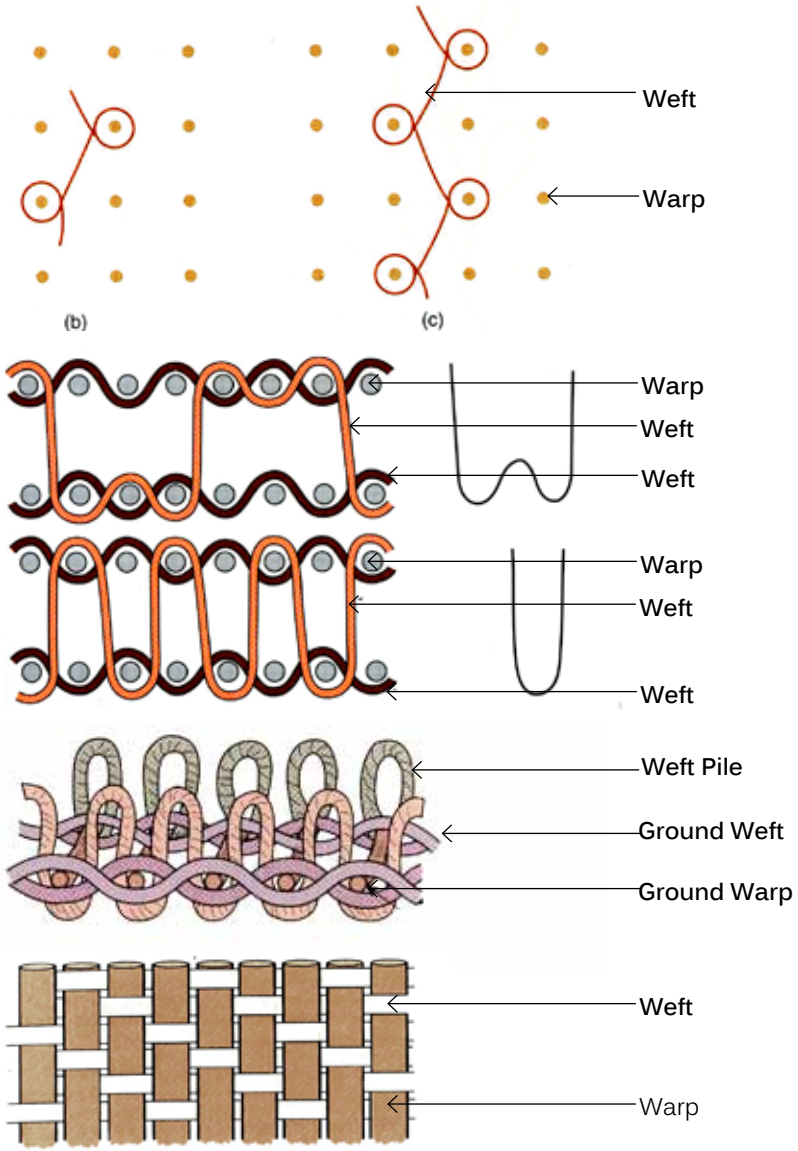


Figure 1.1: A collection of images depicting the essence of a woven textile. (Kadolph, 2007: 237, 256, 259 & 284)

TEXTILE:

The terms **'fabric' and 'textile'** are loosely used as if they are interchangeable, but Picton and Mack (1989: 17) argue that the term 'fabric', derived from the Latin term **'fabricare'**, which refers to all fibrous constructions. 'Textile' on the other hand is derived from the Latin word, **'textere'**, which means 'to weave' and therefore refers only to woven textiles (Picton & Mack, 1989: 17).

Fabrics can be **classified** according to the specific method of interworking fibers. Some fabrics are constructed by **pressing and matting** the fibers into coherence, such as felt. Other fabrics are made by interworking a **single element** with itself, such as knitting, crocheting and braiding. The third group of fabrics are constructed by interlacing a set of elements **parallel** to a second set of elements. This third method is the method used in woven textiles and is also the method used traditionally throughout **Africa** (Picton & Mack, 1989: 18). This extraction of the **fundamental nature** of textiles generated the name of the textile making guild, *WARP + WEFT*.

WARP + WEFT:

"*WARP + WEFT* are the two technical terms for the two types of thread used to create a finished woven product. The **warp** is the **tightly stretched lengthwise** core of a fabric, while the **weft** is **woven between** the warp threads to create various patterns. Some people also call the weft the "filler" threads, since it fills the design with patterns. The archaic term "woof" is also used instead of "weft" in some regions. To weave any kind of textile, the weaver needs to start with the warp threads. **Warp** threads are **stronger** and coarser, because they must be able to withstand tight stretching. They also provide a core of **support** (base structure) for the finished piece, giving the textile form. The **weft** threads make up the **body of the fabric**. They can be one colour or multi- coloured, creating patterns and forms. Some weavers also like different types of material for an assortment of textures." (WiseGeek, 2012)

THE HISTORY OF TEXTILES IN INTERIOR ARCHITECTURE:

For centuries textiles and their qualities and properties have been **excluded** from architecture and architectural theory, as explained in an article by Mark Garcia (2006B: 13). The **prehistoric notions** of using textiles as a structural material was **disregarded** for a long period in history (Garcia, 2006B: 13). Architecture moved away from textile related structures to solid, rigid buildings. It is only until recently, with the advent of **high performance textiles** that textiles and their qualities and properties became **a relevant architectural material group** (Garcia, 2006B: 13). For a long time, the knowledge of tent makers, tailors, couturiers, weavers and sail makers were seen as a 'manual' professions and inferior compared to 'intellectual' profession such as architecture, art and sculpture (Garcia, 2006B: 14). Architecture and textiles have had a relationship dating back to the construction of prehistoric shelters. The most primitive structures, constructed on the basis of textile weaving, is shelters made from structural tree branches interwoven with more flexible branches (Pile, 2005: 15-17). Later, shelter structures were covered with skins or woven mats, such as the hut shown in Figure 1.3 (Pile, 2005: 15-17). These shelters created **the first interior spaces** which were **defined** by the use of **textiles**. The textiles were used not as a decorative interior element, but as a component of the **structure** of the space itself.

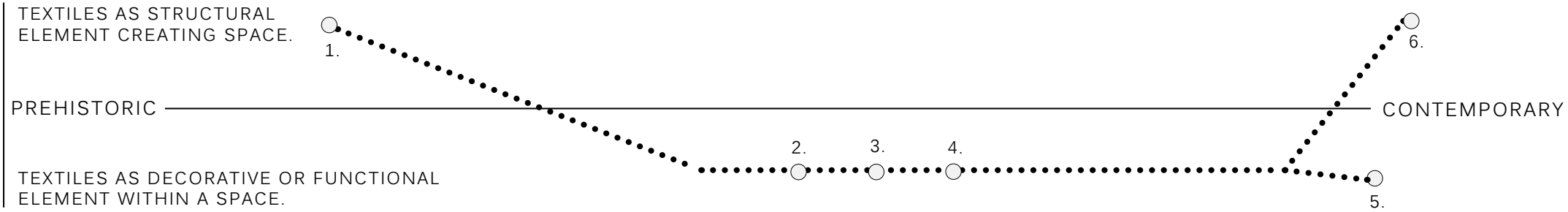


Figure 1.2: A diagram showing the uses for textiles in interior environments through the history of architecture. (Author, 2012)

1.

Figure 1.3: An example of the most primitive use of textiles in architecture. (Pile, 2005: 16)

2.

Figure 1.4: Middle ages: Textiles used as furniture and as decoration. (Pile, 2005: 66)

3.

Figure 1.5: c. 1500. Textiles used on furniture and wall decoration. (Pile, 2005: 141)

4.

Figure 1.6: 1925. Textiles used on furniture and as decoration. (Pile, 2005: 350)

5.

Figure 1.7: 2012. Textiles used as interior decoration. (Nielson & Tylor, 2011: 349)

6.

Figure 1.8: 2012. Textiles are again used to create space. (Meredith, 2012)

Many of the examples of **textile-related architecture** in the ancient civilizations have **perished** due to the lack of durability of textiles; and because the skills and knowledge of artisans within this field were not thought to be valuable enough for recording or preserving. Textiles **produced for interiors** have been more effectively preserved. Aside from the textile structures of nomadic societies, the only notable examples of the use of textiles in architecture are the great awnings of the Coliseum in Rome, the enormous tent palaces of the Mongol emperors of China, the Ziggurat Aqur Quf near Baghdad (c. 1400 BC) as well as the 'Field of the Cloth of Gold' event held in 1520 (Garcia, 2006B: 14).

From the early Christian century to the 19th century, textiles have remained temporary, incendiary, fragile, unstable, high maintenance and low performance (Garcia, 2006B: 13). It is therefore that **textiles were limited** to tents, awnings, temporary structures and specifically to the **interior of buildings** (Garcia, 2006B: 13). Figures 1.4 to 1.6 show how the use of textiles has remained indoors and relatively constant. Examples of the use of textiles for interior applications through the ages are the following: During the Early Christian, Byzantine and Romanesque periods the colour in interior spaces came mostly from textiles (Pile, 2005: 66). Textiles appeared in furniture covers, curtains (not used to cover windows, but used as bed curtains) and wall hangings (Pile, 2005: 66). In Islamic interiors, furniture consisted mostly of low benches and couches covered by textiles. In the Near East textiles were used for floor coverings, known as the greatly valued 'oriental rugs' (Pile, 2005: 74-76). It is interesting to note that some of the oriental and Mediterranean carpets were double sided to allow for a thick pile in winter and a thinner pile in summer (The View from Fez, 2012). Similarly, Indian interiors consisted mostly of carpets and textiles (Pile, 2005: 85). In China (second century C.E.) the entire extent of the interior furnishings consisted of mats or sacks, furniture was only developed thereafter (Pile, 2005: 90-91). From the Renaissance until early in the 20th century, textiles and the qualities and properties of textiles remained indoors, unless used for temporary tent structures. Textiles were mostly used for loose cushions, covered with fabric, the covering of walls with textiles, curtains, panels of textiles used for screens or doors and carpets or rugs (Pile, 2005: 143 &161).

During the Enlightenment, Rationalism and the Industrial Revolution the intrinsic **abstract qualities of textiles** were beginning to be diagrammatically explored (Garcia, 2006B: 15). **Gottfried Semper** (1803–79) explored the textile as a network, woven and flexible mesh (Garcia, 2006B: 15). Drawing **parallels between textiles and built surfaces,** Semper signified a distinct break with traditional theories of architecture and influenced later 20th-century Post modern theories of interior architecture (Garcia, 2006B: 15). In *The Four Elements of Architecture*, Semper named textiles as **one of the four elements in architecture** (Spuybroek, 2011: 7). Textiles were by far the most important of these elements because it changed from physical space dividers into symbolic impressions (Spuybroek, 2011: 7).

French, German and American Modernism contributed greatly to the expansion of the nexus of architecture and textiles (Garcia, 2006B: 15). In the 1960's, Frei Otto's Suspended City and Buckminster Fuller's 1964 new Harlem projects (New York) applied **textile related ideas** to their curving, tensile-based, network of multilevel city designs (Garcia, 2006B: 16). Throughout the decade, Otto continued to investigate the **structural properties** of tensile textile related structures with which he initiated nonlinear structural surfaces and optimised architectural networks and shapes (Garcia, 2006B: 16). These preoccupations with textiles in architecture led to the **rediscovery** of textiles as a material group in interior architecture (Garcia, 2006B: 16).

Recent research shows that the **collaboration between architecture and textiles** is increasing (Garcia, 2006A: 6). With the dawn of computer aided design in the 1990's architecture could **explore** more of the **qualities of textiles** (Garcia, 2006A: 8)**.** The translation of physical textiles and textile qualities and properties into architecture has been a continued preoccupation for research architects like Lars Spuybroek, for whom Semper and Otto have been influential precedents (Garcia, 2006A: 8). At present, advanced textile production (such as thermoplastic setting, ultrasonic welding, advanced digital printing, laser cutting, electrospinning, relief printing and pultrusion) are creating extraordinary supertextiles (Garcia, 2006A: 8). The remarkable range of properties of such **ultra materials** means they are not only substitutes for traditional materials, but are producing **a new typology of interior architecture** (Garcia, 2006A: 8). Figures 1.7 and 1.8 show how the use of textiles in interior architecture has shifted from interior elements to space creating elements.

Figure 1.9: An image showing the adaptable nature of fashion. The dress easily transforms from maxi to mini, from wide to pencil, and the sleeves from short to long. (Lolier, 2011)

Figure 1.10: Honeycomb intersection from Textile Dimension. This fabric is 3D although it was woven on an ordinary 2D loom. (Garg, 2011)

TEXTILES ALLOWING FOR AN ARCHITECTURE WITH QUALITIES RELATED TO FASHION:

"...In the world of fashion things move faster than in architecture- getting dressed, getting undressed, transforming oneself, trying out new sculptural possibilities, examining the qualities of surface texture, inventing a new style and disregarding it again." (Garcia, 2006: 2)

If architecture desires to achieve similar **fleeting and adaptable** qualities portrayed through fashion (refer to Figure 1.9) the characteristics prevalent in fashion should be implemented within architecture. Spaces which are **permanent, durable, fixed and rigid** are synonymous to spaces designed using materials with these characteristics such as **stone, steel and concrete** (Garcia, 2006A: 2). These spaces are described as being in a **solid state** and in a sense **static** (Garcia, 2006A: 2). In opposition to this are spaces which are designed with **textiles**. These spaces can be described as being in a **liquid, dynamic or gaseous** state (Garcia, 2006A: 2). Spaces with these characteristics can be realized through the use of materials which have liquid, dynamic and gaseous qualities, such as textiles, or through the manipulation of materials with "solid" qualities. The exploration of spaces being in these states is presented in Chapter 7.

HANDMADE TEXTILES AS CURRENT GLOBAL TREND:

Internationally renowned trend forecaster, Lidewij Edelkoort, currently presents **hand made** goods and textiles as the latest **trends** on her web site: Trend Tablet. On the Trend Tablet, Edelkoort (2012) states the following about handmade textiles:

The more **virtual** the world is becoming, the greater our need for **tactile stimulation** is. **Digitalism** has triggered the desire for the **manual** and the tactile which results in the desire for **hand produced** goods, especially textiles (Edelkoort 2012).

Similarly to the **Arts and Crafts movement**, designers are again interested in hand produced and hand finished products (Edelkoort 2012). Figure 1.10 is an example of a contemporary handmade textile.

Figure 1.11: Textiles hand dyed with indigo by Heartwear, inspired by the traditional African indigo dyeing. (Taillefer, 2010)

Figure 1.12: Traditional African "tie and dye" process with indigo from the Dakar cooperative. (Polakof, 1982)

THE RELEVANCE OF TRADITIONAL AFRICAN TEXTILES OPPOSED TO GLOBALIZATION:

In this **globalized** world, there is a need to empower designed products with their own character; an invisible energy which is only achievable through the **hand making** process (Edelkoort 2012). The role of designers is to, through their designs, **revitalize handcrafted techniques**. Also, the notion of fabrics being produced by **cheap labour**, causing great suffering and injustice, is becoming more exposed, **unacceptable** and unpopular (Edelkoort 2012). The world is starting to focus on labels which indicate that fabrics are **locally designed and made** (Edelkoort 2012).

Introducing **local craft** to designed goods is a method to oppose the current **identity crisis** of globalization. **Traditional African textiles** have a very **unique identity** resulting from the various handcrafted processes, opposed to the contemporary textiles which are closely imitated and mass-produced by similar international industrial processes (Polakoff, 1982: 12). By **reintroducing** traditional textile making processes to fabrics, the fabrics will develop and encapsulate a **local character** and identity. Textiles from a specific region will again be recognisable and will oppose the notion of global generalization. Figure 1.11 and 1.12 are examples of a traditional African hand crafting process being reintroduced into contemporary fashion which is simultaneously trendy and conveys the unique African dyeing identity.

African textile making processes are still **relevant** today, because of its **immediacy.** Traditionally, Africans crafted fabrics by making use of that which was **available** in their **immediate surroundings**. They made use of **found material and skills** and techniques passed on **from one generation to the next** (Polakoff, 1982: 187). This notion of creating textiles from that which is immediately locally available can be reinterpreted in the use of locally available alternative materials and skills. This notion is relevant to produce **environmentally and socially sustainable textiles**. The African textile making process and examples of African textiles are presented in Chapter 3.

THE UNIQUE CHARACTERISTICS OF TEXTILES:

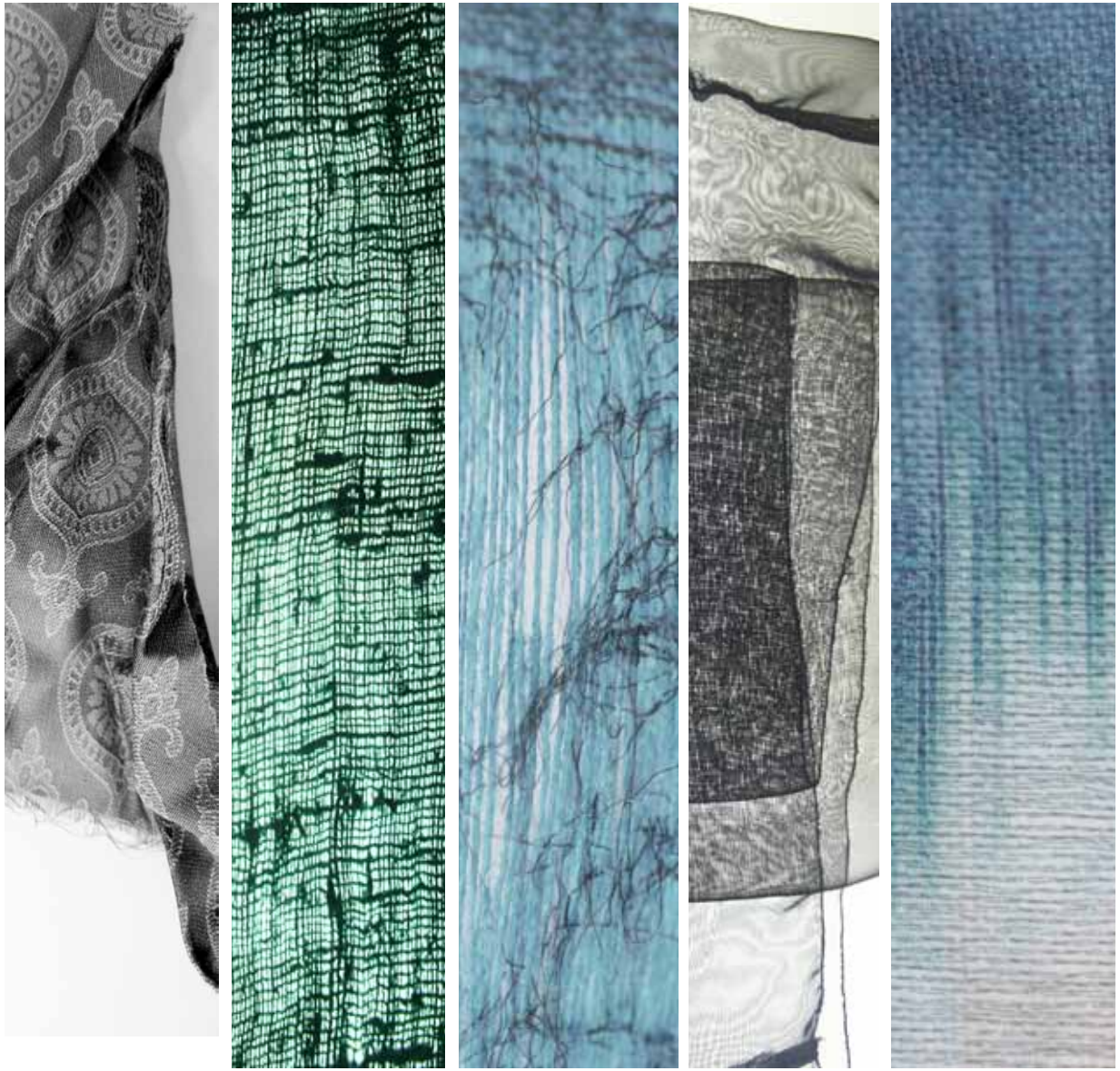


Figure 1.13: Sample of the investigation into the unique characteristics of textiles. (Author, 2012)

Another intriguing aspect is the **unique characteristics** of textiles, compared to other construction materials. These unique characteristics and abilities make textiles an interesting construction material. A physical exploration of the various abilities of textiles has been done through manipulating and photographing various textiles. This exploration is presented in Appendix A. Through the exploration, it was concluded that textiles have the unique ability to naturally:

- Drape
- Flow
- Sway
- Fold
- Absorb
- Crease
- Screen
- Twist
- Tear
- Unravel
- Ripple
- Be soft
- Be fluid
- Disintegrate
- Be irregular
- Colour bleed

These unique characteristics of textiles are the result of the method in which textiles are constructed. Considering the **construction of textiles**, the following aspects are the most significant: The most important aspect of the construction of a textile is not merely the **interlacing** of **elements perpendicular** to each other, but the fact that **small elements** operate together to f**orm a cohesive, continuous whole** (Weinand & Hudert, 2010: 104). Weaving as a construction method also results in **underlying mathematical rhythms and patterns**, depending on the type of weave (Nielson & Tylor, 2011: 342). These different patterns and rhythms are presented in Table 2 in Appendix B.

Methodology:

THE RESEARCH METHODOLOGY :

For this dissertation to develop from research questions and theory to a design solution, a **research strategy** is required (Groat & Wang, 2002: 11). A research strategy is the **plan or structure** of the process through which the research will be done and should be differentiated from research tactics which refer to the **specific techniques** to be used (Groat & Wang, 2002: 11).

The research strategy for this project will be a method of research through design. Research through design aims to use the **product** or **product prototype** as a tool to enquire **design knowledge**. The prototypes or products acts as a method to formulate, explore and obtain design knowledge. The designer conducting the research can make observations on how the product or prototype was experienced to guide research through design as an **iterative process**, in order to obtain the best results (Keyson and Alonso, 2009: 1).

The research tactics used through the process of research through design are as follows:

A **literature review** to competently define and address the topic of the study. For the literature review to exist, the material has been arranged into the key theories established through the problem statement and hypothesis (Wang, 2002: 46). The use of the literature review is both design and research orientated. The use of the literature review in relation to the design is to develop case-specific programmatic information, to investigate typological precedents and to gather facts and information in order to generate normative action (Wang, 2002: 46). The literature review related to research is to identify and connect the study topic to the relevant sources, to ground the topic in the relevant theory and to respond to the body of knowledge on the specific study topic (Wang, 2002: 46).

An **analysis of the host building** is undertaken so that the building is properly understood before intervention takes place. Scientific measures are used to obtain quantified data. Personal insights and perceptions are used to obtain qualitative data from the building.

Precedent studies are investigated and interpreted to obtain design knowledge. Precedent studies are conducted to gain in-depth knowledge of the relevant theory and due to the fact that are representative of similar design aspects in the study (Fellows & Lui, 2003: 24).

In order to execute the design, the **design problem** and **design method** is established. The design problem is the question of designing for textiles with textiles. The design method is the method of **translation**, where textiles are translated into interior architecture. In order to be able to translate textiles into interior architecture, a thorough understanding of the nature of textiles, as well as the traditional and contemporary textile making processes are necessary. To **explore the nature of textiles**, a series of photographs of textiles manipulated in different scenarios have been taken. These photographs are presented in **Appendix A**.

The knowledge of traditional textile making processes was gained through a **literature study**. The knowledge on contemporary textile making processes has been gained through **interviews**. The interviews were with members from the Pretoria Weavers Guild and Textile Design lecturers at Tshwane University of Technology. It is evident that the knowledge gained through the research for this dissertation is both **practical and theoretical**.

Simulations of the design proposal are executed to **test and approve the design**. This process is referred to as simulation research (Wang, 2002: 91). The process of simulation will consist of building physical models, CAD models, environmental simulations and physical prototypes.

Conclusion:

This chapter served to introduce the dissertation by elaborating on the aspects which triggered the **investigation of textiles in interior architecture**. These aspects contribute to the significance of textiles and justifies textiles as a **relevant study topic**. The study will demonstrate how textiles are used to create **contemporary interior architecture**, instead of merely using textiles as decorative interior elements. It will demonstrate how a **softer, more liquid and gaseous interior** environment can be constructed by exploring the unique abilities of textiles. Textiles, being able to produce an architecture which can **easily adapt** (similar to fashion), will be investigated. The ability of **handmade textiles**, to convey **local identity** is very important for this study, due to the location of the site, as explained in the next chapter. The unique **characteristics** of textiles and the intriguing aspects of the **structure** of textiles will be investigated and celebrated throughout the dissertation. Since the study has been introduced, the description and analysis of the site can follow in Chapter 2.

SIGNIFICANCE AND ANALYSIS OF THE SITE:

The material presented in this chapter is the description of the **significance** and **analysis** of the MArch(Prof) dissertation of Korine Stegmann executed in 2008. The chapter starts with a brief description of the significance of the architectural proposal, followed by an in-depth **analysis of the site** and the **interior aspects** of the building. The aim of the analysis is to identify aspects of the building which are not well resolved and need to be **ameliorated**, as well as aspects of the building which are well considered and need to be **embraced**. The **response** to the aspects which should be ameliorated is also presented. This chapter is presented on a **darker background** to distinguish it from the rest of the book as the description and analysis of the architectural proposal designed by Korine Stegmann. The solutions to the problematic aspects are **presented on white** as it forms part of the proposed interior intervention together with the rest of the dissertation.

The chapter starts with an explanation of the **site selection** process, the position of the site within the **Arts and Cultural Corrido**r and the vision for the corridor. The site and site selection process is unique, due to the fact that a contemporary unbuilt building (an architectural proposal) was selected.

The significance of the architectural proposal of Stegmann is briefly explained in terms of its **location**, its significance within the proposed **framework**, its **programme**, the **users** and an analysis of the i**nterior** of the building. The main theoretical premises according to which the architectural proposal is designed are also briefly explained.

The architectural proposal is analysed, firstly on a macro and then on a meso level. These analyses include a **contextual analysis**, an **environmental analysis**, an **analysis of the approach** and an **analysis of the public spaces** surrounding the building. Unresolved issues are identified such as the approach to the site, the under utilization of the public courtyard and the undefined entrance.

An analysis of the building, from an **interior perspective** is also presented. An analysis of unresolved and well resolved aspects of the interior spaces is undertaken. The aspects which **need to be resolved** are the solar screens casting undesired light patterns on work surfaces; the hard, smooth, monotone and cold materials used throughout the building (which results in a cold, inhumane interior with acoustic problems); the schedule of accommodation (which is not sufficient) and the gradation of public and private spaces (which are not well considered). The aspects of the building to be **embraced** are the grid structure with infill possibilities, the scale, volume and proportion of the building, the services and systems and the use of accent colours to distinguish certain elements like the pods.

Site Selection:

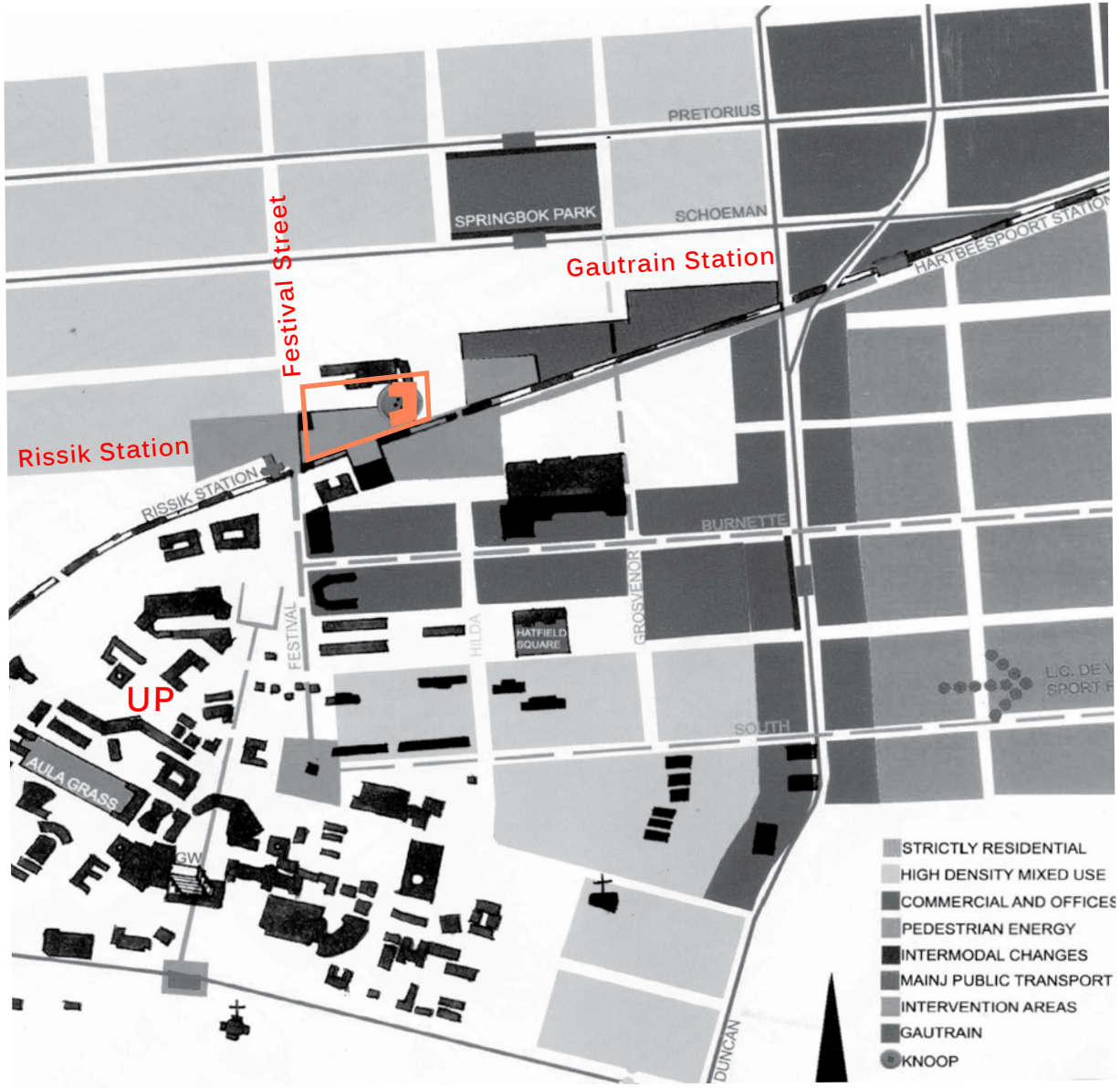


Figure 2.1: Location of KNOOP. (Stegmann: 2008, 23) edited by (Author, 2012).

PROCESS OF SELECTING THE SITE:

It was decided that the value of a **collaborative process** between an architect and interior architect, prior to construction, needs to be demonstrated to prove the following: The value of a **site analysis** from an **interior perspective** is necessary, in order to establish whether two different programs can **function effectively** within the same building and whether an intervention is possible within a building with a fixed programme. Thus, the appropriate site had to be a contemporary, unbuilt building and had to comply to the following criteria:

1. The site had to have a programme which will **relate to textile making** in order for the two programmes to collaborate and function mutualistically and simultaneously.

2. The site had to be within a **vibrant public precinct**, clearly distinguishable to the public.

3. The site had to be near major **transportation stations**, in order to ensure that textile makers from surroundings communities can easily commute to the site and that the general public can access the proposed facilities.

The chosen site, KNOOP, designed by Korine Stegmann in 2008 as part fulfilment of her MArch(Prof), is the new **Clothing and Consumer Science** building for the University of Pretoria. The building is not situated on the campus, but within the **Hatfield precinct**, next to the railway line, between the Rissik train station and the **Gautrain** station.

Development of the Existing Framework:

Figure 2.2: Map indicating the position of the site within the designated arts area of the S.T.A.R.T. precinct. (Author, 2012)

Figure 2.3: Map indicating the position of the site in relation to the Arcadia Arts and Culture Corridor proposed by the Tshwane Municipality in 2011. (Author, 2012)

COMBINATION OF CURRENT FRAMEWORKS:

The **framework** proposed by the class of 2008 (Figure 2.2) is situated on the parameter of the **Arcadia Arts and Cultural Precinct** proposed by the Tshwane Municipality in 2011 (Figure 2.3) (City of Tshwane Metropolitan Municipality City Planning Division Metropolitan Planning Section 2011: 31). The Arcadia Arts and Cultural precinct can be **extended** to stretch from the Pretoria Arts Museum to the Hatfield Gautrian station. By extending the precinct, it forms an **Arts and Cultural Corridor** which **connects two important landmarks** in the area. The extension of the precinct also allows the selected site to fall within the Arts and Cultural Corridor (Figure 2.4).

The municipality states that this precinct should **accommodate art faculties** and **art related facilities**. The municipality proposes that these facilities should be owned by either the Tshwane University of Technology, the University of Pretoria or professional art institutions (City of Tshwane Metropolitan Municipality City Planning Division Metropolitan Planning Section, 2011: 31). The architectural proposal, being a department building of the University of Pretoria is therefore **correctly situated** within the precinct. The site has the potential to become a **gateway** between the University and the Arcadia Arts and Cultural Corridor.

Arcadia street, the main axis of the Corridor, currently has a **desirable spatial quality**, defined by the arcade of full grown trees which creates an environment which can readily be **pedestrianized** as shown in Figure 2.5. The vision for this corridor is to adapt a **similar ambience** as Vila Madalena in São Paulo, Brazil. The precinct is alive with street culture; arts and cultural activities; boutique shops selling locally designed merchandise as well as lively bars and restaurants. Figure 2.6 portrays the ambience of Vila Madalena and shows the wide range of activities that take place in this area. From formal art galleries to informal street performances, the area is not restrictive and **expressive of the local flavour.**

The vision for the Arcadia Arts and Cultural Corridor is also to express the **local identity.** *WARP + WEFT* will be at the lead. The Corridor will be the first experience for local and international **tourists** departing from the **Gautrain** and is therefore very important.

Development of Existing Framework:

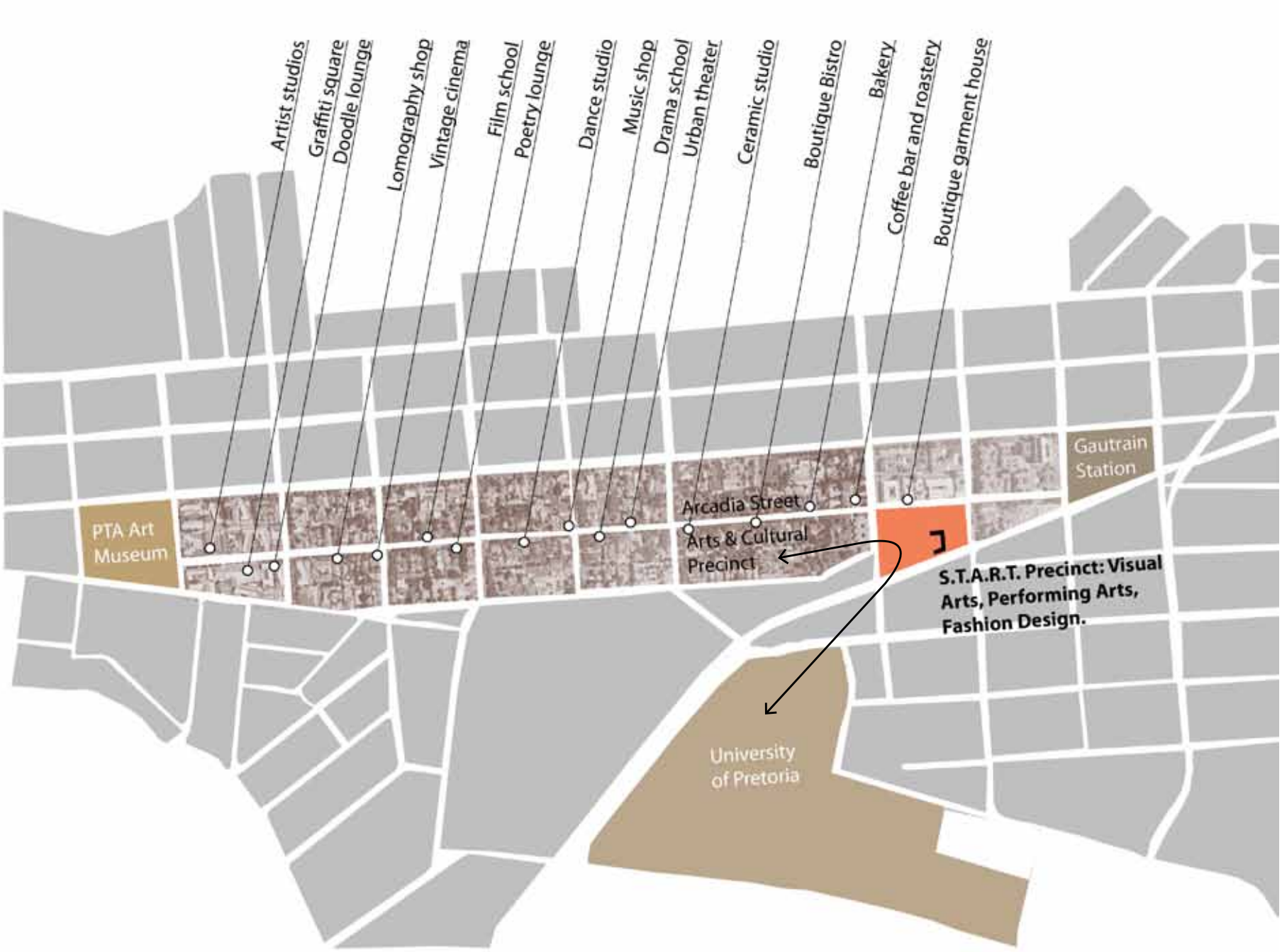


Figure 2.4: Diagram showing the combination of the two frameworks to form the new, extended framework. (Author, 2012)

Figure 2.5: Photograph of the spatial quality of Arcadia Street. (Author, 2012)

Figure 2.6: Collage of Photographs of Vila Madalena, São Paulo, Brazil. The area is alive with a variety of arts and cultural activities and promotes a vibrant street life. (Author, 2009)

Significance of the Architectural Proposal_ Programme, Users and Theory:

Figure 2.7: Visualisation of KNOOP. (Stegmann: 2008, 2)

PROGRAMME AND USERS OF THE ARCHITECTURAL PROPOSAL:

The architectural proposal is designed to be the new **Clothing and Consumer Science Department** of the University of Pretoria. The programme is therefore a contemporary fashion design school, **without accommodating** the **design or making of textiles**. This creates the **possibility** for designing a textile design and production facility.

The main users are the UP fashion design students. The building was designed to accommodate a **variety of users** and the idea of **collaboration** has been initiated. This notion of collaboration strengthens the aspiration to c**ollaboratively accommodate two programmes** within one building. The types of collaboration referred to are: Firstly, collaboration of the department with other tertiary institutions and related businesses (Stegmann, 2008: 55). Secondly, cross pollination between this department and the other creative departments within the area (Stegmann, 2008: 52). Thirdly, the building also allows for interaction with the public realm through the use of the facilities provided within the building (Stegmann, 2008: 75).

THE THEORETICAL INVESTIGATIONS OF THE ARCHITECTURAL PROPOSAL:

Parallels between fashion design and architecture was drawn. Fashion design principles were interpreted into architecture. An interpretation of fashion into architecture is relevant for the purpose of this project, because of the similarities between the two disciplines. The **similarities between architecture and fashion design** are described with terms such as ‘structural skin’, ‘geometry’, ‘movement’, ‘texture’ etc. Both disciplines make use of a plan, pattern or blueprint to realise the design. In both disciplines the factor which determines the success of the product, is its usability and the way in which it is designed to nurture human comfort (Stegmann, 2008: 41). The architectural proposal specifically investigates four principles when drawing parallels between fashion and architecture. These principles are: Reconstructing the design process; the ‘skin and bones’ concept; revealing and concealing and the idea of using simple geometrical forms (Stegmann, 2008: 41). These investigations are significant, in that they provide clues, information and inspiration as to how textiles can be interpreted into interior architecture.

Significance of the Architectural Proposal_ Location:

Figure 2.8: S.T.A.R.T Precinct (Le Roux: 2008, 19) edited by (Author, 2012).

THE SITE LOCATION:

The building is not situated on the main campus of the University of Pretoria, but rather next to Festival Street in **Hatfield** as shown in Figure 2.1. This is due to the fact that, on campus, the building would be **concealed from the public** and less public interaction would take place. The framework in 2008 had the vision of a **future urban campus**. The site also links the business area of Brunett Street to the University of Pretoria (Stegmann, 2008: 14).

The significance of the location is the close **proximity to two train stations**; the Rissik train station and the Gautrain station. These stations will encourage and instigate more **pedestrian activity** on the site. Therefore, this site has the possibility to become a future **destination** for local and international tourists.

THE PRECINCT:

In the framework of the Future Urban Campus, the site is located within the proposed **S.T.A.R.T. precinct** as shown in Figure 2.8. S.T.A.R.T is an acronym for Social Transition through the Activation of Regenerative Techniques. The precinct consists of the Rissik train station, an arts precinct, a public participation area and an African cultural center. The six projects in this framework are bound by a large **public space**, which **stretches across the railway**. The aim of the precinct is to create a focus of civic identity and a destination for local and international tourists. The precinct is identified by its vibrancy and permeability to the public (Stegmann, 2008: 18). This aim of the precinct is significant within the Arts and Cultural Corridor, due to the shared aspirations of **portraying local identity**, especially to the Gautrain users.

Macro Analysis:

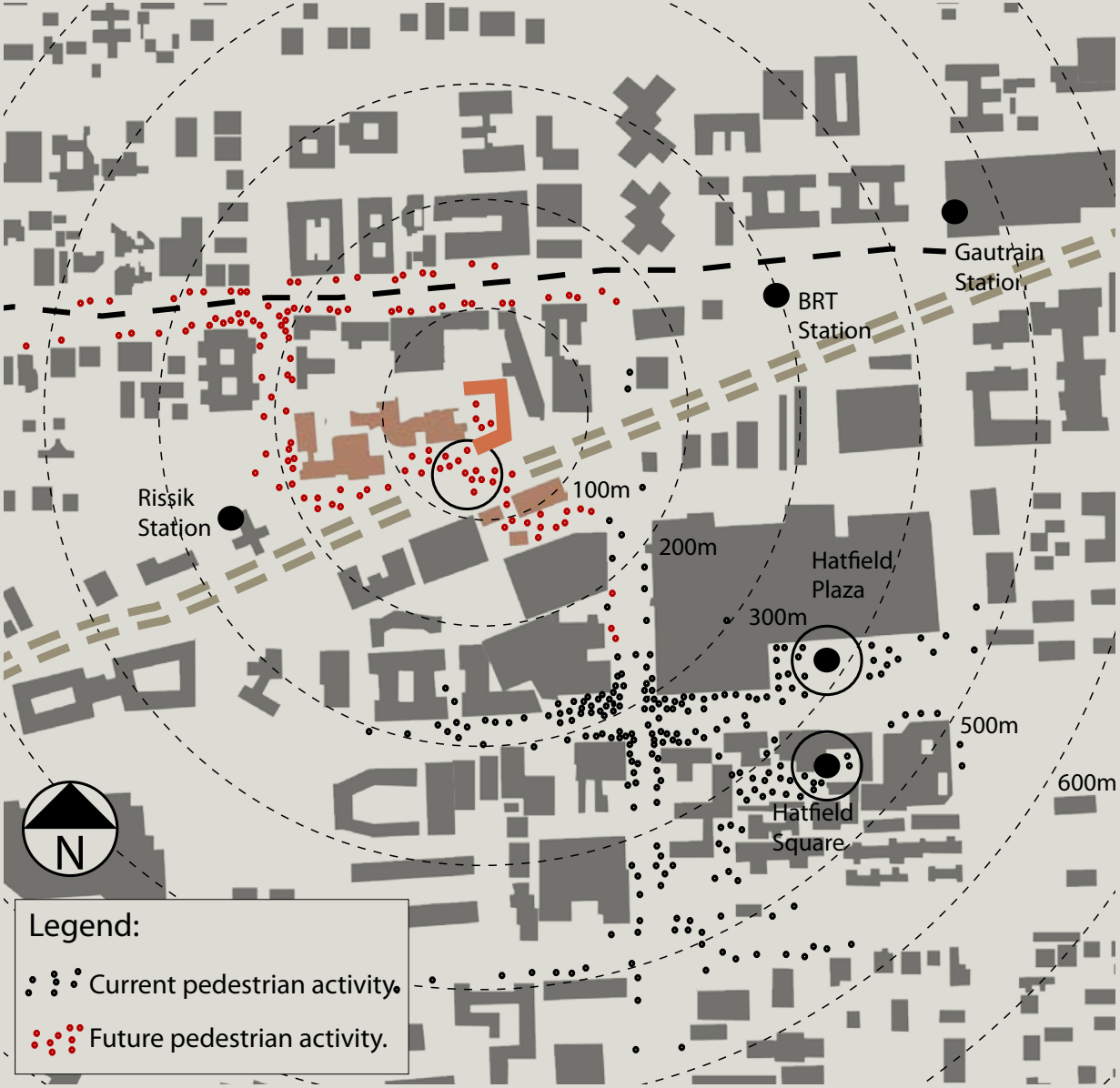


Figure 2.9: Map indicating the role of the site as a gateway for pedestrian energy in Hatfield to infiltrate the northern area from the south. (Author, 2012)

THE INFLUENCE OF THE CONTEXT:

The **railway** forms a **barrier** in Hatfield, separating the southern, more active area from the desolate and more suspicious area north of the railway. The area south of the railway is occupied by university residences, Hatfield Plaza and Hatfield Square. Part of the architectural proposal is a large **urban platform** which **stretches over the railway** and which **links** the northern and southern areas of Hatfield with each other. This link over the railway allows **energy** which is contained south of the railway to **spill** to the north of the railway and ultimately into the Arcadia Arts and Culture Corridor. Figure 2.9 shows the human activity south of the railway infiltrating towards the north across the platform proposed over the railway on the site.

This means that the **pedestrian activity** on the site will **increase** and that many people will walk past the architectural proposal on a daily basis. Figure 2.10 indicates the pedestrian activity around the building. This is an ideal scenario for **public exhibitions** and for the **branding and marketing** of the products produced within the building. This also creates the opportunity for textile makers from informal communities to use the facilities of the proposed intervention to **sell** their products to **passers-by** on the urban platform.

Another factor which contributes to the large **pedestrian demand** on the site is the fact that the site is situated between the **Rissik train station** and the **Gautrain station.** Thus, the proposed intervention should make active use of pedestrian activity in and around the site to enhance **activities which spill out** from the building into the surrounding public spaces.

Currently, there are suspicious **drug dealing activities** in the open area next to the site. Figure 2.10 indicates the location of these drug dealing activities. Once the building is implemented, these activities will be exposed to **passive surveillance** and will disappear.

A portion of the **building's view** (Figure 2.10) to the east is **blocked** by the existing building on the north-east. The **south-eastern view,** to and from the architectural intervention, is the most significant, because it will be the most **exposed façade** of the building, visible to the **pedestrians** crossing the platform and to **motorists** driving in Hilda Street.

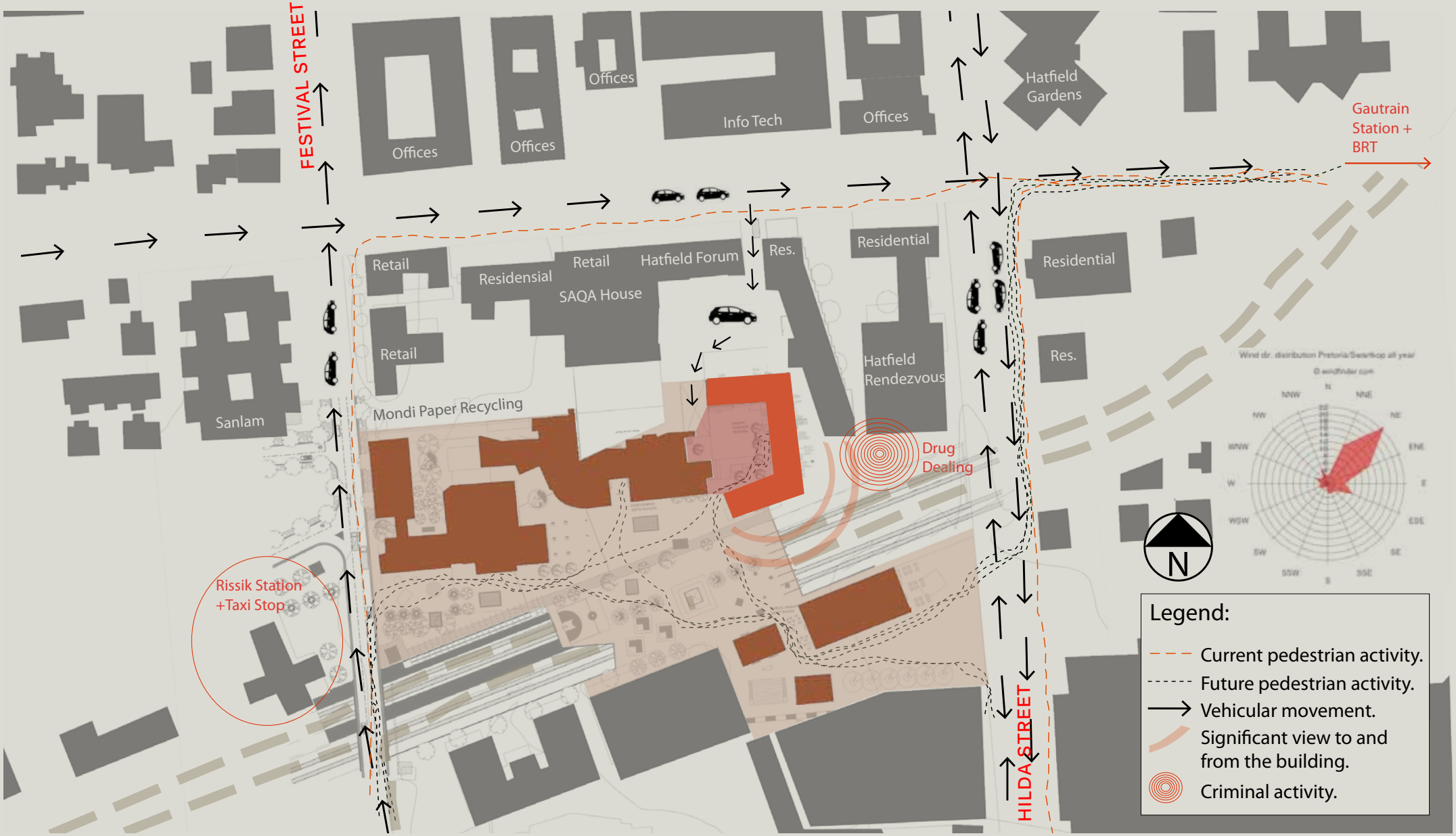


Figure 2.10: Map of the site and its immediate surroundings indicating human activity and movement through the proposed framework. (Author, 2012)

Meso Analysis:

APPROACHES AND OUTDOOR PUBLIC SPACES:

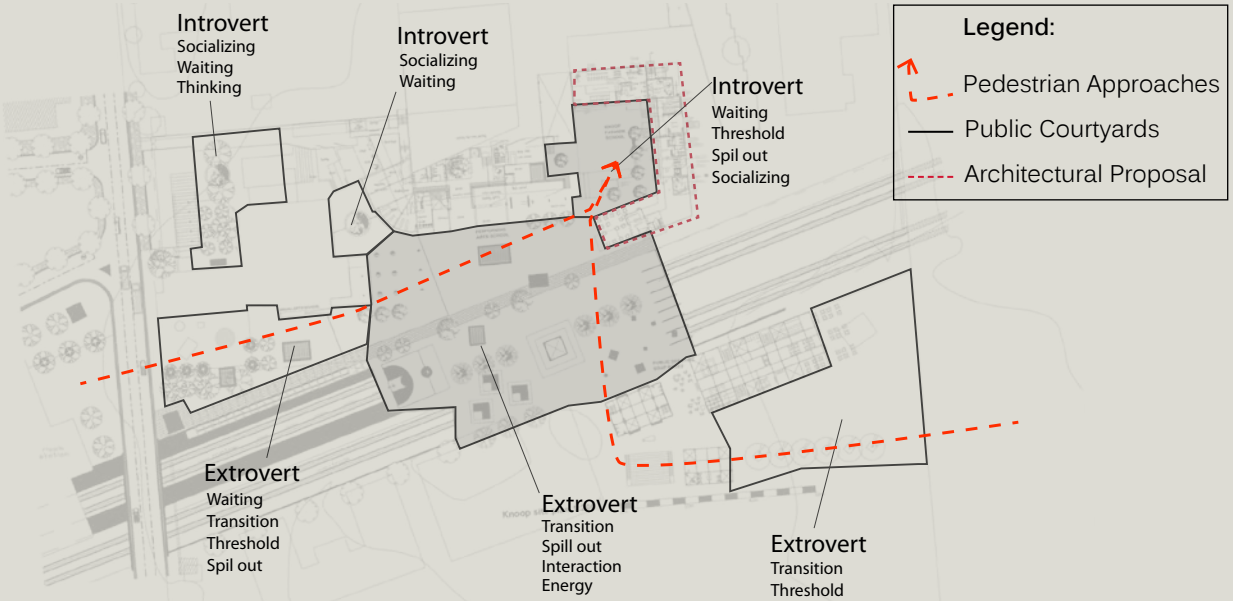


Figure 2.11: Diagram indicating the public squares and approaches to the building. (Author, 2012)

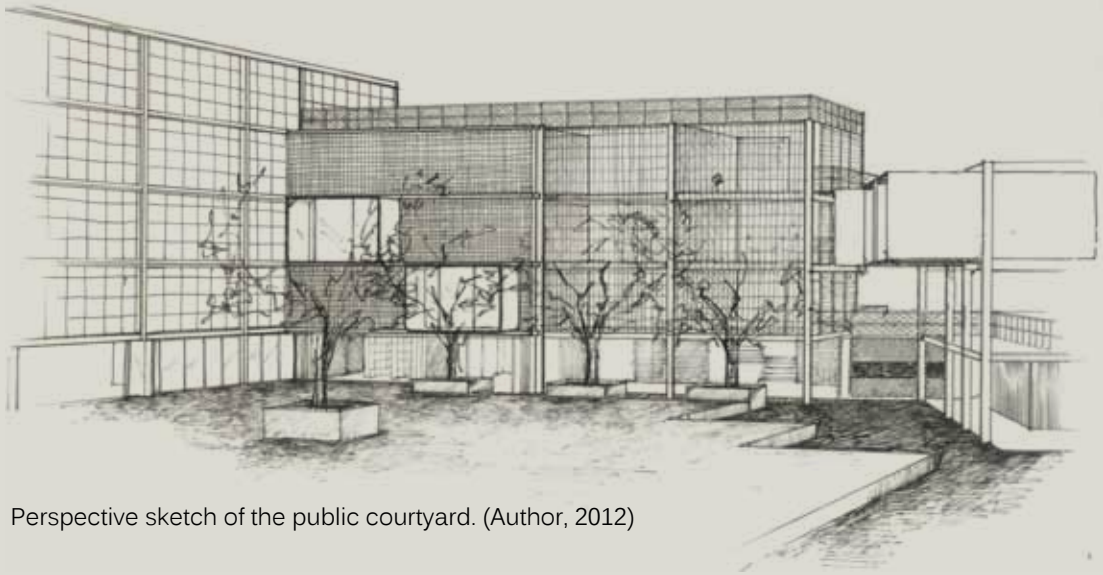


Figure 2.12: Perspective sketch of the public courtyard. (Author, 2012)

The main **pedestrian approaches** towards KNOOP, the architectural proposal, are along the l**arge urban platform** which stretches over the railway. From the large urban platform, pedestrians enter the more intimate **public courtyard space** in front of the building. Figure 2.12 shows the building as seen from the main approach towards the building. The **vehicular** approach towards the site is from the **north**. Vehicles enter the **basement parking** from the ramp at the side of the building. **Refuse removal and delivery vehicles** also enter the site from the **north** and can drive on the eastern side of the building, as indicated in Figure 2.11. There is currently **no way** for pedestrians to **access** the **public courtyard** from the **north**, due to the ramp which is positioned exactly in between the architectural proposal and the adjacent building, leaving no pathway for pedestrians as indicated in Figure 2.11. It is important for pedestrians to be **able to enter** the site from the north, since the **Arcadia Arts and Cultural Corridor** is situated north of the site.

The platform over the railway and the public courtyard spaces are important to the building as **spill-out spaces**. The difference in the character and scale of these two spaces are also important, because it will inform the type and nature of spill-out activities. The **public courtyard** in front of the building is a comfortable space, **protected from the prevailing winds** throughout the year. Refer to Figure 2.10 for the indication of the prevailing winds. This public courtyard is currently **not sufficiently utilized**. Figure 2.12 shows how the public courtyard is currently utilized. It has the possibility to serve the building by accommodating activities.

Solution:

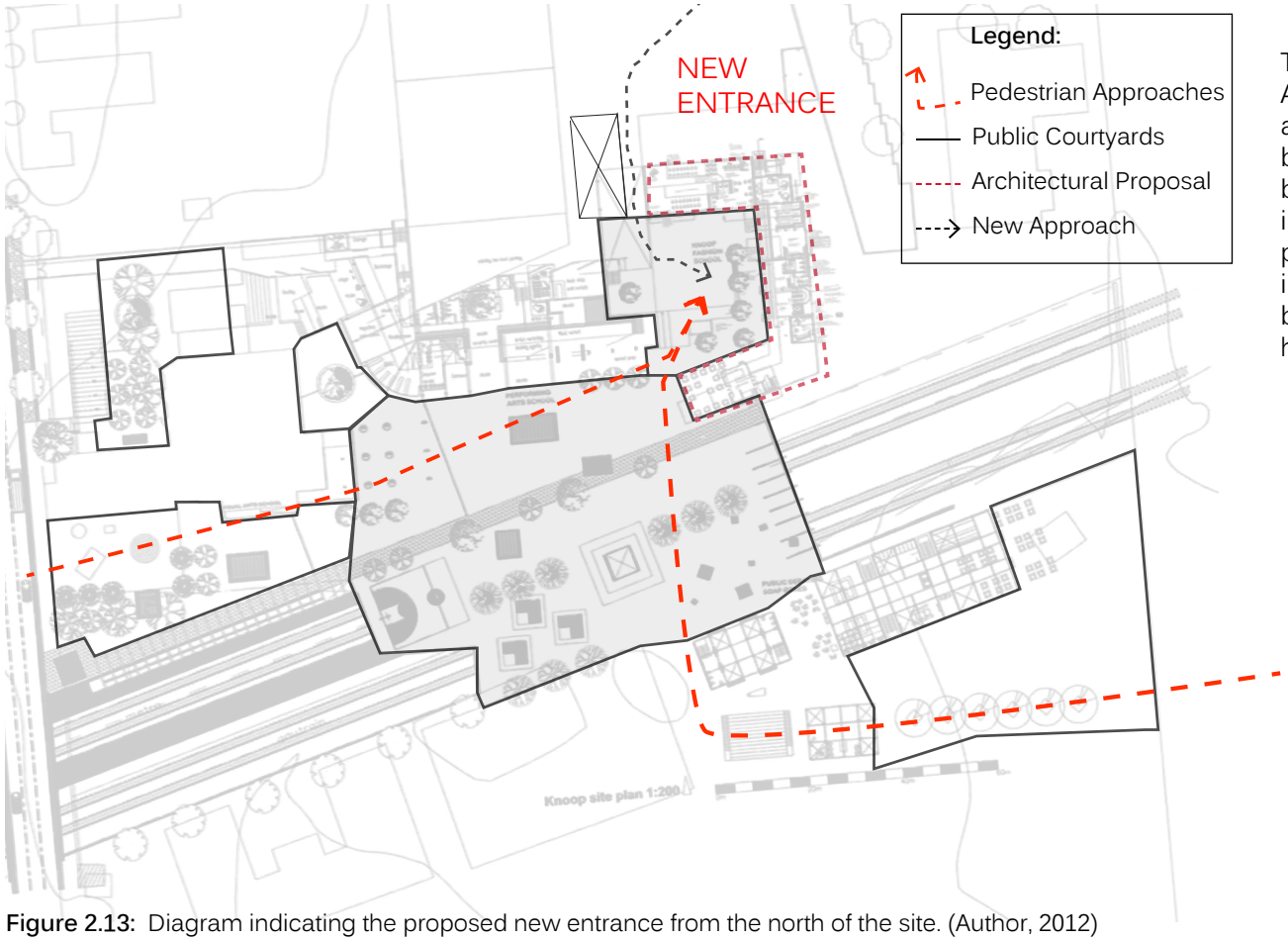


Figure 2.13: Diagram indicating the proposed new entrance from the north of the site. (Author, 2012)

SOLUTION TO THE INACCESSIBILITY FROM THE NORTH:

The problem of the public courtyard which is **inaccessible** from the Arcadia Arts and Cultural Corridor north of the site can be easily **solved** as indicated in **Figure 2.13.** The solution is to make the **ramp** to the basement parking **slightly longer**, so that the opening of the ramp can be situated **more towards the north**, in line with the edge of the building. This has the added benefit of the ramp not being adjacent to the public courtyard. The ramp is also over designed in its width. By making the ramp **slightly thinner**, a **pedestrian passage** can be allowed between the ramp and the building. These small adjustments do not have any major implications on the layout of the basement parking.

Solution:

SOLUTION TO THE UNDER-UTILIZATION OF THE PUBLIC COURTYARD:

The currently **under-utilized public courtyard** can be better utilized by providing the courtyard with a purpose. Considering the case study of the **Fashion Kapitol,** presented in Chapter 5, the public courtyard can be used for **outdoor fashion shows** and **informal weekend markets**. The proposal is that a temporary **outdoor fashion ramp** is extended from the fashion show space, out onto the public courtyard. The **floor level** of the courtyard is then **lowered** to allow for seating in the manner of an **amphitheatre**. The lowering of the floor level is crucial, to allow the ground floor to be level with the fashion ramp. The amphitheatre's seats can be utilized as **informal market space** on selected weekends. The amphitheatre can also be covered with an **adjustable canopy**. The amphitheatre will also be a space for students to meet and relax in-between classes.

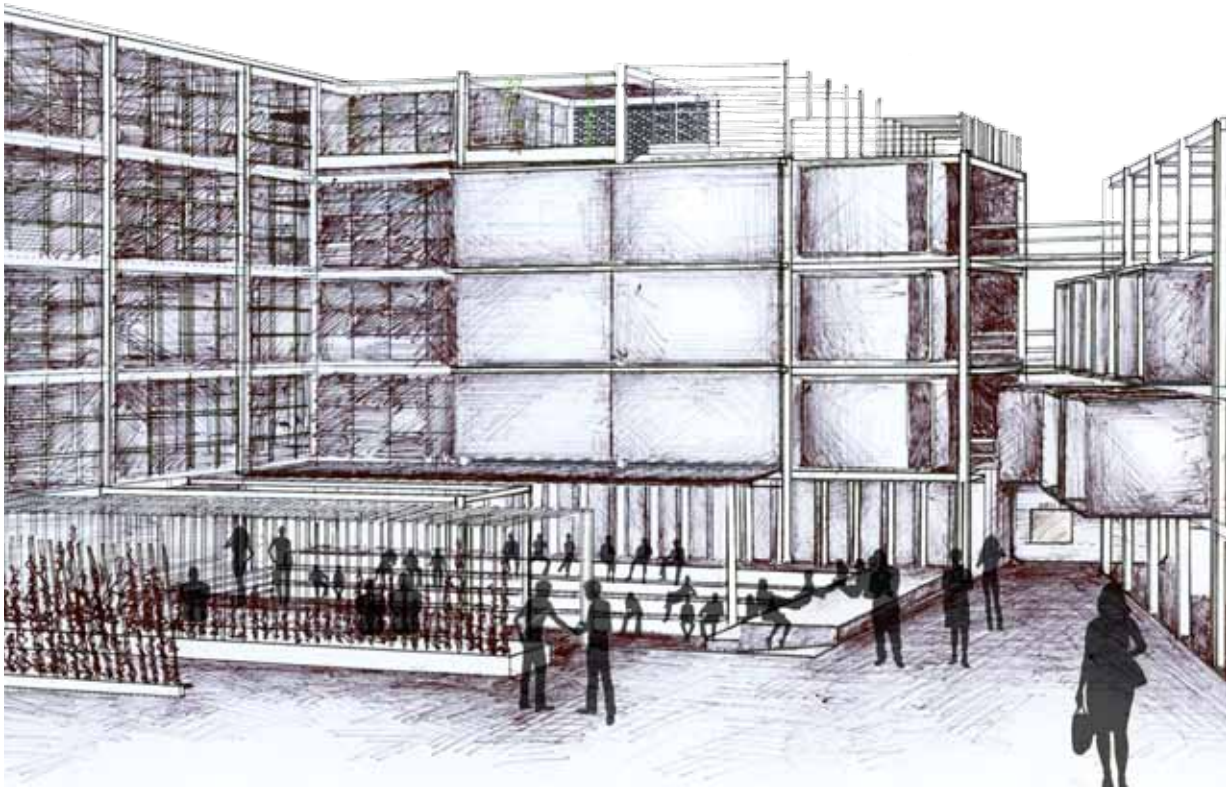


Figure 2.14: Perspective sketch showing the activation of the public courtyard. (Author, 2012)

Meso Analysis:

BUILDING ENTRANCE:

When approaching the building one is **uncertain** of where the **entrance** to the building is. The reasons why the current entrance is **unrecognisable** and **not well positioned** is because it is not situated in the vicinity of the **information pod** and far away from the **main vertical circulation** of the building, as indicated on the plan in **Figure 2.17**. The current entrance is **obscured by a row of trees** and separated from the courtyard by a **floor level differentiation** as indicated in **Figure 2.15**.

A more **appropriate position** for the entrance would be at the **information pod** and near the **main circulation** as indicated in **Figure 2.16**. The floor lever differentiation is **not a barrier** at this position as indicated in **Figure 2.16**. However, the tree at this location is still obscuring the entrance and will have to be **removed**.

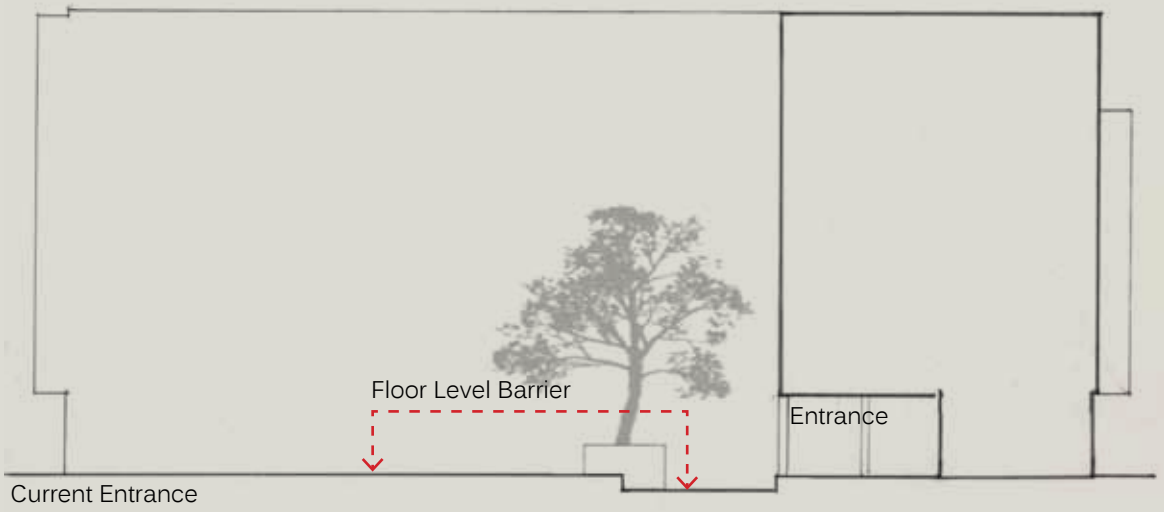


Figure 2.15: Diagrammatic section showing the position of the current entrance and the floor level differentiations. (Author, 2012)

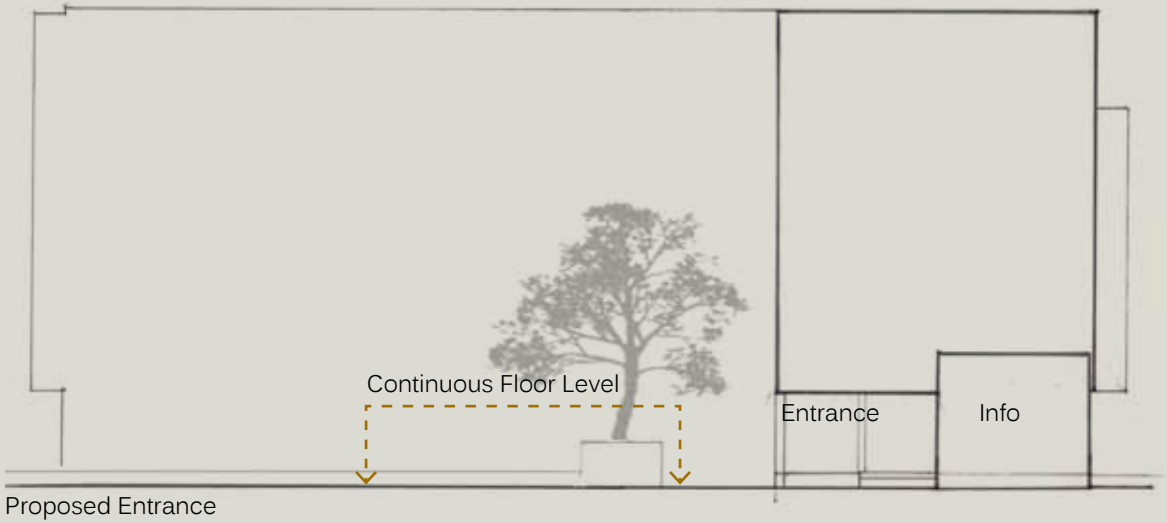


Figure 2.16: Diagrammatic section showing the position of the proposed entrance and the floor level differentiations. (Author, 2012)

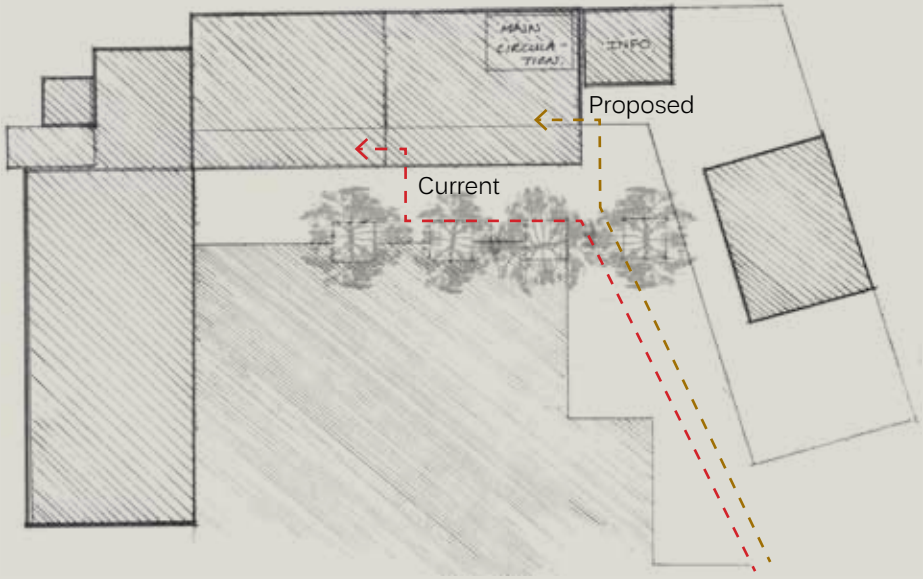


Figure 2.17: Diagrammatic plan showing the position of the current and proposed entrances, the information pod and the main circulation. (Author, 2012)

Solution to the Undefined Entrance:

Figure 2.18: The entrance as transition between outdoor and indoor. (Author, 2012)

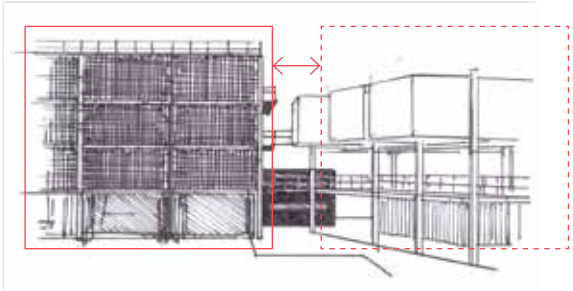


Figure 2.21: The entrance as a connection point between the stereotomic and tectonic. (Author, 2012)

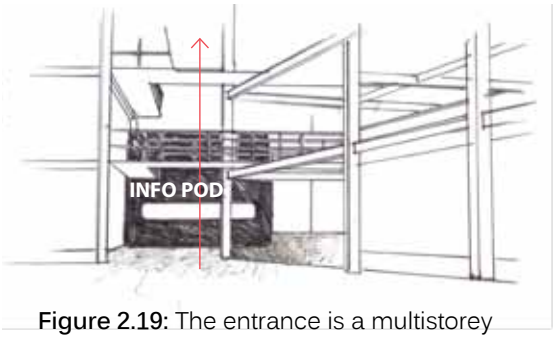


Figure 2.19: The entrance is a multistorey space. (Author, 2012)

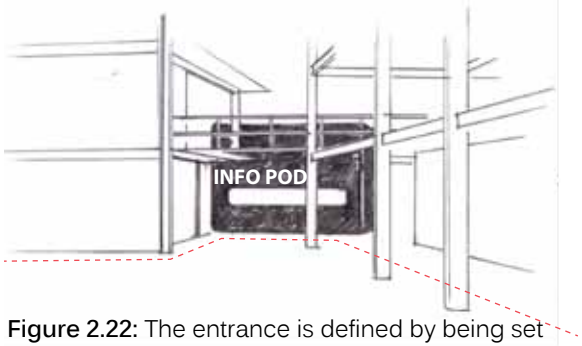


Figure 2.22: The entrance is defined by being set back into the building. (Author, 2012)

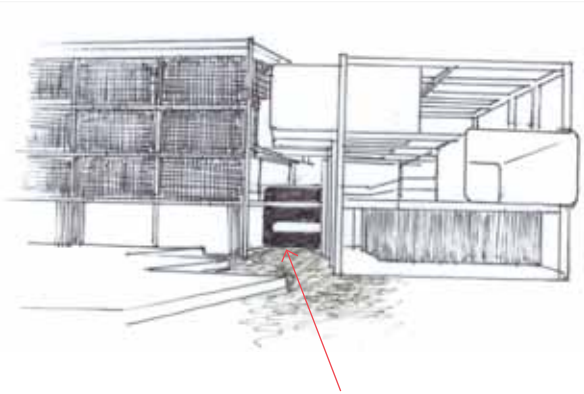


Figure 2.20: The entrance is situated along the main vista of the building. (Author, 2012)

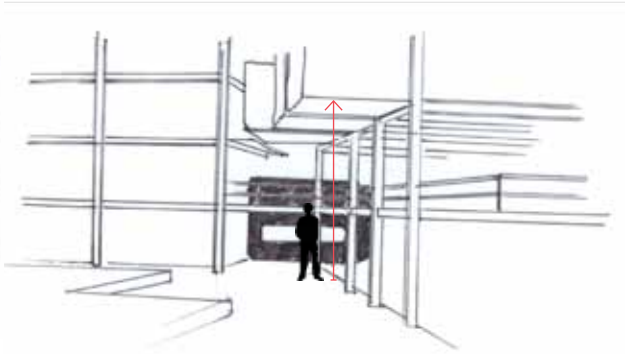


Figure 2.23: The route towards the entrance is defined by the overhang created by the suspended pods. (Author, 2012)

ENTERING THE BUILDING:

According to Krier (1988: 137) the **transition** from the urban public space into the building is defined by different gradations of **public and private** spaces. Krier (1988: 137) also states that the architectonic significance of an entrance is an **indication** of; and an **introduction** to the function of the building. Krier (1988: 137- 145 & 169) illustrates the various typologies which defines a well designed entrance and public courtyard space. The proposed new entrance to the architectural proposal, KNOOP, is motivated according to the principles illustrated by Krier. The principles are the following:

The entrance is a **transitional space**, providing a middle ground from **outdoor to indoor** and from **public to less public**. Figure 2.18 illustrates the entrance space as a transition from outdoor to indoor. The space is a **semi outdoor space** defined only by translucent screens and a series of walkways overhead.

The entrance space is the **connection point**, between the part of the building which reads as **steriotomic** and the part which reads as **tectonic**. This indicates the breaking down of the solidity of the building which also reads as a transition from exterior to interior. Refer to Figure 2.21.

The volume of the entrance space is **multistorey**, with only lightweight walkways to define the volume. This multivolume space is in direct **contrast** to the **adjacent single volume** space. Refer to Figure 2.19.

The entrance space is **defined** by the fact that the space is **set back** into the building. The indentation of an entrance provides a threshold space which introduces the building. Refer to Figure 2.22.

The entrance space is in line with the **main vista** defined by the façade of the building and the floor level change in the public square, as indicated in Figure 2.20.

The route towards the entrance is **defined** by the **overhead pods** suspended from the structural steel framework. These pods define a volume which **navigates** the pedestrians towards the entrance. Refer to Figure 2.23.

Environmental Analysis:

Winter Morning:

Winter Afternoon:

Figure 2.24: An indication of the undesired shade on the northern façade in winter. (Author, 2012)

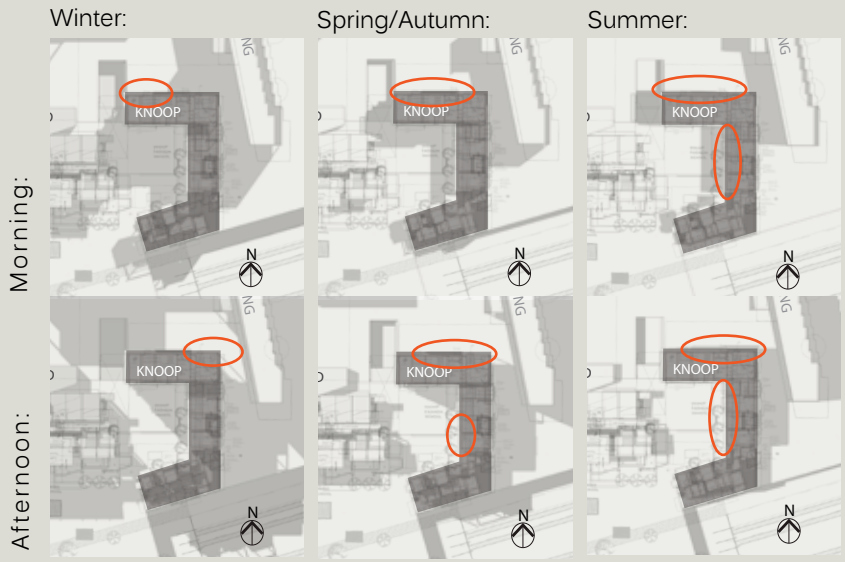


Figure 2.25: Images to indicate the radiation on the various façades throughout the year. (Author, 2012)

SOLAR IMPACT ON THE BUILDING:

The architectural proposal, KNOOP, is comfortably positioned between two existing buildings, (one proposed building and two existing buildings) with the railway creating the southern edge. This composition has desirable and undesirable **environmental impacts** on the building under investigation.

The large **eastern and western façades** which are exposed to the sun is **protected by steel mesh screens,** which acts as the **second skin** of the building. These mesh screens are not the most desirable solar protection. Firstly, the mesh screens will cast **undesirable shadow patterns** on work surfaces and exhibition spaces. Secondly, the mesh will **not function effectively** and will still allow solar radiation to penetrate the building in the morning and in the afternoon. Mesh screens are not sufficient due to the fact that it does not have the required vertical planes or a dense construction, but only steel wires with large openings in between. The proposed solutions for the eastern and western screens are presented in Chapter 7.

The **northern façades** are partially covered with a **steel mesh screen** and mostly without overhangs. This is not the most effective solution to protect a northern façade due to the fact that it will also **block out desired winter sun**. The mesh screen is also not able to **sufficiently protect** the interior from harsh summer sun and prevent overheating. A better solution would be to provide the northern façade with **overhangs and a horizontal louver** system. Figure 2.27 indicates the positions of the solar steel meshes and the lack of overhangs on the northern façade. It is also important to note that the adjacent buildings are **casting shadows** over the northern façade in the winter, as indicated in Figure 2.24. This will limit the amount of solar radiation acquired in order to reap the benefits of the fly-wheel effect.

Stegmann (2008: 111) suggests that **loose internal panels** can be configured to block the hazardous light and shadow patterns, yet it is **not a very effective** solution.

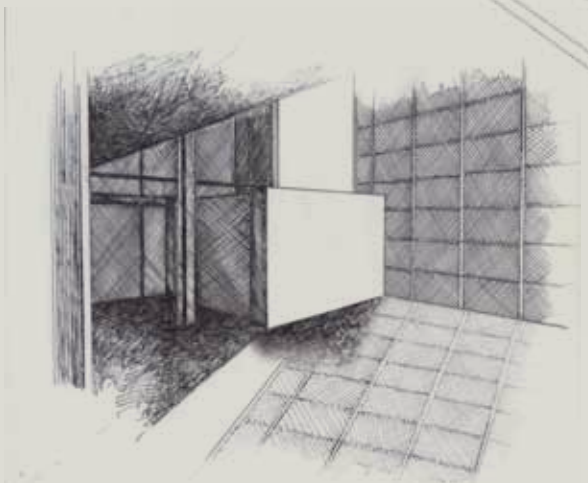


Figure 2.26: Perspective sketch showing the problematic light and shade patterns created by the solar mesh screens. (Author, 2012)

Figure 2.27: An indication of the inefficient provision for solar control on the various façades. (Author, 2012)

Solution:

SOLUTION TO THE PROBLEMATIC SOLAR SCREENS:

The **solution** to the problematic solar screens is to **replace the steel mesh screens** with more appropriate devices. The meshes on the northern façade can be replaced with an adjustable **horizontal louver system**. An **overhang** should be created at the top of the louver system, where the steel walkways do not create an overhang. The **façades of the pods can be set back** into the pods. This will allow the pods to have an **overhang** and it can function as a small balcony. The mesh screens on the eastern and western façades can be replaced with **textile screens**. These screens will be thoroughly investigated as an important design element and will be presented in Chapter 7 and 8.

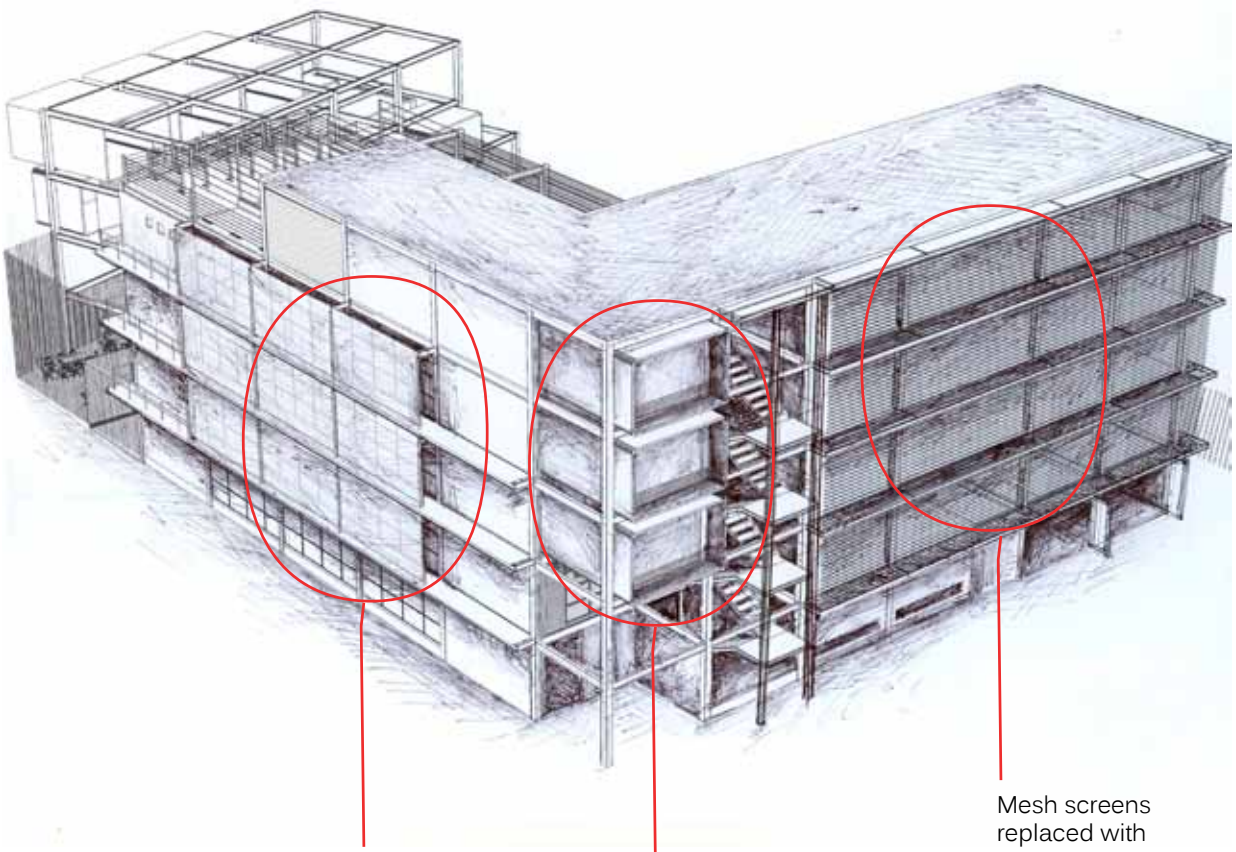


Figure 2.28: An indication of the correct provision for solar control on the various façades. (Author, 2012)

ANALYSIS OF THE TYPOLOGY:

The building is designed according to a **grid structure** with skin **infill components** which create spaces within this grid as indicated in **Figure 2.29.** This gives the building the ability to change and **reconfigure** spaces effortlessly. The grid infill can occur in any combination of **horizontal or vertical configurations** as indicated in Figure 2.30. The new intervention will benefit from this ability of the building to adapt and change. The interior intervention does not have to be strictly according to the original plan. This is made possible due to the fact that the **lightweight skins** can easily be shifted and **reconfigured** according to new programmatic requirements. The response to this ability of the building is presented in Chapter 6. The architectural intervention also allows for **future change** by specifying fixtures such as bolts and heavy duty Velcro.

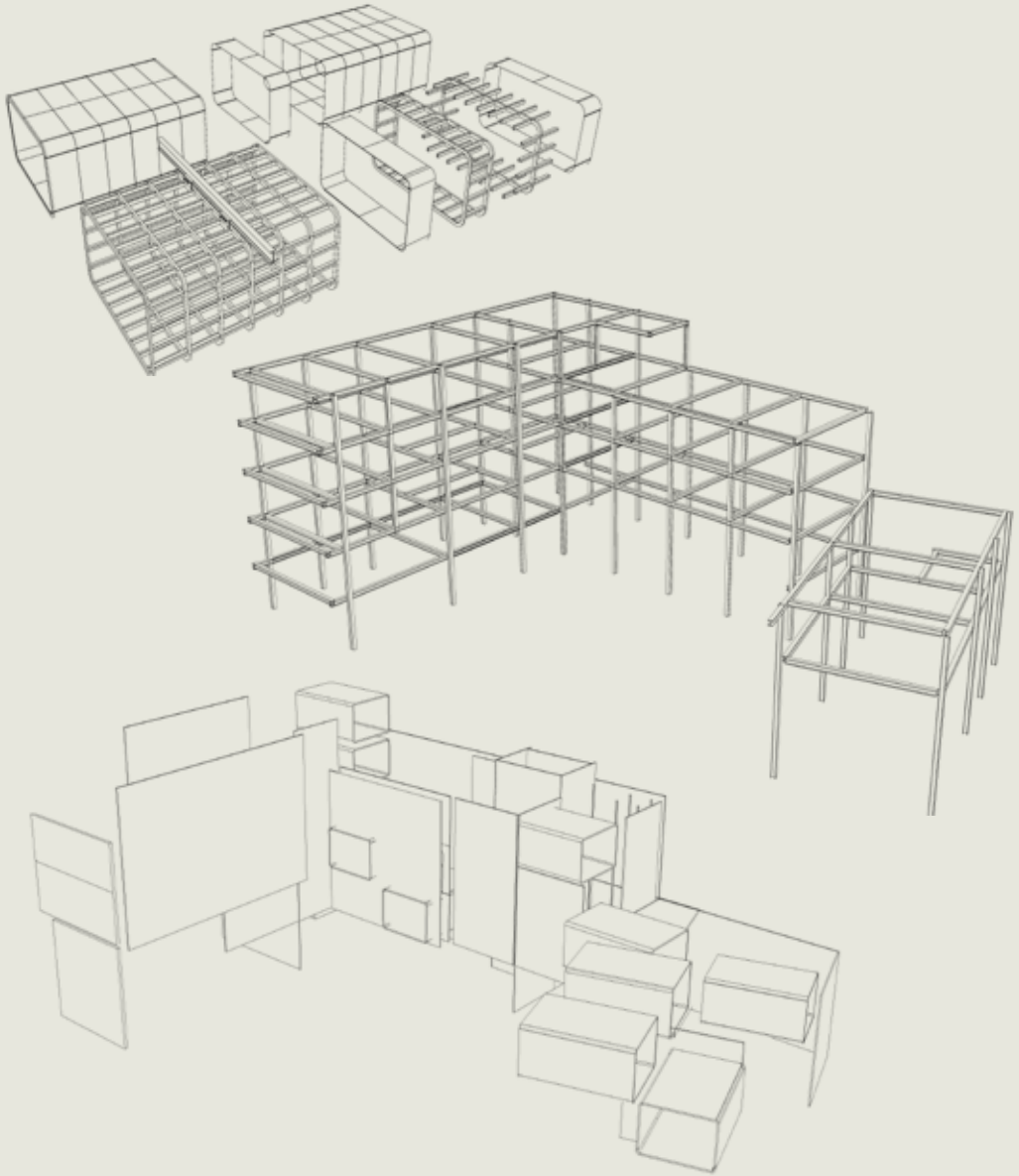


Figure 2.29: Diagrammatic models indicating the 'skin and bone' structure of the building (Author, 2012)

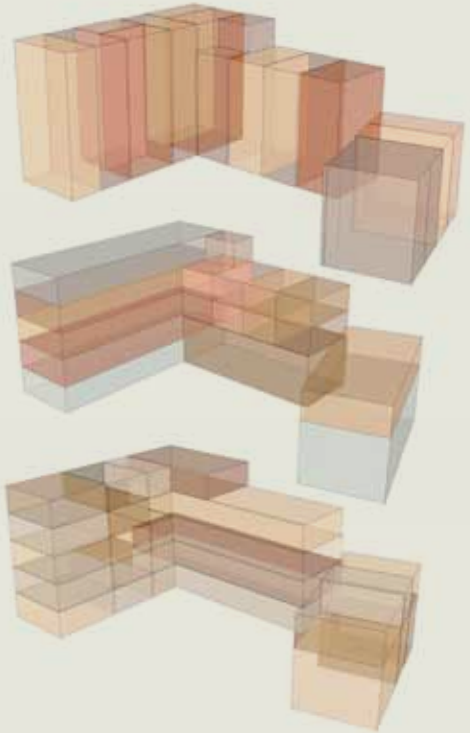


Figure 2.30: Diagrammatic models indicating the infill possibilities as a result of the structure. (Author, 2012)

Significance of the Architectural Proposal_ Interior Spaces:

Figure 2.31: Perspective sketch showing the walkways associated with fashion runways. (Author, 2012)

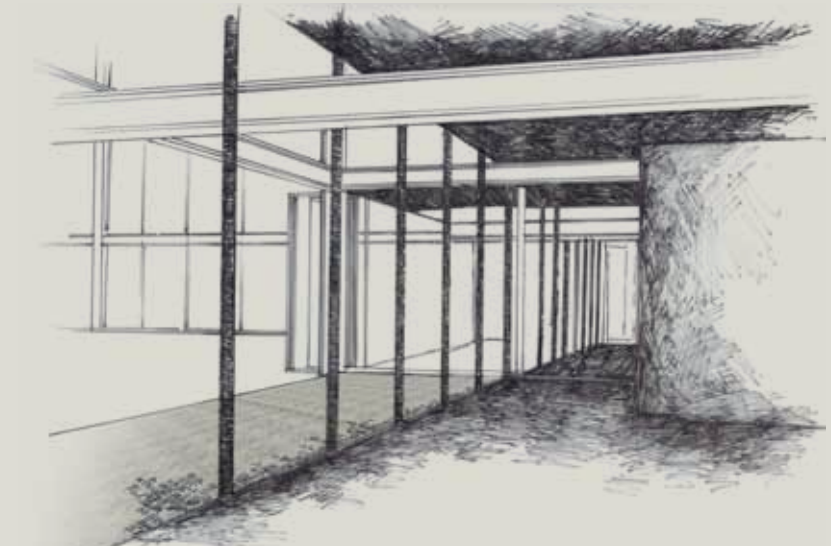


Figure 2.32: Perspective sketch showing the rhythm created by the support structures. (Author, 2012)

THE INTERIOR SPACES:

The specific nature and qualities of the **interior spaces** within the architectural proposal fuelled the decision of **selecting** this specific building. The interior spaces of the architectural proposal have many **desirable** aspects which will contribute to the success of the intervention. The interior spaces also have many aspects which need to be **improved**. These aspects provide opportunities to be solved through the use of **textiles** and thereby exploring the use of textiles in interior architecture. The nature of the interior spaces can be summarized as follows:

The nature of the **grid structure and infill panels** gives the building the ability to **shift spaces within the grid**, which reminds one of a sliding puzzle. This gives the building a clever, yet playful character which provides for **endless spacial configurations** and variations in volume.

The interior of the architectural proposal already consists of a well considered **variation of volumes**. It is also well designed according to **human scale** and **proportions**, which makes the building friendly and easily habitable.

The interior spaces are either **concealed or revealed** from the exterior by a series of solar screens which act as the second skin of the building.

The **industrial character** of the architectural proposal can be ascribed to the specific use of hard, cold, smooth and monotone materials, together with the exposed structure and tectonics.

The exposed structure creates a strong **horizontal and vertical rhythm** throughout the interior spaces as shown in Figure 2.33. This provides opportunities for the interior intervention to either contrast or respect the rhythm.

The building has a strong **connotation with fashion**. Throughout the building the walkways are designed with a connotation to **runway ramps**, as illustrated in Figure 2.31. (Stegmann, 2008: 62)

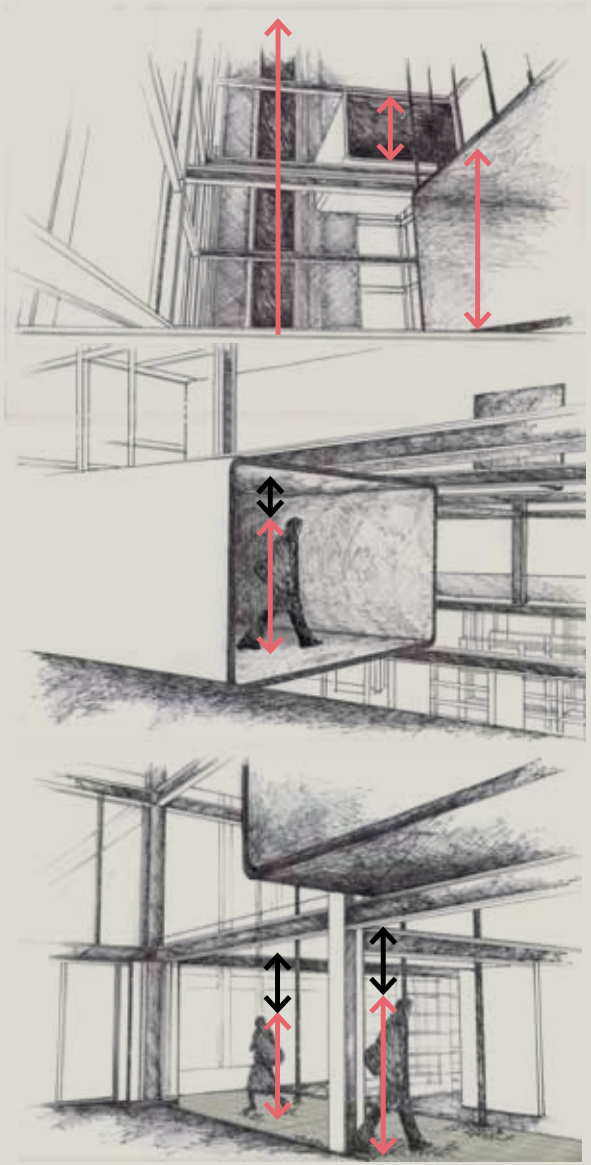


Figure 2.33: Perspective sketches showing the scale, proportion and volume. (Author, 2012)

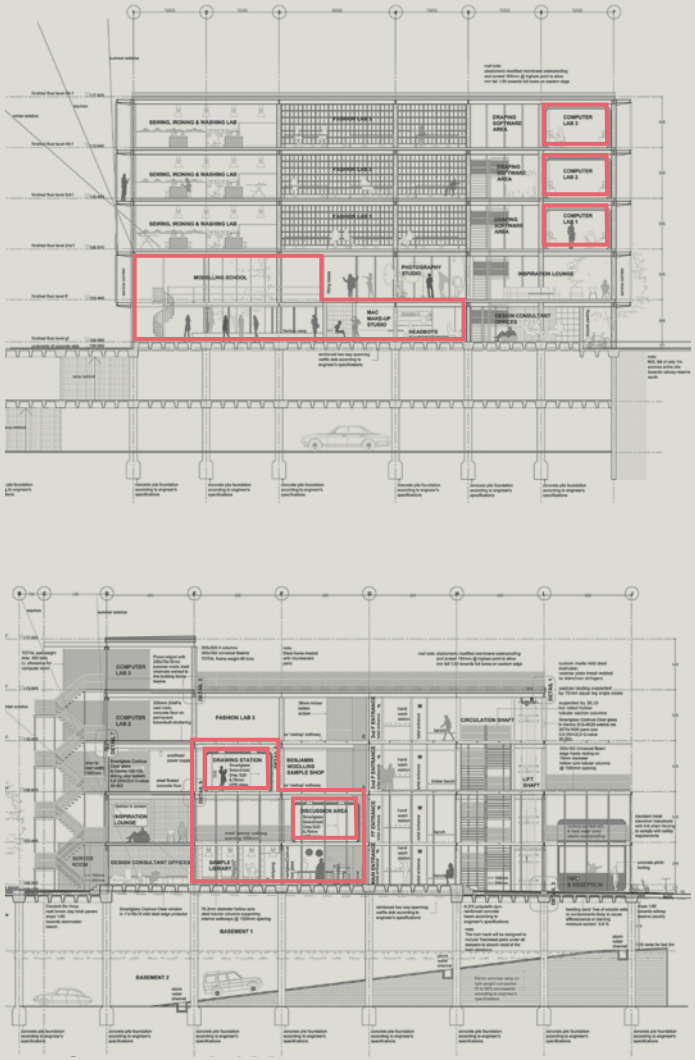


Figure 2.34: Sections showing the variations in volumes. (Stegmann, 2008) edited by (Author, 2012).

ANALYSIS OF THE USE OF SCALE, VOLUME AND PROPORTION:

Although KNOOP is relatively a large building, it is apparent that the building is designed according to well considered **human proportions**. A **variety of volumes** are implemented within in the spaces, which allows for a **diverse spatial experience**. Spaces range from arge double and triple volume spaces, to intimate low volumes contained by the pods. The sections in Figure 2.34 start to show this variation in volumes within the existing building

This good consideration for scale, proportion and volume should be respected by the new intervention. The new intervention should **contribute to variation** by responding to the unique spatial requirements of each space while simultaneously responding to the ergonomic requirements of its users. These responses are presented in Chapter 6 and 7.

Figure 2.35: Representative plan indicating services and systems in the building. Plan not to scale. (Stegmann, 2008) edited by (Author, 2012)

ANALYSIS OF THE SERVICES AND SYSTEMS.

The representative plan in Figure 2.35 shows an analysis of all the various **services and systems** repeating within the architectural proposal. The **plumbing** services are well positioned **between the primary and secondary skins** of the building and are easily accessible by means of the steel walkways. This position of the services contributes to the **concealing and revealing nature** of the building, as indicated in Figure 2.36. At some places the services are concealed by the exterior solar mesh screens and at other places the services are revealed.

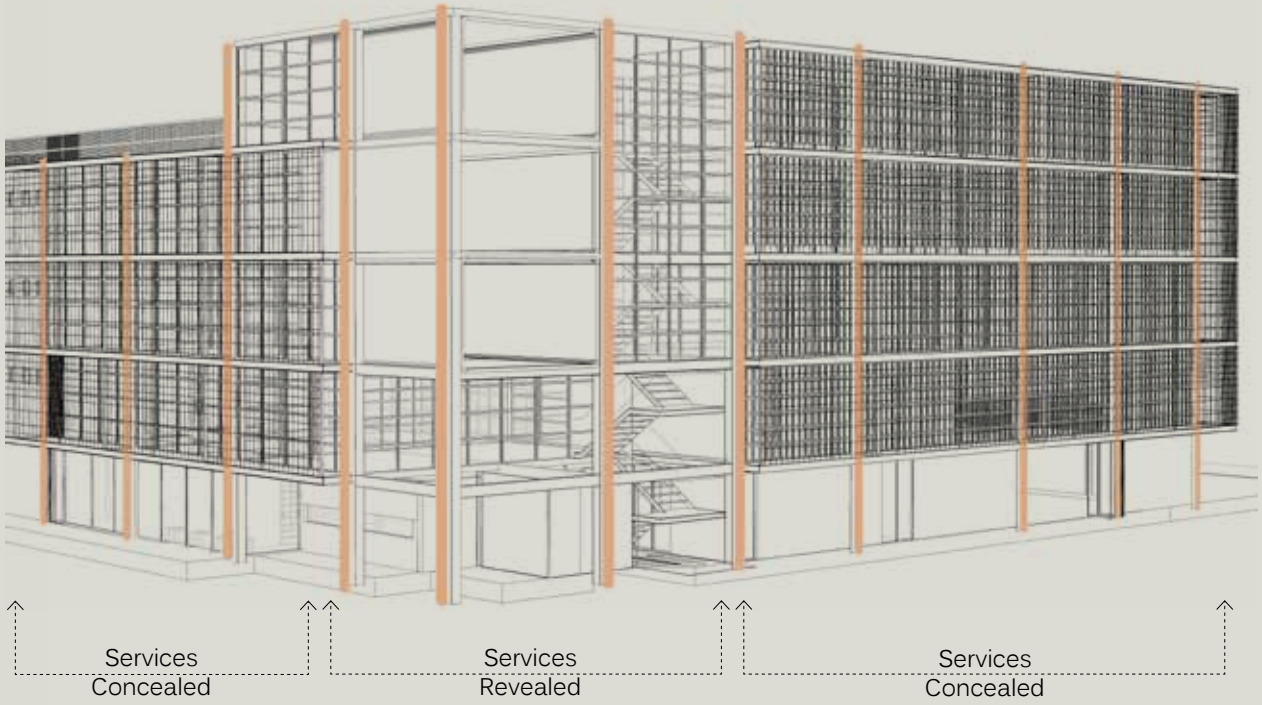


Figure 2.36: The concealing and revealing character of the services. (Author, 2012)

Building Analysis:

ANALYSIS OF NATURAL LIGHT ENTERING THE SPACES:

Sufficient **natural light** enters the interior spaces. There is a **variety in the type** of natural light that enters the interior spaces. In the winter, **direct light** enters from the **north**, which heats the building through the **fly-wheel effect**. During the summer direct sunlight will still enter the building due to the lack of overhangs. **Soft light** enters through the **southern glazing**. Light, **diffused** by the solar screens, streams into the building through the **eastern and western fenestration**.

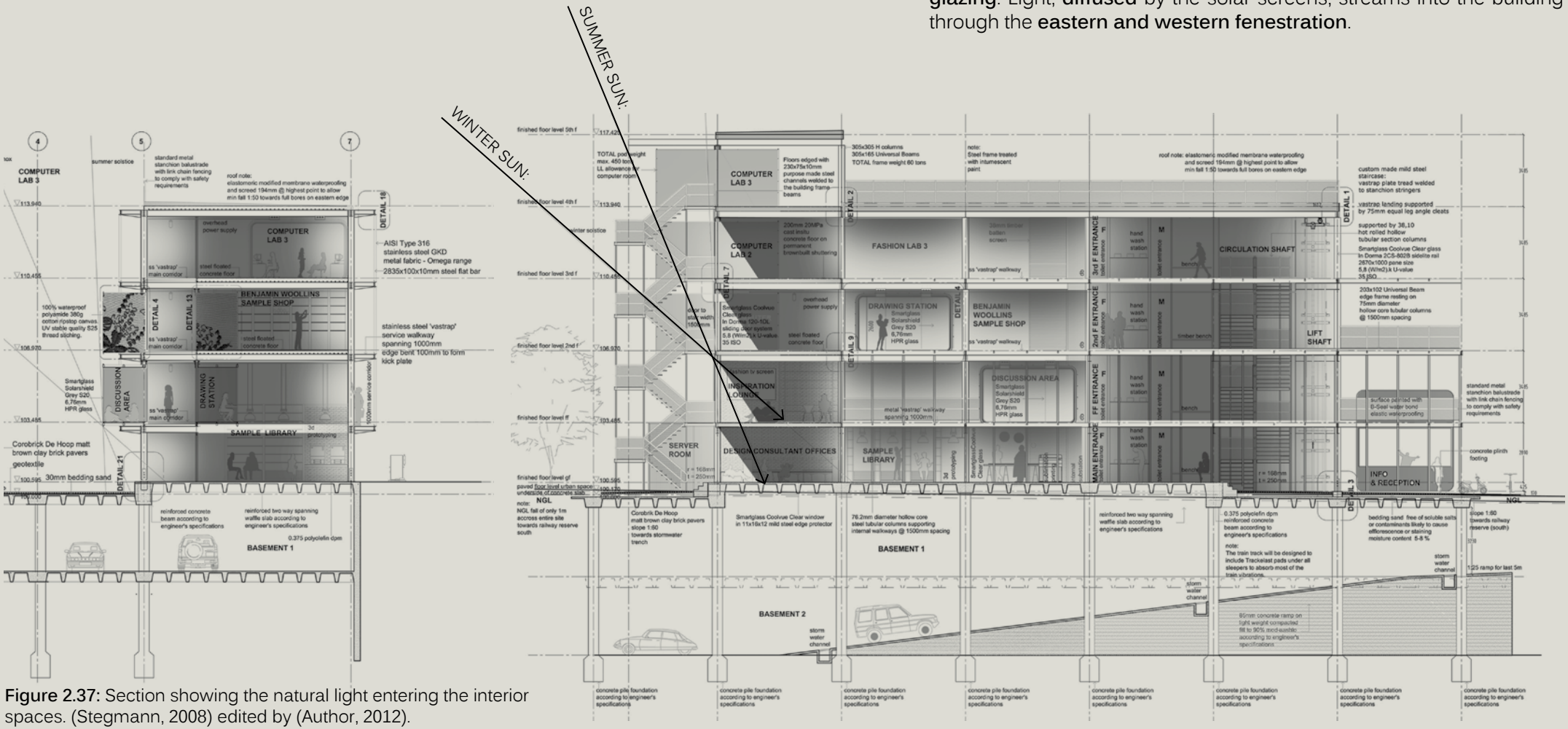


Figure 2.37: Section showing the natural light entering the interior spaces. (Stegmann, 2008) edited by (Author, 2012).

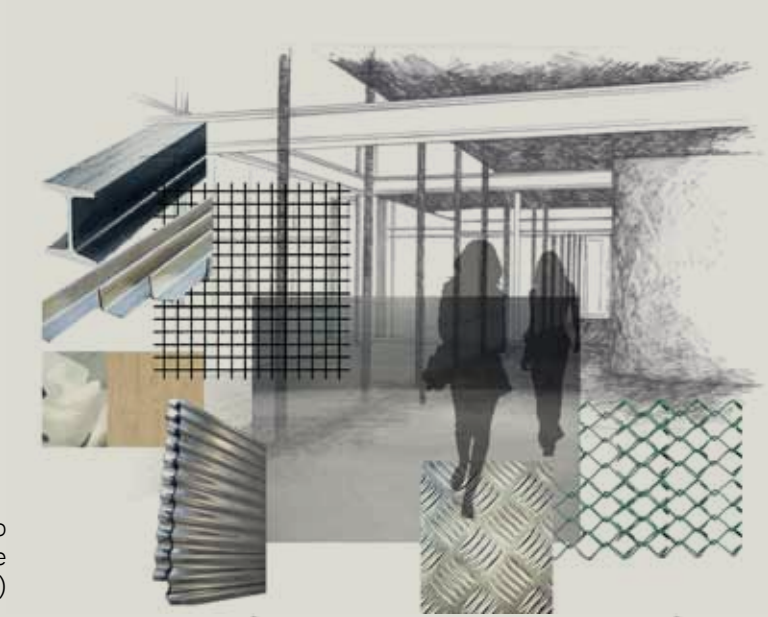


Figure 2.38: Perspective collage to convey the general spatial quality of the architectural proposal. (Author, 2012)

ANALYSIS OF THE USE OF MATERIALS AND TEXTURE:

Predominantly, the **materials** used in KNOOP are **hard, cold, smooth and monotone** materials such as the structural steel beams, concrete, glass, steel mesh, steel "vastrap" corrugated partitions and occasionally wood. All these hard surfaces contribute to an interior **lacking** in **tactile** quality, **psychological warmth**, **colour** and **acoustic absorption**.

Although specific sound **insulating glass** has been used to isolate certain spaces from noise being generated by sewing machines (Stegmann, 2008: 117), no material has been specified to **absorb the sound** generated within the work spaces. The **acoustic problem** is further **amplified** by the steel "vastrap" walkways, which makes a large amount of noise when tread upon. Refer to Figure 2.39 for the positions of the steel "vastrap" walkways.

This acoustic problem provides significant opportunity for the use of **textiles as an acoustic absorptive material**. The new intervention should therefore explore the possibility of utilizing the significant sound **absorption properties of textiles** within spaces to absorb unwanted sound and noise.

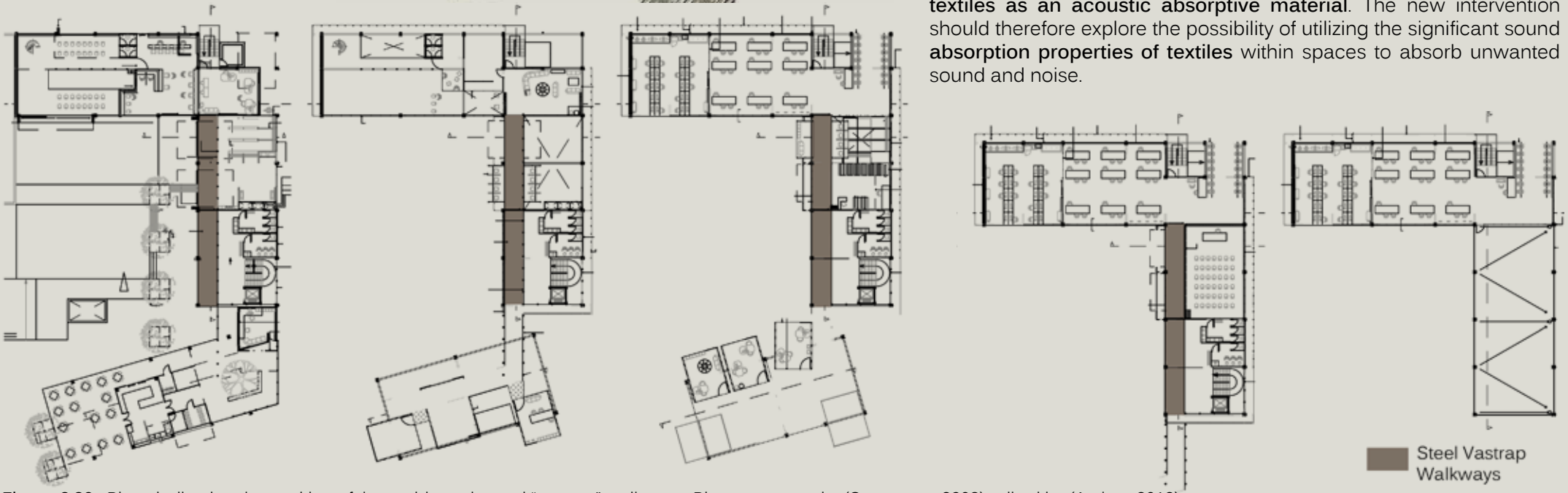


Figure 2.39: Plans indicating the position of the problematic steel "vastrap" walkways. Plans not to scale. (Stegmann, 2008) edited by (Author, 2012)

Solution:

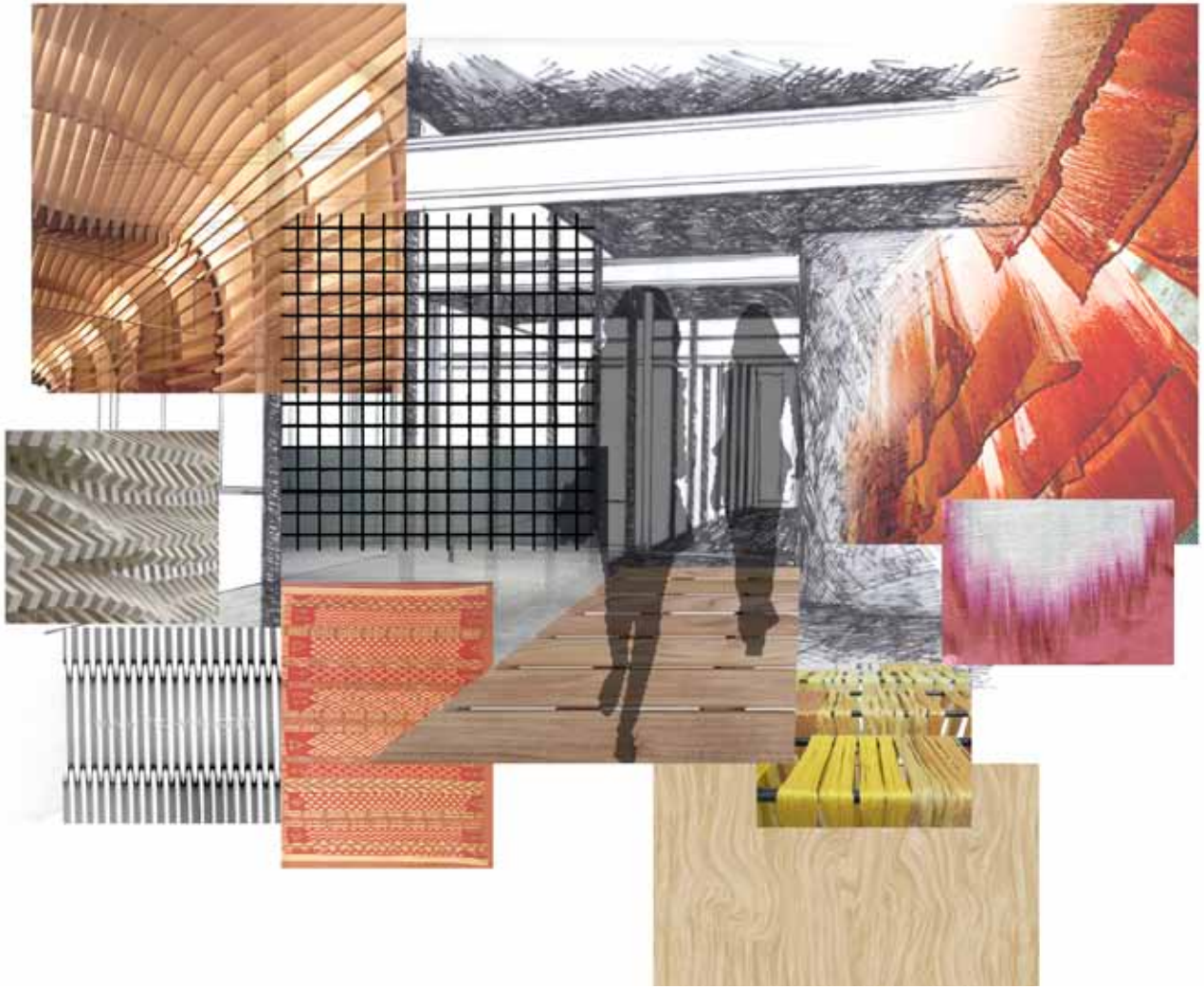


Figure 2.40: Perspective collage to convey the general spatial quality as a result of the interior application and utilisation of textiles. (Author, 2012)

SOLUTION TO THE PROBLEMATIC MATERIAL SELECTION:

The **material selection is problematic** and results in an interior environment which is hard, cold, texture-less and monotone. The material selection also does not provide **acoustic absorption**. These problems will be solved through the use of **textiles** in the interior architecture. The colour, texture and pattern of textiles will create a much more **comfortable and desirable interior environment**. Textiles are also a very good solution for **acoustic absorption**. The application of textiles used for acoustic absorption will thoroughly be investigated as an important design element and will be presented in Chapter 7.

Building Analysis:

Figure 2.41: Plans indicating the position of the pods rich in colour and texture. Plans not to scale. (Stegmann, 2008) edited by (Author, 2012)

ANALYSIS OF THE USE OF COLOUR:

The **suspended pods** within the building are the only elements which are provided with **colour and pattern**. The pods consist of a structural skeleton, clad with interior and exterior skins. Internally, the pods are clad with steam bent plywood. The exterior skins are made from waterproof 80% polyamide cotton ripstop **canvas** (Stegmann, 2008: 104). This canvas can be **printed** on in order to **change the appearance** of the pods on a regular basis (Stegmann, 2008: 98).

The copious amounts of **steel and concrete** used in the construction of the building results in a **subtle grey background**. The colourful pods bring **accents of colour**, which portray the identity of the building (Refer to Figure 2.41 and 2.42.). The ability of the canvas to change colour and pattern enables the pods to become the **branding elements** of the building.

The pods act as functional **billboards** to the pedestrians in the public squares surrounding the building. This ability of the pods should be embraced by the new intervention as a method to convey the branding and identity of the building. The response to this statement is presented in Chapter 7.

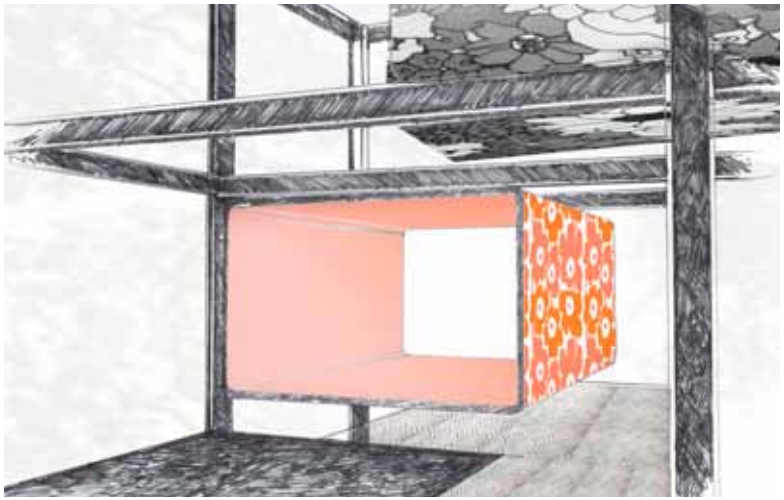


Figure 2.42: Perspective sketch showing the pods rich in colour and texture. (Author, 2012)

Analysis of Schedule of Accommodation:

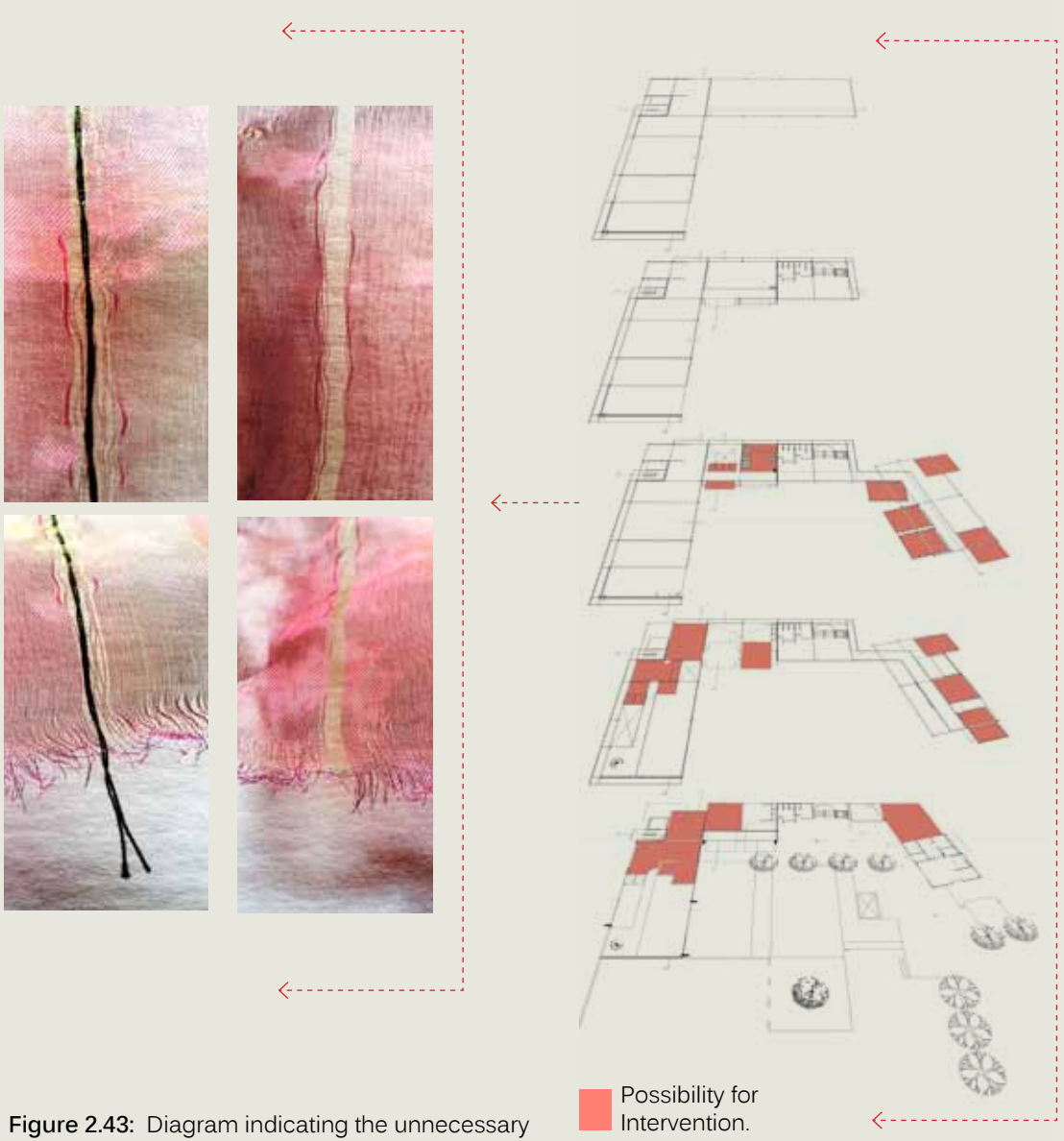


Figure 2.43: Diagram indicating the unnecessary spaces which provide the possibility for intervention and the comparison to a textile. (Author, 2012)

CRITIQUE ON THE NECESSITY OF SPACES:

After three interviews about the **spatial requirements** of the building had been conducted with students and lectures at the current Clothing and Consumer Science department, the **schedule of accommodation** was analysed and critically evaluated. According to De Villiers, Meyer and Retief (2012) the following spaces provided for in the architectural proposal are **vital** for the department to function:

- 3 Fashion Labs
- 3 Sewing Labs
- Drawing Stations
- 3 Computer Labs
- 1 Small Lecture Room
- Runway / Fashion Show Space
- Textile Sampling Library
- Workshop with sublimation printers and 3D prototyping
- Coffee Shop and Pause Area

The following spaces, in the architectural proposal, **are not necessary** for the department to function (De Villiers, Meyer & Retief, 2012). Just as a **yarn** in a **piece of fabric** can be **pulled out and replaced** by another, these spaces can be **taken out and replaced** by the new intervention.

- MAC Make-Up Shop
- Hair Dressers
- Photography Studio
- Discussion Areas
- Offices for Sponsors and Collaborators
- Open Air Crafts Area
- Modelling School

The following spaces, **not included** in the architectural proposal, are **vital** for the functioning of the department and should also be incorporated into the building (De Villiers, Meyer & Retief, 2012):

- 1 Small Lecture Room.
- 1 Large Lecture Room
- 1 Textile Lab
- 1 Staff Meeting Space
- 8 Staff Offices

Analysis of Public and Private Spaces:

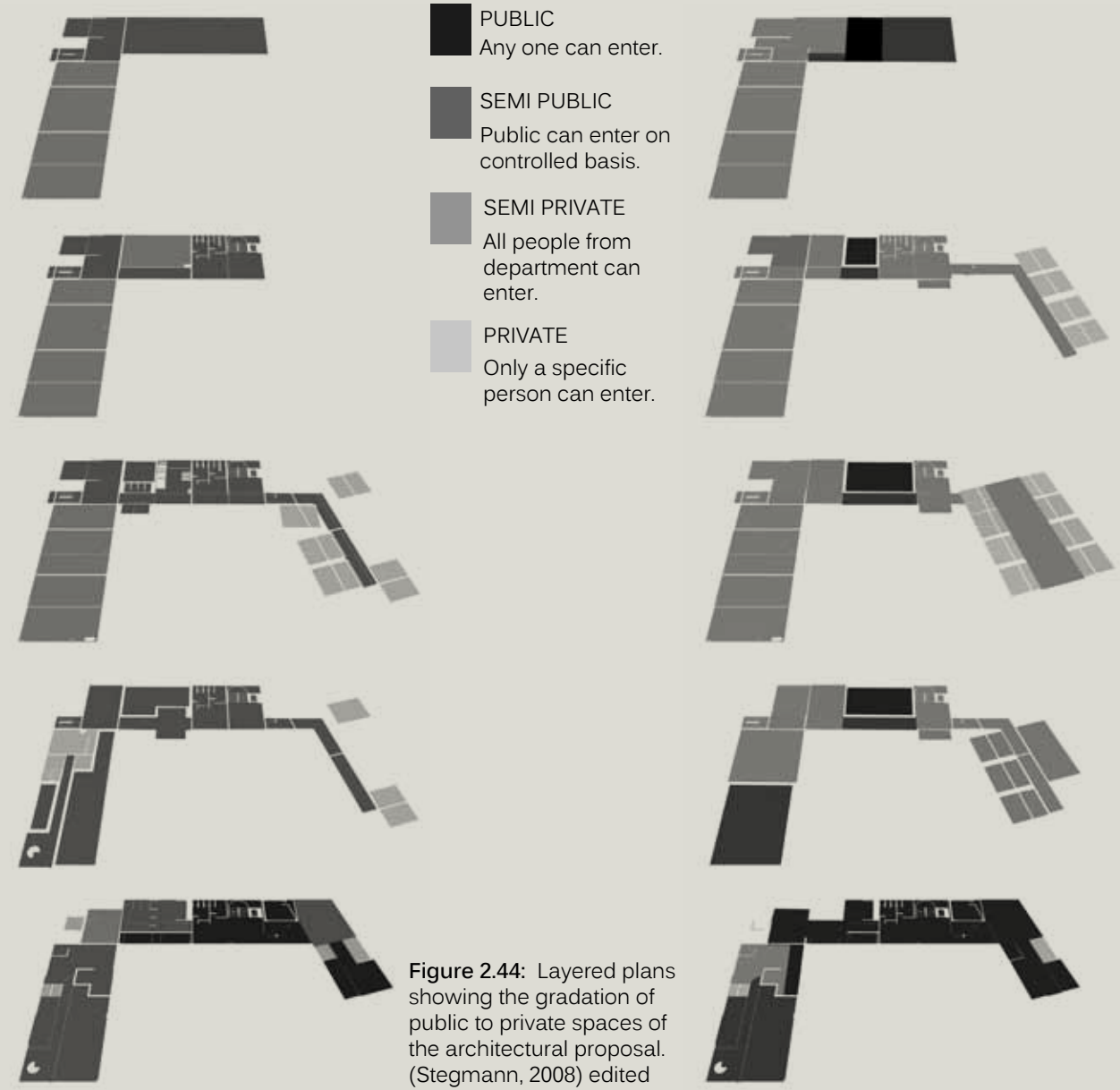


Figure 2.44: Layered plans showing the gradation of public to private spaces of the architectural proposal. (Stegmann, 2008) edited by (Author, 2012)

Figure 2.45: Layered plans showing the amended gradation of public to private spaces. (Stegmann, 2008) edited by (Author, 2012)

PUBLIC AND PRIVATE SPACE DISTRIBUTION:

The allocation of **public and private spaces** in the architectural proposal is not well considered. There is no **privacy gradient** from public to semi-public space as one **enters** the building. Neither is there a **sufficient privacy gradient** from semi-public to private space as one move **vertically** within the building. Figure 2.44 shows the poor privacy gradient from public to private spaces.

Figure 2.45 shows how the public and private spaces could be configured. The **ground floor** should function as the **public interface** of the building, varying between spaces which are **completely accessible** to the public and spaces which are accessible to the public **under controlled circumstances**. The upper floors should **not be accessible** to the public, except in the multivolume exhibition space. The upper storeys are for the **private** use of the department and the textile making guild. These spaces vary between spaces accessible to anyone from the department or textile making guild, to spaces only accessible to specific persons. An explanation on how this privacy gradient is achieved will be presented in Chapter 6.

Conclusion:

Through the explanation of the **site selection** and the introduction of the **framework** in which the site falls, the importance of the project to convey **local identity**, through locally produced textiles, is established.

Through the **explanation** of the **architectural proposal**, the intention of **collaboration** occurring within the building is clear. However, **no indication** is made of how the design of the **interior contributes** to the idea of collaboration. It is also important to note that **no specific spaces** in the building have been **dedicated to textile design**. The concept of drawing **parallels between fashion and architecture** provides a suitable backdrop for the notion of **translating textiles into interior architecture** and is applicable to the formation of a holistic building identity.

Through the **analysis** of the architectural proposal and the identification of the issues that need to be **ameliorated** and those that need to be **embraced**, a **response** to the problematic aspects was proposed. This response will inform the design of the interior intervention and will be presented in Chapter 6, 7 and 8. The findings in this chapter act as **design informants** on how and where the new interior intervention should realize.

PROGRAMME AND USERS:

Since the architectural proposal has been explained and thoroughly analysed in the previous chapters, the **interior intervention** can now be explained. This chapter elaborates on the **programme and users** of the proposed intervention. The chapter starts with **introducing** the **programme and users** through explaining the **background** of each. **African textile making** is then described in detail, the three types of **textile making processes** are described and **functional requirements** of the textile making workshops are described. The **four user groups** are introduced and the **spatial requirements** of each group are stated. The chapter ends with the **contribution** of the product to the **South African context** and African **identity**.

Background:

INTRODUCTION TO THE PROGRAMME AND USERS:

Figure 3.1: Craft done in collaboration with professional fashion designers. (SA Fashion Week, 2010)

Figure 3.2: Craft done in isolation from professional designers. (KUNYE, 2006)

The **Pretoria Weavers Guild** is in desperate **need of a building** where the guild can **transfer its legacy** to **forthcoming generations**. This need derived from the realisation that most of the members within this guild are elderly and realise that if they do not transfer their skills, knowledge and passion, it will be lost. To transfer their legacy, the guild is in need of **workshops, exhibition space, retail space and meeting space**. Space is also required to **store and display** valuable book collections and textile making equipment. These items need to be documented or transferred to electronic format. The book collection can be stored and displayed in the proposed library. The equipment can be used in the workshops and simultaneously be exhibited as the textile making process is exhibited.

According to Petra van Rensburg (2012), a member of the Pretoria Weavers Guild and Textile Design lecturer at TUT, the Pretoria Weavers guild desire to **transfer their knowledge and skills** to people in **underprivileged communities** within Tshwane. Hereby the **legacy can continue** and the community can be **empowered**.

An example of a project where community **craft workers** have been approached to **collaborate** with **professionals** is the **Fashion Fusion project** initiated by S.A. Fashion Week in 2006. Craft workers were asked to make textiles and fashion related accessories for professional fashion designers. The **success** of the project was remarkable: Not only were 900 craft workers empowered, but also, 40 professional designers were able to present fashion ranges with a proudly South African identity (S.A. Fashion Week, 2006). This project was so successful, that it was repeated in 2011 (KZN Fashion Council, 2010). Figure 3.1 and 3.2 shows an example of handwork done in **collaboration** with professional fashion designers for S.A. fashion Week in 2011, opposed to craft work done in **isolation**. This comparison shows that collaboration between craft workers from the community and professional fashion designers is desirable in order to produce a commodity which is more **valuable and aesthetically pleasing**.

A similar project, where **a fashion designer collaborated with community craft workers,** is the Afghan Spring/ Summer 2011 Range by Anke Loh. Anke Loh is a fashion designer who, together with the *Afghanister Frauenverein* (Osnabrück, Germany), created a clothing range made from **hand embroidered textiles** by women from Afghanistan and Pakistan (Loh, 2012). The embroiders work in an incubator training center (named Honar) in Peschawar, Pakistan. Since 1997, refugees have come to the center for apprenticeship (Loh, 2012). The hand embroidered fabric is dyed and constructed into garments by Anke Loh (Loh, 2012). This initiative, shown in Figure 3.3 is a another good example of the success reached through a **collaborative project**.

Considering the success of the Fashion Fusion Project and the fashion range by Anke Loh, the textile making guild should **follow a similar approach**. The product delivered through the **collaboration between the Pretoria Weavers Guild and the community textile makers** can have more value if **collaboration with the fashion design students** is introduced. The input of the fashion design students to the textile making process will result in a collaborative programme consisting of **three layers**: The Pretoria Weavers Guild, the textile makers from the community and the fashion design students.

Students often leave tertiary institutions with sound technical skills and academic knowledge, but **without experience of collaborating** with people from the **community** or **fellow professionals** (Gronski & Kenneth 2000: 784-785). The collaboration suggested will solve this problem, considering that **inter-professional education** as well as **community collaboration** will occur. It is best done not through theoretical study material, but through direct, relevant **interaction** (Gronski & Kenneth 2000: 784-785).

The underlying concept for this collaborative approach is that the skills and knowledge are not only transferred **top down**, from the Pretoria Weavers Guild to the textile makers, but **also bottom up**. Handmade textiles are a great example of a product where the technologies and knowledge of the South African **first world** (represented by the Pretoria Weavers Guild and the fashion design students) can **amalgamate** with the **traditional indigenous knowledge and skills** of the South African **third world** (represented by the community textile makers). This mutualistic approach is an approach which stimulates a process of **sharing knowledge, inspiration and skills**. It is a give-and-take or teach-and-learn practice. The **abilities of the underdeveloped**, to enrich international standards and promote local SA identity, should **not be underestimated** (Jekot, 2007: 66- 68).

An excellent **example** of woven products, produced by the underprivileged community in **collaboration** with designers, is the woven T-shirt range by Mielie. The products in this range are both fashion and interior related. The collection of photographs in Figure 3.4 shows the vibrant products, which conveys an African flavour very well.

Figure 3.3: Collection of photographs showing Afghanistan embroided textiles for Anke Loh, who uses the fabric to make fashionable garments. (Loh, 2010)

Figure 3.4: Collection of photographs showing the woven T-shirt products produced by Mielie. (Mielie, 2012)

The Programme: African Textile Making:

TRADITIONAL AFRICAN TEXTILE MAKING:

The proposed **programme** for the interior intervention within the architectural proposal is a **textile making guild, which interprets, expresses and celebrates traditional African textile making**. The vision for the textiles produced at WARP + WEFT is not that of a mere imitation executed through the traditional craft methods, but an **interpretation** of the traditional materials used, process used, character of the textiles, colour etc. The aim is to establish that which makes African textiles **unique** and worth expressing in contemporary textiles.

The traditional African process of textile making consists of the following processes (These possesses are portrayed in Figure 3.15 to 3.25.):

Spinning fibers into yarns.
Weaving of the yarns into a textile.
Dyeing of textiles or yarns.
Drawing, **printing** or stencilling on textiles.
Embellishment with appliqué, beads, yarns, metal disks etc.
(Picton & Mack, 1989: 18)

The purpose of this textile making guild is solely to explore the traditional African textile making processes and therefore the process will be **restricted to the authentic African process**. For the purpose of this textile making guild, the focus is on **textile** making and therefore, no other fabric making processes (such as knitting or lace making) will be accommodated in this guild. This is due to the fact that traditional African textiles are s**olely woven fabrics**. The guild will allow spinning, weaving, dyeing, printing and embellishing processes, due to the fact that these processes are significant to the identity of **African textiles**.

The **dyeing and printing** processes included are traditional **African processes**, such as dying the yarns, resist dyeing methods such as batik and tie- dyeing, painting with starch before dyeing as well as embroiding before dyeing (Picton & Mack, 1989: 160- 179). Prints are done with handmade stencils, handmade stamps, drawing and painting (Picton & Mack, 1989: 160- 179). Contemporary processes such as stock dyeing (when natural fibers are dyed before spinning), silk-screen printing, roller printing, heat transfer printing, airbrush printing and etch or burn-out printing are not included (Nielson & Tylor, 2011: 342).

The **embellishing** processes are also true to the traditional **African practice** and includes appliqué, bead work, embroiding, cut-pile embroiding and embellishing with found objects such as metal disks (Picton & Mack, 2011: 169 - 201).

Much of the textiles produced in Africa are still products of pre-colonial, **traditional processes**, which still have social and cultural significance. Figures 3.5 to 3.14 depict the character and identity of typical African textiles. The character and identity portrayed through these images are that which, when **interpreted into contemporary textiles**, will lend the contemporary textiles its **African identity**.

The **character and identity** of traditional African textiles are ascribed to three variables in the textile making process: The colour and nature of the fibers or **yarns** used in the process, the relationship between the **warp and weft yarns,** which are effected on the loom and the **finishing** or embellishment of a textile after manufacture (Picton & Mack, 1989: 19).

The fibers used for African textiles are **bast, cotton, raphia, silk and wool.** Cotton, silk and wool are spun before it can be woven (Picton & Mack, 1989: 23). Natural dyes used are **indigo** (the most popular), **red, black, brown, white, orange, purple, yellow and green**. These dyes are obtained from various plants and minerals (Picton & Mack, 1989: 38-39).

The importance of textiles in Africa is ascribed to the fact that textiles are not only articles of clothing, providing modesty and protection against the elements, but as elements which has **cultural value and portray wealth and status** (Picton & Mack, 1989: 11-13). Certain colours, decoration or shapes of garments have **political or ritual significance**. Textiles may even be used to clothe a house to mark a significant event. A textiles as a gift is a means by which social relationships are created and maintained (Picton & Mack, 1989: 11-13).

Figure 3.5: Silk textile woven for royalty, Madagascar. (Picton & Mack, 1989: 142)

Figure 3.7: Cotton textile with open work, Nigeria. (Picton & Mack, 1989: 71)

Figure 3.9: White and indigo cotton textile, Sierra Leone. (Picton & Mack, 1989: 97)

Figure 3.11: Traditional Basotho blanket. (The Clan, 2011)

Figure 3.13: Woollen textile,

Figure 3.6: Embroidered raphia textile, Zaire. (Picton & Mack, 1989: 199)

Figure 3.8: Indigo dyed cotton textile, Yoruba. (Picton & Mack, 1989: 111)

Figure 3.10: Resist dyed raphia textile, Zaire. (Picton & Mack, 1989: 146)

Figure 3.12: Resist dyed cotton textile, Zambia. (Picton & Mack, 1989: 150)

Figure 3.14: Cotton textile,

The Programme: African Textile Making:

Figure 3.15: Woman applying starch to a cloth for a resist dyeing technique, Nigeria. (Picton & Mack, 1989: 154)

Figure 3.16: A Djerma weaver weaving complex patterns, Niger. (Picton & Mack, 1989: 106)

Figure 3.17: Yoruba woman pounding indigo leaves, Nigeria. (Picton & Mack, 1989: 36)

Figure 3.18: A man peeling the outer layer of a raphia palm leaflet, Nigeria. (Picton & Mack, 1989: 33)

Figure 3.19: Narrow strip weaving, Nigeria. (Picton & Mack, 1989: 94)

Figure 3.20: The spinning process, Nigeria. (Picton & Mack, 1989: 31)

Figure 3.21: Indigo dyeing process, Nigeria. (Picton & Mack, 1989: 38)

Figure 3.22: Yoruba women beating a cloth to add smoothness and lustre. (Picton & Mack, 1989: 158)

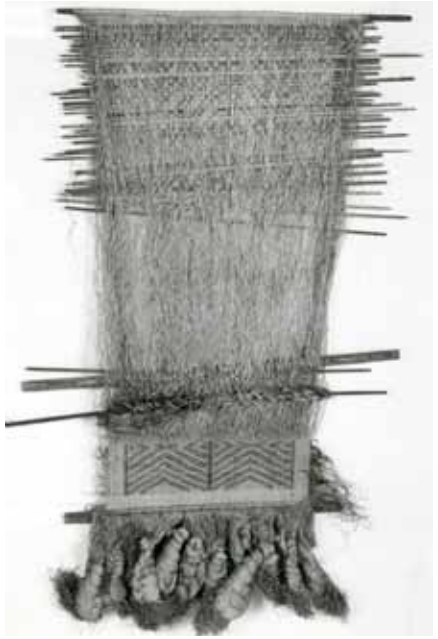


Figure 3.23: A single-heddle raphia loom with 36 supplementary shed sticks, Zaire. (Picton & Mack, 1989: 91)

Figure 3.24: Resist dyed raphia textile, Zaire. (Picton & Mack, 1989: 19)

Figure 3.25: Adrinkra stamps with samples of printed cloth, Ghana. (Picton & Mack, 1989: 165)

The Programme: African Textile Making:

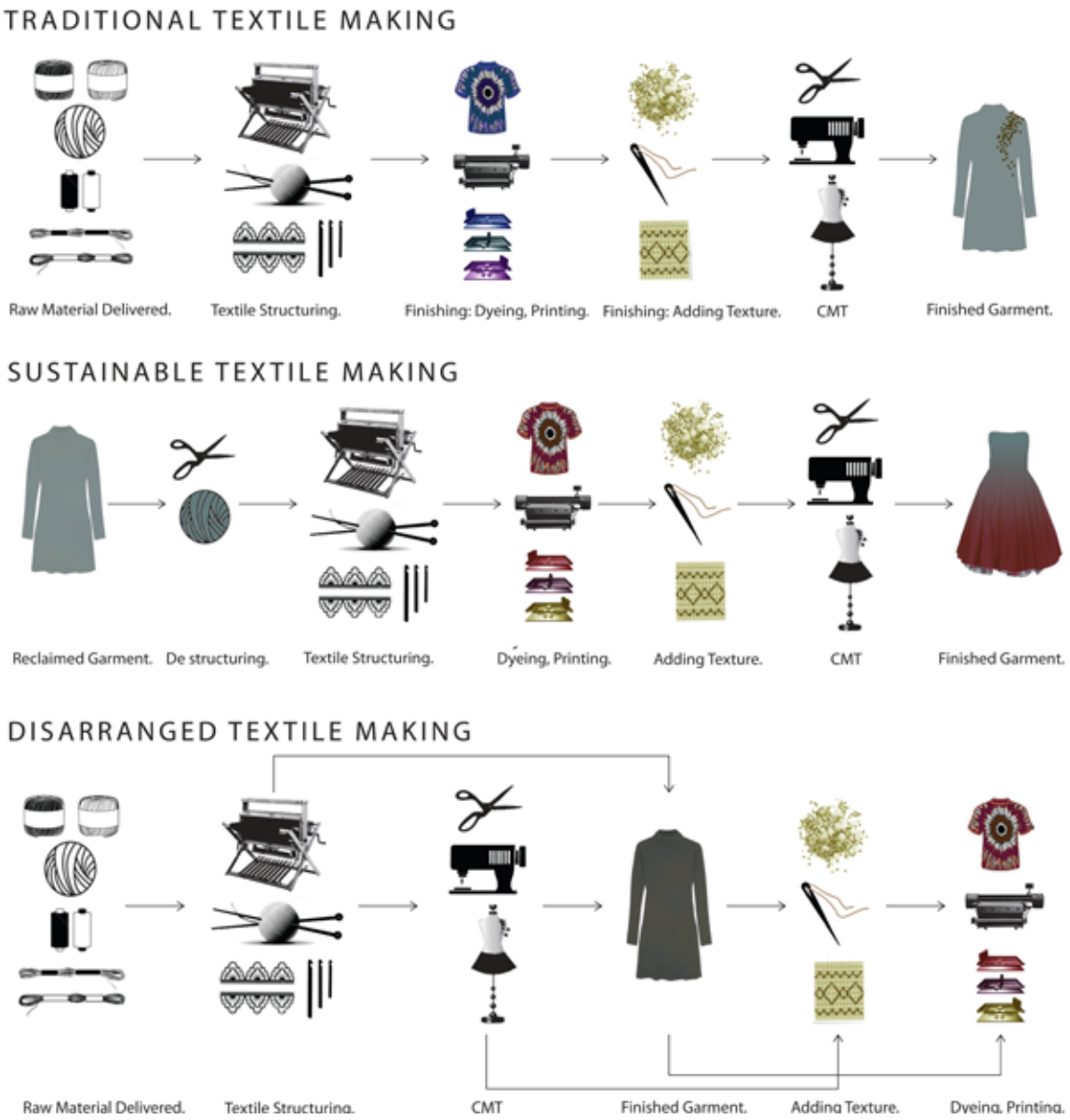


Figure 3.26: Diagram of the three textile making processes accommodated in the programme. (Author, 2012)

THREE PROCESSES ACCOMMODATED WITHIN THE PROGRAMME:

Three interpretations of **traditional African textile and garment making processes** will be accommodated within the programme:

This first process indicated in Figure 3.26 is the **traditional textile making process**. This process is initiated with raw materials, from which textiles are constructed. The textiles are dyed and finished after which garments are constructed (Kadolph, 2007: 175- 410).

The second process is a **sustainable process**, which incorporates the **upcycling** of **waste material** and the **downcycling** of **garments**. The downcycling process will incorporate the process of making yarns from old garments. Old knitted garments can be unravelled to reuse the yarns as material for weaving and embellishing (Van Rensburg, 2012). Reclaimed clothing can also be cut into strips to be used as weaving material (Van Rensburg, 2012). The upcycling processes will incorporate the use of useless materials or waste materials to make embellishments for the textiles, stamps for the printing processes and weaving material (Van Rensburg, 2012).

The third process is a **disarranged process**, where the steps in the traditional process can be **rearranged** to create interesting **contemporary effects** and finishes. Garments by fashion designer Anke Loh is an example of this disarranged process. The fabric of the garments within her Spring/ Summer 2011 range is first embroiled, then dyed where after it is constructed into garments (Loh, 2012).

These processes will inform the **spatial layout** of the **textile making workshops**. It is essential that the workshops for the different stages within the various processes are situated in such a manner that they **showcase and exhibit** the traditional textile making process and at the same time allow for **effortless interaction** and the flow of materials between each other.

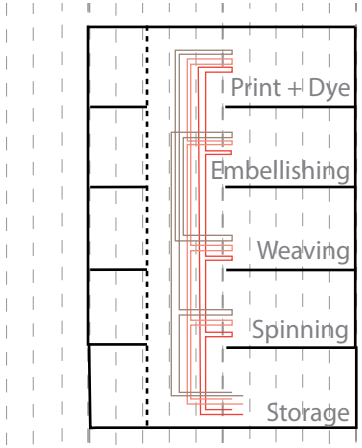


Figure 3.27: Diagrammatic indication of the interactive processes between the workshops. (Author, 2012)

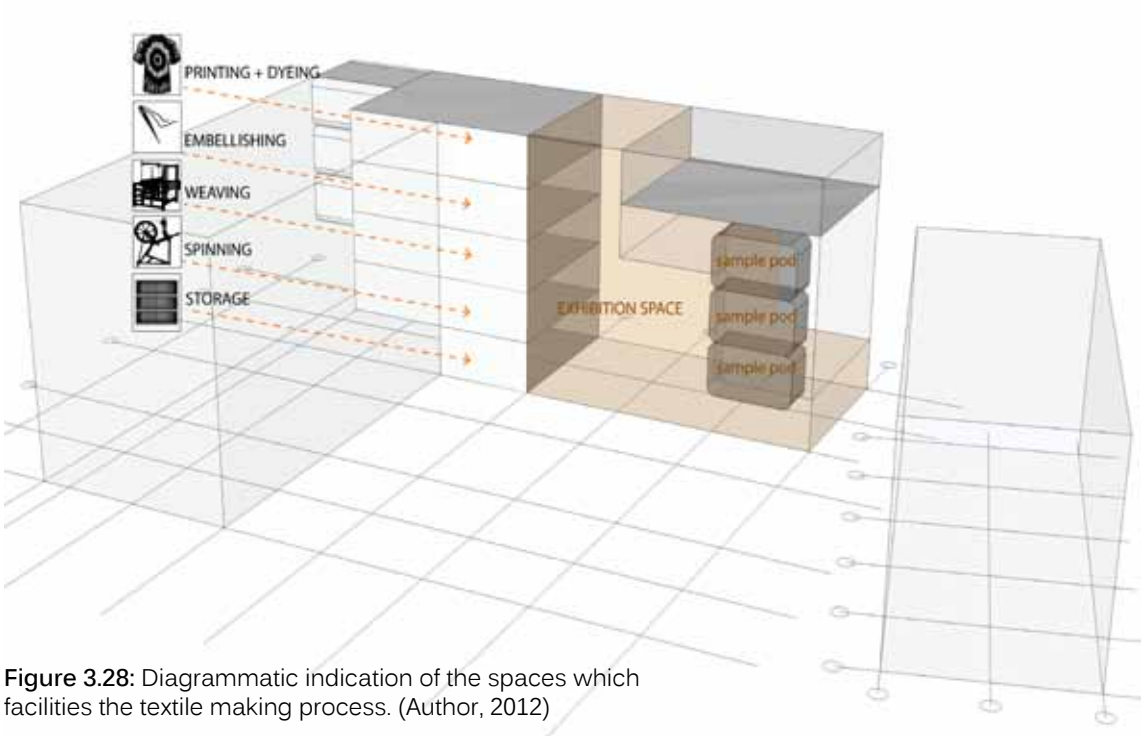


Figure 3.28: Diagrammatic indication of the spaces which facilities the textile making process. (Author, 2012)

ALLOCATING THE TEXTILE MAKING PROCESSES IN THE APPLICABLE SPACES:

As indicated in Figure 3.28, the workshops are **vertically arranged** according to the **traditional textile making process**. The smallest space on the ground floor is utilized as **storage space**. The **spinning process**, being less complicated than the other processes, requires a smaller space and therefore no additional pod is added to this workshop space. The large space on the fourth floor is assigned to the **dyeing and printing** processes, owning to the fact that the space is able to open up towards the **exterior on top of the roof**. This creates the perfect space for the **drying of textiles**.

The textile making workshops are positioned **vertically** above one another to **facilitate the disarranged process** of textile making as shown in Figure 3.27. These spaces are **linked** by a staircase and a lift which allow one to travel vertically across the multivolume space adjacent to the textile exhibition space. This enables the textile makers to travel effortlessly from one workshop to another in **no particular hierarchy** or specific order.

The Programme: African Textile Making:

WORKSHOPS:

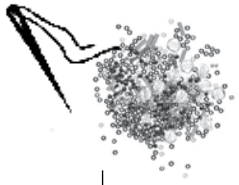
Spinning:

Adjustable chairs
Personal lockers
Writing boards
Pinning boards
Hand wash basin
Storage_ Raw Material
Storage_Yarns to dye
Storage_Yarns to weave
Storage drawers_ Tools
Spinning wheels

Weaving:

Adjustable chairs
Personal lockers
Writing boards
Pinning boards
Hand wash basin
Storage_ Drawers for tools
Storage_ Raw Material
Storage_Yarns
Storage_Textiles- dyed
Storage_Textiles- embellished
Hand looms
Tables _ Hand looms

Embellishing:



Adjustable chairs
Personal lockers
Writing boards
Pinning boards
Hand wash basin
Storage_Textiles to dye
Storage_Textiles to embellish
Storage_Yarns
Storage_ Raw Material
Storage_ Fabric to dye/print
Storage_ Fabric in process
Storage_ Drawers for tools
Storage_ Embellishings
Tables _ Small + pincushion
Tables _ Large + pincushion
Soft Seating

Printing + Dyeing:

Adjustable chairs
Personal lockers
Writing boards
Pinning boards
Hand wash basin
Storage_ Fabric
Storage_ Fabric to embellish
Storage_ Fabric in process
Storage_ Dye stuff
Storage_ Preparation equipment
Dyeing pots on gas stoves
Drying space
Tables _ Small + pincushion
Tables _ Large + pincushion

Recycling_ Unraveling:

Soft Seating
Storage_Old knitwear
Storage_Unraveled yarns
Storage_ Drawers for tools

Recycling_ Strip making:

Storage_Old garments
Tables _ Cutting mats

Recycling_ Embellishment making:

Storage_ Recycled material
Storage_ Tools
Tables _ Cutting mats

Recycling_ Stamp Making:

Storage_ Recycled wood
Storage_ Wood carving tools
Tables _ Cutting mats
Storage_ Stamps

Figure 3.29: Diagram showing the divisions in which the textile making workshops and the requirements of each workshop. (Author, 2012)

FUNCTIONAL REQUIREMENTS OF THE TEXTILE MAKING WORKSHOPS.

Each of the four textile making workshops has unique **functional requirements**. The difference in the way the spaces are designed within each workshop will be determined by the different **equipment and storage requirements** of each workshop. The diagram in Figure 3.29 shows the functional requirements of each workshop. Evident in the diagram is the fact that each textile making workshop has additional functional requirements that need to be incorporated in order for the **sustainable textile making processes** to function effectively. The spaces in which these sustainable textile making processes take place will differ from the rest of the workshops.

The Users:

THE USER GROUPS AND THEIR SPATIAL REQUIREMENTS:

The **four different users** and their positions within the programme are indicated in Figure 3.30. It is important to note that the Pretoria Weavers Guild, the textile makers from the community and the fashion design students are **equally positioned**, because of the **non-hierarchical collaborative interaction** between these groups. The public only interacts with the programme on an **irregular basis** (markets, fashion shows, and textile exhibitions) and under controlled circumstances (tours through the textile making spaces, exhibitions and seminars). The only spaces that the public can access freely are; the coffee bar, retail space and printing lab.

The four user groups accommodated within the project each have their own set of **programmatic requirements**. The diagram in Figure 3.31 lists the requirements of each user group. It also indicates which of the spaces will be utilized by more than one user group. It is within these spaces that **collaboration and interaction** will occur and where the public will get a glimpse of the textile related activities.

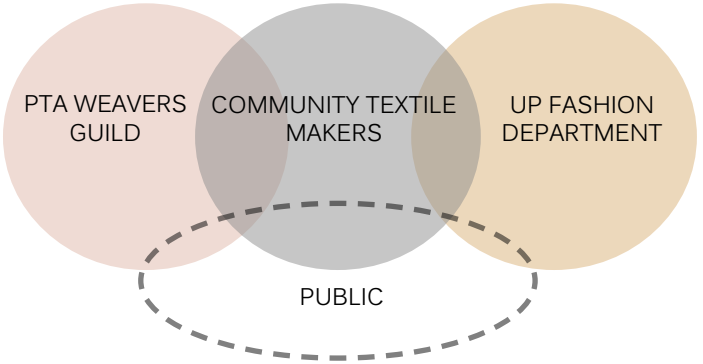


Figure 3.30: Diagram of the layering of the users within the programme. (Author, 2012)

The Users:

UP FASHION DESIGN STUDENTS:

- 3 Fashion Labs.
- 3 Sewing Labs.
- Drawing Stations.
- 3 Computer Labs.
- 2 Small Lecture Room
- Runway / Fashion Show Space.
- Textile Sampling Library.
- Workshop- sublimation printers+ 3D prototyping.
- Coffee Shop and Pause Area.
- 8 Staff Offices.
- 1 Staff Meeting Space.
- 1 Industrial Lab.
- 1 Textile Lab.
- 1 Large Lecture Room.

COMMUNITY TEXTILE MAKERS:

- Textile Making Workshops.
- Informal Collaborative Spaces.
- Formal Collaborative Spaces.
- Coffee Shop and Pause Area.

PTA WEAVERS GUILD WORKSHOP PRESENTERS:

- Textile Making Workshops.
- Temporary Exhibition Space.
- Permanent Exhibition Space.
- Coffee Shop and Pause Area.
- Staff Offices.
- Staff Meeting Space.
- Raw Material Shop.
- Library.
- Store Room.

PUBLIC AND TOURISTS:

- Drawing Factor: Coffee Shop and Pause Area.
- Drawing Factor: Exhibitions.
- Drawing Factor: Retail.

Figure 3.31: Diagram showing different user groups, their programmatic requirements and overlapping in programmatic requirements. (Author, 2012)

Project Contribution:

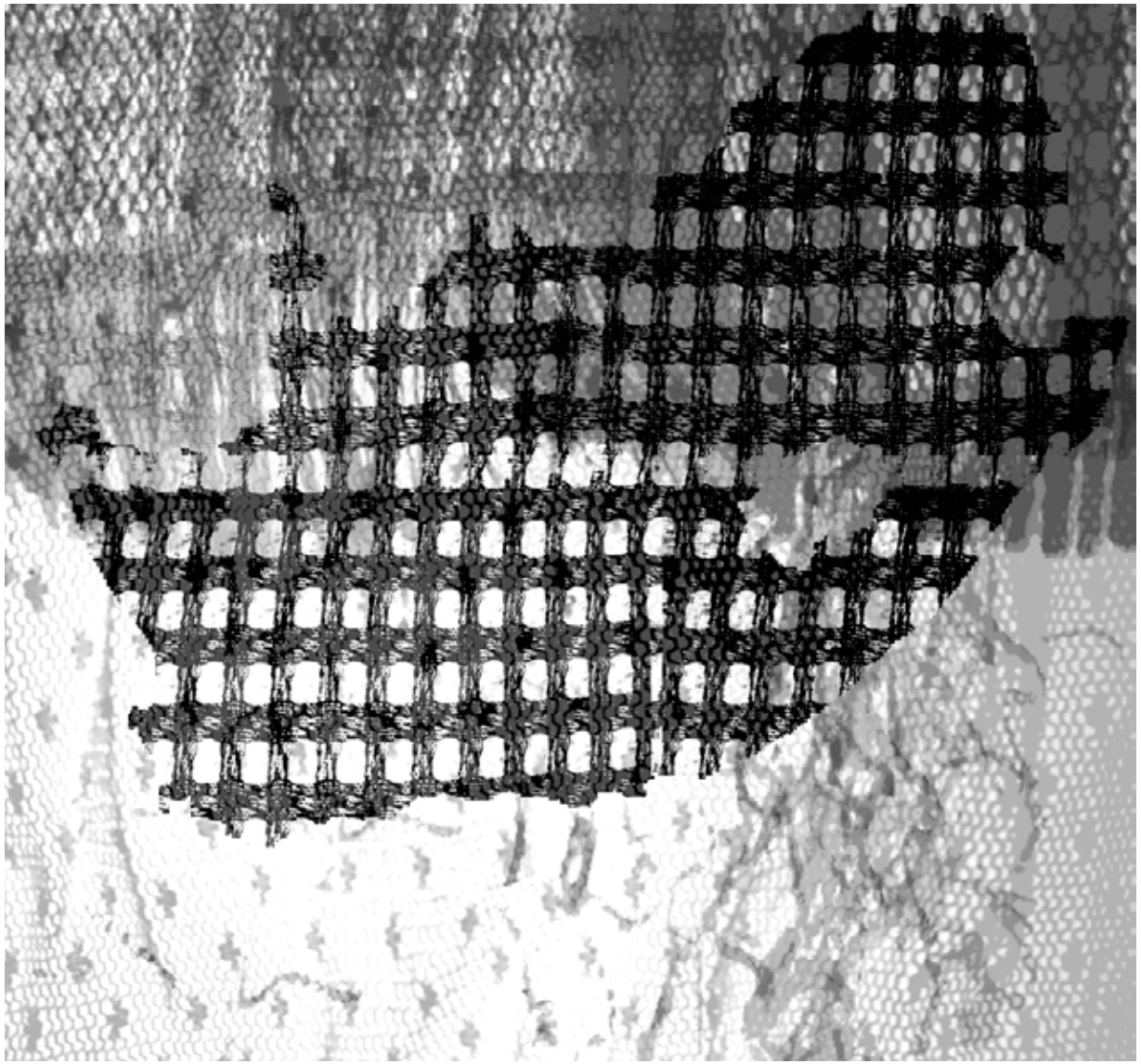


Figure 3.32: Handmade textiles contributing to South Africa (Author, 2012)

CONTRIBUTION TO SOUTH AFRICA:

The project will benefit South Africa in the following ways:

• The **crafts industry** in South Africa will be **benefited** by the textile making guild as a result of the produced textiles, which portray African identity and flavour. The craft of hand-made textiles will be explored in order to achieve a **high quality, unique "made-in-South-Africa" product**. These handmade goods will have a **higher commercial value** than commercial arts and crafts made primarily for the tourism industry.

• Traditional textile making **skills and knowledge** will be **preserved, explored and developed**. Textile makers from informal communities will be **empowered** by the skills learnt, the knowledge gained and the exposure that they receive in order to establish their reputation.

• The textile making guild collaborating with the Clothing and Consumer Science Department can act as a **precedent for collaborative production and educational environments** within South Africa.

• The building will act as a **platform for integration between the first and third world paradigms** within South Africa. This is due to the delicate integration of the students, professionals and the underprivileged textile makers within one building.

• The **precinct** will benefit from the **memorable experience** created through the celebration of locally produced textiles which portrays the **local flavour and identity**, especially to the local and international Gautrain users.

• The **translation of textiles into interior architecture** will result in the development of unique construction methods and materials, which will contribute in the exploration of a **unique language** for South African interior architecture.

• The sustainable textile making processes provide an answer to the question of how to **reuse waste materials and garments** and reduce landfill.

Conclusion:

This chapter elaborated on the **programme and users** for the interior intervention **African textile making**; the different textile making **processes** accommodated as well as the f**unctional requirements** of the textile making workshops is thoroughly explained. The **four user groups**, and the **spatial requirements**, of each have been investigated. The validity and significance of the programme within the **South African context** was also explained. Since the site has been analysed and the programme and users have been introduced, the design problems, theoretical investigations and the hypothesis can be discussed in the following chapter.

THEORETICAL INVESTIGATION:

Since the site has been analysed and the programme and users of the interior intervention have been introduced, a **summary** of the investigation can now be presented. This **summary** describes the **essence** of the **urban response**, the **response to the architectural proposal** and the **intention of the interior intervention**. From these descriptions, the **design problem** and **hypothesis** is formulated, which in turn leads to the **theoretical investigation**. The chapter begins with the summary and thereafter elaborates on the various **theoretical investigations**.

The theoretical investigation is presented as **five design methodologies**, each explained through **precedent studies** in which the various **theories have been applied**. These five design methodologies are methods through which **textiles can be translated into interior architecture**. Three sources of **inspiration** for these methods of translation are established. The sources are **contemporary woven fabrics** in general, **traditional African woven fabrics** and the **traditional African textile making process**. The significance of the traditional African textile making process and its possibility for interpretation within interior design is also investigated.

Summary of the Investigation:

RESPONSE TO THE URBAN CONTEXT:

WARP + WEFT, which is situated within the **extended Arcadia Arts and Cultural Corridor**, plays an important part within this corridor. The intervention is a **thread in the urban fabric** which contributes to the aspiration to **convey local identity and flavour** to the **Gautrain users**, through the celebration of African textiles.

RESPONSE TO THE ARCHITECTURAL PROPOSAL:

The interior intervention aims to **weave into the architectural proposal** and improve various problematic aspects thereof. The aim is to demonstrate how **two programmes** can function **collaboratively** within one building.

INTENTION OF THE INTERVENTION:

The intention of the interior intervention is to c**elebrate African textiles** through contemporary interpretations thereof. The interpretations are executed through the traditional African textile making methods. The celebration of textiles occurs through the **exhibition of the textiles** and through the **exhibition of textile making processes**. Another method of celebrating textiles is by exploring the **use of textiles** in interior architecture, especially to solve the unresolved or problematic aspects of the architectural proposal.

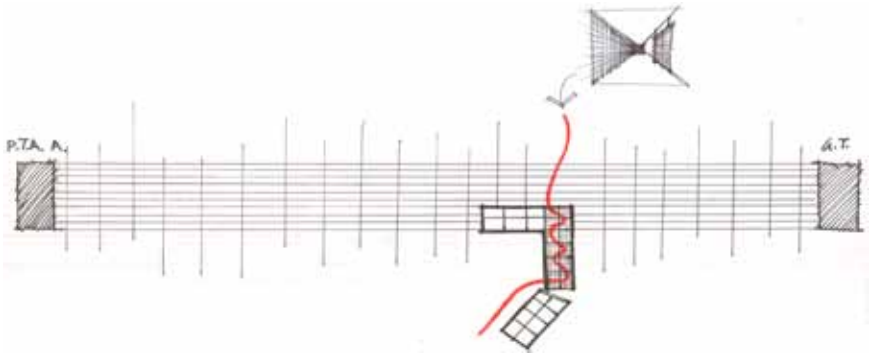


Figure 4.1: A Parti diagram of the summary of the investigation. (Author, 2012)

DESIGN PROBLEMS:

This aspiration of celebrating textiles, by exhibiting the textiles, exhibiting the production processes of textiles and by using textiles in interior architecture to explore their potential and possibilities, creates a very unique **design problem**. This entails the question of how to design for a **textile related programme** by **using textiles**, opposed using textiles for a **non-textile related program** such as a hotel or a restaurant. The design question entails how one designs a textile exhibition space by making **use of textiles** or an **interpretation** thereof without visually distracting from the textiles being exhibited. Textiles used to create or define spaces like the workshops should also not compete with the textiles being produced within these spaces.

HYPOTHESIS:

It is hypothesised that the identified design problem can be solved through the differentiation of spaces which function as a **background** for the production or exhibition of textiles, and spaces which **celebrate and exploit** textiles in interior architecture. It is hypothesised that this can be accomplished though **five methods of translating textiles into interior architecture**.

FIVE METHODS OF TEXTILE TRANSLATION:

There are four methods, commonly described by theorists, in which textiles can be **translated into interior architecture**. Textiles and architecture engage either through **metaphors**, **physical structure**, **the actual use of textiles** or **written text** (Garcia, 2006A: 8). The design can operate between all four of these methods, or a selection of one or more (Garcia, 2006A: 8). There is another aspect of textiles which can also be translated into interior architecture. This fifth method, which is the invention of the author, is the translation of the **unique characteristics** of textiles.

The first method, the translation of textiles through **metaphor**, occurs when spaces or elements in spaces are **compared** to a textile. An example of this translation is when spaces or elements within a building are described as being interwoven. (Garcia, 2006A: 8)

The second method, the translation through **physical structure**, is when building elements are physically **constructed** in the same way that a **textile is constructed,** as stated by Garcia (2006A: 8). It is also when the underlying **construction principles** are translated. The basic construction principle on which this translation is based, is the **interlacing of warp and weft elements**. Translated, this would mean that an object or space is constructed from elements providing **structure**, relating to the warp yarns within a textile and elements providing **infill**, relating to a weft yarn within a textile. Another important structural principle of textiles is the fact that a textile consists of **many small particles**, which **acts together to form a cohesive whole** (Weinand & Hudert, 2010: 104). Other underlying construction principles are the **rhythm and pattern** of textiles. Weaving rhythms vary with the different types of weaves. Table B2, in Appendix B, shows the various types of weaves and their inherent patterns and rhythms. An example of this method is a screen made by interweaving steel members.

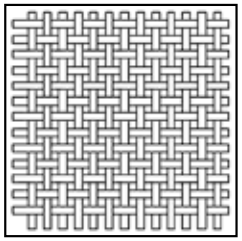
The third method is when **actual textiles** are used to create spa-ces or become elements within a space, such as tensile structures or curtains (Garcia, 2006A: 8). Textiles have many **properties** which are crucial to create a comfortable, aesthetically pleasing environment, such as its **texture, colour, pattern, insulating abilities, acoustic absorption ability** and its ability to **screen** without completely obscuring.

The fourth method, described by theorists, is when textiles and interior architecture engage through **language and text** (Garcia, 2006A: 8). This is done through exploring words which has the s**ame origins**, or **terms** that are **used in both** textile making and interior architecture, such as “unravel”.

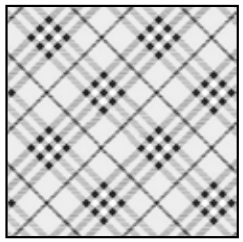
The fifth, novel interpretation of textiles into interior architecture is the interpretation of the **unique characteristics** of textiles. Textiles, unlike any other construction materials have unique abilities and characteristics which have been presented in Chapter 1. This method of translation can be executed by manipulating a material which does not have the properties of a textile, to resemble these properties, such as a metal screen which has the same screening effect as a piece of fabric.

An **icon** has been assigned to each of the five methods, so that whenever a method is utilized in the design of an object or space, the icon **indicates** under which **category the design method falls**. **Figure 4.2 to 4.6** shows these icons. These five methods will be used on different scales and for different purposes.

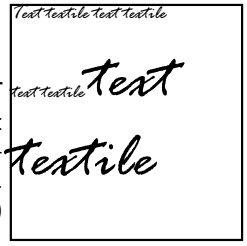
METAPHOR
Figure 4.2: Icon: Translation through metaphor. (Author, 2012)



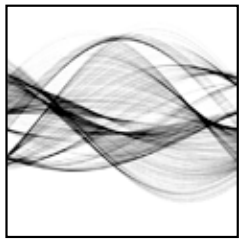
STRUCTURE
Figure 4.3: Icon: Translation of structure. (Author, 2012)



ACTUAL USE OF TEXTILES
Figure 4.4: Icon: Actual use of textiles. (Author, 2012)



LANGUAGE/ TEXT
Figure 4.5: Icon: for the translation through text. (Author, 2012)



UNIQUE ABILITIES
Figure 4.6: Icon: Translation of characteristics: (Author, 2012)

Precedents: Translation through Metaphor:

Figure 4.8: Physical model showing the Eco Pavilion inserted into the museum designed by Matthias Goeritz in 1953. (Koitani, 2011)

Figure 4.7: Perspective of the Eco Pavilion. (Koitani, 2011)

Figure 4.9: Photograph of the warp yarns on a loom. (Author, 2011)

METAPHORIC TRANSLATION OF TEXTILES INTO INTERIOR ARCHITECTURE:

Eco Pavilion, Mexico DF, Mexico.
By MMX Studio, 2011

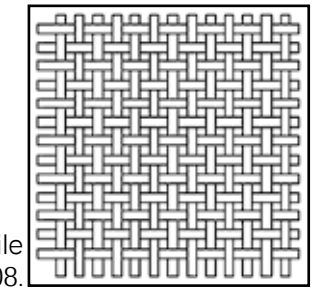
This pavilion is built at the main patio of a museum, designed by Matthias Goeritz in 1953. It was constructed for an annual competition organized by the Eco Experimental Museum in Mexico City. MMX Studio won the first prize for the 2011 Eco Pavilion. The pavilion is designed to house an array of events (Rosenberg, 2011.).

The museum was designed as an interwoven series of sensations created through the carefully designed sequence of warped spaces, light variations and views. The new pavilion extends these ideas to create a new series of experiences which are linked to the sequence of the building. The spaces in the pavilion are constantly in a state of flux as the space transforms and changes due to the varying shadows cast by the ropes during the progression of the day (Rosenberg, 2011.).

This pavilion is an example of the **metaphoric translation** of textiles into interior architecture. The rope constructions, by which the spaces are defined, **interweave** in a similar way that the **warp and weft yarns interweave on a loom**. Through comparing the photograph taken of the warp yarns on a loom (Figure 4.9) with the perspective and model of the pavilion (Figures 4.7 and 4.8), the metaphoric translation becomes evident.

Precedents: Translation through Structure and Form:

TRANSLATION OF THE STRUCTURE OR FORM OF TEXTILES INTO INTERIOR ARCHITECTURE:



Timberfabric investigation project: The textile module by Yves Weinand at IBOIS, 2008.

The Textile Module is part of the Timberfabric investigation project founded by Yves Weinand at IBOIS (Laboratory for Timber Fabric), at the École Polytechnique Fédérale de Lausanne (EPFL). The aim of the project was to explore new timber construction techniques (Weinand & Hudert, 2010: 103).

This project is an example of how the **structuring processes** can inform the **physical appearance** of structural elements defining a space. Weinand and Hudert (2010: 104) explains that **wood and textiles** both consist of **fiber-based tissues** and that **wood is also a soft and supple** material like **textiles**. It is this correlation in properties that informed the investigation between micro-scale fiber structures (textiles) and timber structures. The textile module explores the dual capabilities of timber to be formed and retained in a given form as well as the application of **textile-making principles** to timber (Weinand & Hudert, 2010: 104).

Weinand and Hudert (2010: 104) also states that textiles consist of **multiple yarn elements** that **work and operate together as a cohesive whole**. This notion is also explored through the Textile Module, where **elements in the structure depend on one another for their strength** (Weinand & Hudert, 2010: 104).

Figure 4.10: Braided structural timber arches from the Textile Module. (Hudert, 2010: 105)

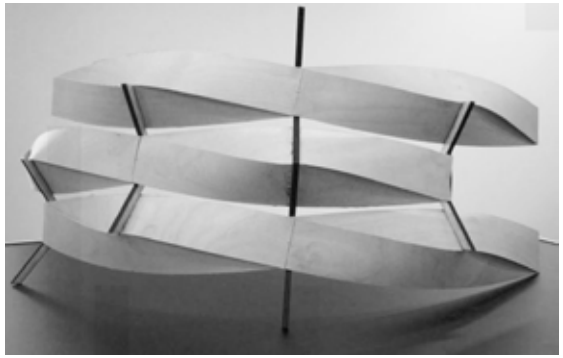


Figure 4.11: Timberfabric prototype. The structure consists of warp and weft elements. (Hudert, 2010: 106)

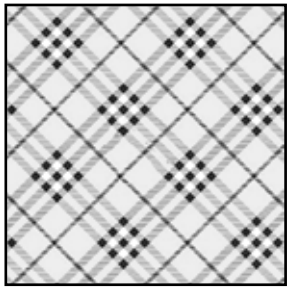
Figure 4.12: Timberfabric component. (Hudert, 2010: 102)

Precedents: Use of Actual Textiles:

Figure 4.13: Steilneset Memorial By Peter Zumthor and Louise Bourgeois. (Meredith, 2012)

Figure 4.14: Entrance into the textile space of the Steilneset. (Meredith, 2012)

SPACE CREATED BY THE APPLICATION OF A TEXTILE:



Steilneset Memorial, Vardø, Norway. By Peter Zumthor and Louise Bourgeois, 2011

The Steilneset memorial is a structure for the remembrance of the dark days in Norway in the early 17th century (Bell, 2011). Bell (2011) explains that the small fishing community at Vardø was torn apart by the witch mania that infected most of Europe. People were accused of witchcraft and burned or tortured to death. The structure of the memorial forms part of the National Tourist Routes Programme, which consists of 18 routes that embrace the beautiful natural landscapes. The memorial consists of a wooden structure and a ductile canvas space. The wooden structure is inspired by the wooden racks that were used to dry the daily catch (Bell, 2011).

Steilneset memorial is a good example of the **application of a textile** to create space. The tensile structure is kept in **tension** by the exterior wooden structure. The wooden structure provides the memorial with structure and strength, as opposed to the **canvas space** which is **soft, ductile** and dependent on the wooden structure for its shape.

Precedents: Textiles and Architecture Engaging through Text:

Future Systems

Richard Davies, Photographer
Norbert Schoerner, Photographer
Selfridges Department Store,
Birmingham, England
2003
Digital prints
Courtesy of Future Systems,
Richard Davies and Norbert Schoerner

Architectural model
Courtesy of Selfridges

Future Systems' building for Selfridges Department Store in Birmingham is a four-storey organic form clad in a blue stucco skin studded with fifteen thousand shimmering anodised-aluminium discs. The shape and the skin of the building are so unusual that it seems almost alien next to its neighbour, a nineteenth-century church although it is now a much loved part of the city scape. Future Systems' principals Jan Kaplicky and Amanda Levete compare the undulating curves of the building to those of a waistline and the fluidity of its billowing shape to the drape of a fabric. The architects cite snakeskin and the 1960s paillette dresses of Paco Rabanne, as well as the voluminous forms of Baroque churches, as inspirations. They designed the discs to wrap all surfaces of the building, including the roof, in one continuous movement, confounding notions of front, back and side façades. The building has been a catalyst for the urban regeneration of Birmingham, while providing a fresh and contemporary identity for Selfridges.

Lars Spuybroek/NOX

Maison Folie, Lille, France
2004
Architectural model: wood, rubber, paper
Courtesy FRAC Centre, Orléans, France

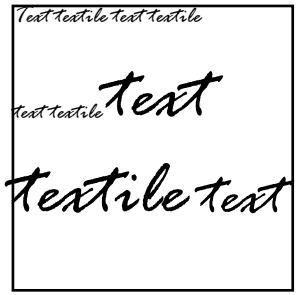
Maison Folie, Lille, France
2004
Digital print
Courtesy Lars Spuybroek/Nox

Rotterdam-based architect Lars Spuybroek and his studio NOX have been at the forefront of research into digital design and of architecture's use of new and powerful computing-tools to create a completely a new kind of architecture. He has, he says, a 'textile way of thinking', where the use of textile tectonics intervenes at both an aesthetic level—undulating, draped surfaces: and at a structural level—weaving, interlacing, braiding, knitting and knotting. This approach has been facilitated by Spuybroek's revolutionary work with computer technology, which, combined with using the latest hi-tech materials, has allowed him to push the boundaries of both form and structure in building.

The Maison Folie arts and cultural complex at the heart of a derelict area in Lille is a cluster of buildings centring around a renovated textiles factory. The building's spectacular glimmering and undulating façade is created by the stainless steel Escal textile, the interlocking metal components of which appear to have been knotted together.

Figure 4.15: A page from the "Skin and Bones" exhibition guidebook where textiles and architecture engage through text. (Skin and Bones Exhibition Guidebook, 2008)

ENGAGING ARCHITECTURE AND TEXTILES THROUGH LANGUAGE AND TEXT:



The paragraph below is an example of how t**ext and architecture engages**. The paragraph explains how the **two disciplines are related** by looking at roots of textile related words.

> *"The etymological link is explicit. 'Textile', 'technology', 'text', texture', 'connection' and 'context' are all derivative inflections of the same proto-Indo-European word 'tek', which is the root of 'architecture'. 'Technology' and 'textile' are also both derived from the Latin 'texere', meaning to weave, connect and/or construct. 'Fabric' has its origins in the Latin 'fabricare', or 'fabre', meaning to work, or to make."* (Garcia, 2006: 6)

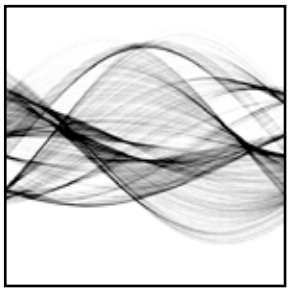
The page (Figure 4.15) from the "Skin and Bones" exhibition guidebook (Skin and Bones Exhibition Guidebook, 2008), is another example of **textiles and architecture engaging through text**. The exhibition, which presented parallel practices in fashion and architecture, is described through **terms which are related to textiles**. These terms are: 'Undulating', 'draping surfaces', 'weaving', 'interlacing', 'knitting', 'knotting', 'interlocking', 'studded', 'fluidity' and 'wrap'.

Precedents: Unique Abilities of Textiles Translated:

Figure 4.16: Detail of the Wooden Textile. (Neeb, 2003)

Figure 4.17: Wooden Textile cabinet. (Neeb, 2003)

THE TRANSLATION OF THE UNIQUE ABILITIES OF TEXTILES:



Wooden Textile Cabinet. By Elisa Strozyk, 2003

This cabinet front is constructed from triangular pieces of wood attached to a textile base. Together, these pieces of wood **imitate the flow and draping ability of textiles** even though it is not a woven material and not created by naturally rigid members.

Storzyk (2003) states the following:

*"Wooden Textiles convey a new tactile experience. We are used to experience **wood as a hard material**; we know the feeling of walking across wooden floors, to touch a wooden tabletop or to feel the bark of a tree. But we usually don't experience a **wooden surface** which can be **manipulated by touch**. Wooden Textiles is a material that is half wood-half textile, **between hard and soft**, challenging what can be expected from a material or category. It looks and smells familiar but feels strange, as it is able to move and form in unexpected ways."*

Inspirational Sources for the Translation:

Figure 4.18: Contemporary hand woven textile. (Warchal, 2010)

Figure 4.19: Traditional African woven textile from Algeria. (Picton & Mack, 1989, 62)

Figure 4.20: Traditional African textile making process in Burkina Faso. (Picton & Mack, 1989, 101)

SOURCES FROM WHICH TO TRANSLATE TEXTILES INTO ARCHITECTURE:

WARP + WEFT focus solely on the **African textile making process**, of which the weaving, printing and dying are the most prominent processes. Therefore, only the following sources will act as **inspiration** for the **translation** of textiles into interior architecture:

The first source is **woven textiles in general**. The composition, texture, chemical decomposition, mechanical destruction, edging, as well as the effect of light on all woven textiles. Refer to Figure 5.18. Appendix A presents a collection of photographs taken during an exercise to explore the **characteristics of woven fabrics**.

The second source of inspiration is **traditional African woven textiles** and the specific properties and qualities thereof. Refer to Figure 5.19. When the collection of images of African textiles (presented in Chapter 3) were critically studied, it became apparent that the aspects which give African textiles its identity is its **pattern, colour and texture**. The **pattern** is created either through the weaving s**tructure**, or through the **print or dye** applied. The **colour** is a result of the colour of the **raw material and the dyed material**. The **texture** is a combination of the **pattern, weaving method** and **decomposition** such as **unravelling and disintegration**.

The third source of inspiration is the **traditional African textile making process**, with the focus on the weaving, printing and dyeing processes. Refer to Figure 5.20. The **essence** of the traditional African textile making process is its **immediacy**. As already stated, Africans traditionally crafted fabrics by making use of that which was **available in their immediate surroundings**. They made use of **found material** and skills taught from **generation to generation** (Polakoff, 1982: 187).

This is an important notion, not only for the **creation of textiles** from **materials which is immediately locally available** and **indigenous skills and knowledge** which are **locally transferred**, but also by applying the **concept** to the **design** and creation of the interior intervention.

Conclusion:

The **theoretical methods for translating textiles into architecture** and the establishment of the **sources** from which the **translation will occur** have been established. The specific **theoretical investigation** is a result of the identified **design problems** and **hypothesis**. The establishment of the theoretical investigation and design methodologies allows the design to develop. This chapter describes the **tools** with which the **design** will be explored through Chapter 6 and 7 and through which the **precedents** in the following chapter are studied.

PRECEDENT STUDIES:

This chapter presents **precedent studies** which represent local and international **examples** of aspects which informed the interior intervention. These **design related precedent** studies build onto the **theoretical precedent studies** presented in the previous chapter. The precedents presented are grouped according to those which informed the **conceptual approach** to the design, those which influenced the **design development** and those that inspired the **technical investigation**. The **relevance** of these precedents to the interior intervention is explained, in this chapter, but the execution of the design is explained in Chapters 7 and 8. Where a precedent is an example of the **theoretical approach** explained in the previous chapter, it is mentioned. The precedents presented are:

Precedents influencing the conceptual approach:
- The town of San Gimignano in Tuscany, Italy
- The Fashion Kapitol in Johannesburg
- Woman's Jail Precinct, Constitution Hill in Johannesburg
- UK Pavilion; Shanghai Expo 2010 in China

Precedents influencing the design:
- Circa Gallery on Jellicoe in Rosebank
- Textile Field, Victoria & Albert Museum in London
- Hot Rod House Staircase in Seattle, Washington
- GMT Institute of Property Management, Indonesia
- MFO-Park in Zürich, Germany
- Baker D. Chirico in Carlton, Australia
- Hot Rod House Pulley Mechanism in Seattle, Washington
- Garden of Exile - Jewish Museum in Berlin, Germany
- Workstations in Boukunde, University of Pretoria

Precedents influencing the details:
- NoviSkin Staircase in Pretoria, Brooklyn
- NoviSkin Ceiling Structure in Pretoria, Brooklyn
- Central Park Apartment in New York

Precedent Study_ Conceptual Approach:

SAN GIMIGNANO TUSCANY, ITALY.

Thriving textile center in the Middle Ages.

Figure 5.1: San Gimignano. (Torre Prima, n.d.)

San Gimignano influenced the verticality of the interior spaces as well as the notion of the textiles drying on the roof of the building.

It is speculated that the tall towers in San Gimignano functioned as drying spaces for the long, dyed textiles. This was in the time when the town was famous for dyeing textiles with saffron dye. (Journey to Ancient Civilizations, n.d.)

This concept of hanging textiles in towers influenced the noting of designing the exhibition space as a **vertical space** which a staircase winding around the hanging textiles being exhibited. Also, this precedent influenced the idea of **celebrating the textile dyeing and drying processes** by **expressing the process on the roof**.

Precedent Study_ Conceptual Approach + Spatial Planning:

FASHION KAPITOL, JOHANNESBURG.

Designed by ASM Architects and Urban Designers, 2008.
Conceptualized and managed by Rees Mann.

This local precedent influenced the design of the intervention with regards to the spatial planning and the functioning of the programme. It also provided clues on the expression of local identity.

The Fashion Kapitol is a tailor made square on the corner of Pritchard and Polly streets in the center of the Garment District of Johannesburg. The Fashion Kapitol is a large **multifunctional public space**, consisting of an outdoor fashion ramp, fashion related retail outlets and a restaurant called the Fashion Shack, which also sells locally produced goods.

The large open area on the public square hosts an **informal fashion market** every Saturday (Mann, 2012). Seamstresses and tailors use the space (free of charge) to sell their garments (Mann, 2012). This notion influenced the proposal of **developing the public courtyard** on the investigated site to function as an informal market space. This proposal was presented in Chapter 2.

The **outdoor fashion ramp** (Figure 5.3 and 5.4), which is the first in Johannesburg also provide an affordable opportunity for upcoming fashion designers to showcase their work. The outdoor fashion ramp draws many passers-by into the square (Mann, 2012). This fashion ramp celebrates the latest South African fashion as a commodity and does not exclude the underprivileged (Mann, 2012). The idea of an **outdoor fashion ramp** also influenced the proposal of **activating the public courtyard** by means of an outdoor fashion ramp, as presented in Chapter 2.

The Fashion Shack is an **inspiration** to the **proposed coffee bar** which will, likewise to the precedent, be c**ombined with the retail outlet** where the students and textile makers can sell their projects. The combination of the two functions creates an interesting eating environment.

Figure 5.2: Southern entrance to the Fashion Kapitol. (Author, 2012)

Figure 5.3: The fashion ramp at the Fashion Kapitol. (Author, 2012)

Figure 5.4: The amphitheatre for the fashion ramp. (Author, 2012)

Precedent Study_ Conceptual Approach: Solar Protection:

Figure 5.5: Collection of images of the solar screens at the Woman's Jail Precinct, Constitution Hill. (Kate Otten Architects, 2007)

WOMAN'S JAIL PRECINCT, CONSTITUTION HILL; JOHANNESBURG:

Designed by Kate Otten Architects, 2007.

The building is protected by exterior solar screens of various opacities which is influential to the solar protection of the interior intervention.

> "*Screens shield the new buildings from sun and allow the office users to determine their visual privacy from the public. The top storeys are clad with perforated flat metal sheeting that will rust with time to blend with the existing buildings. The pattern for these screens is derived from pixilating a photograph of the sky – ex-prisoners speak emotively about the sky and how it was the only element over which the prison authorities had no control. The bottom two storeys have screens that slide between the glass facades and the colonnade. Prisoners were brought equipment to make tapestries as a way of staying sane - this idea is translated into a more robust element where large steel 'buttons' are 'stitched' with wire on to a steel frame.*" (Kate Otten Architects, 2007.)

These screens, provided as a means to protect the building from unwanted solar radiation, is inspiring to the design of the solar protection for the interior intervention. The screens are designed with differences in opacity, depending on the application and interior effect desired. The **screens protecting the interior intervention** from solar radiation will also **differ in opacity**, depending on the requirements of the specific space being protected.

The notion of **translating a tapestry** or a textile into a solar screen will be investigated together with the **use of actual textiles** as solar screens. These investigations are explored in Chapter 7.

Precedent Study_ Conceptual Approach: Soft, Textile-like Elements:

Figure 5.6: The UK Pavilion consisting of clear acrylic rods. (Heatherwick studio, 2010)

UK PAVILION; SHANGHAI EXPO 2010, CHINA:

Heatherwick Studio, 2010

The UK Pavilion informed the decision to construct the walkway structure and solar screen with smaller members to create the desired impression of softness.

The pavilion consists of 60,000 identical rods of clear acrylic, 7.5 metres long. These rods, which extend through the walls of the box and lift it into the air, create the impression of a soft texture, similar to grass, although the rods are stiff and hard in reality (Heatherwick Studio, 2010). This notion of creating an impression of a **soft texture** through **naturally hard elements** was inspirational to the construction of the textile-like solar screen and walkway structure. This precedent also informed the decision to, during the iterative design process, make the construction members smaller for a **softer effect**. The iterative process and the design of the solar screen and walkway structure is presented in Chapter 7.

Precedent Study_ Spatial Configuration:

Figure 5.7: The spiral walkway. (Author, 2011)

Figure 5.9: An exhibition in the spiral walkway. (Author, 2011)

Figure 5.10: Circa Gallery on Jellicoe. (McLaren, 2009)

Figure 5.8: The rooftop lounge at the Circa Gallery. (Author, 2011)

CIRCA GALLERY ON JELLICOE, ROSEBANK.

Designed by StudioMass, 2009.

The spatial design of the exhibition space and rooftop extension within the interior proposal was influenced by this precedent.

The Circa Gallery, situated on the corner of Jellicoe and Jan Smuts Avenues in Rosebank, is designed by StudioMass and completed in 2009.

The single flexible exhibition space is surrounded by a concrete spiral walkway. This staircase is covered with an exterior skin of powder coated aluminium slates. The spiral walkway pulls one up into the building and eventually out onto the rooftop lounge. The spiral walkway creates a memorable experience as one becomes aware of the city by the views through the slates and of the exhibition. The climax of the experience is when one walks out onto the rooftop lounge. As one takes a moment to breathe or sit a moment to contemplate, the view over the city merges with the exhibition. Through the moulding of the spiral walkway around the exhibition space, the architecture also becomes part of the art exhibition.

The relevance of this gallery for *WARP + WEFT* is the **extended and enhanced experience** created through the spiral walkway, which **encircles the exhibition space**. This notion is **applied to the vertical textile exhibition space** to enhance and elongate the textile experience.

The **rooftop lounge** is another source of influence on *WARP + WEFT*. The relevance of this lounge is the **experience of the extension** of the exhibition and the effect of merging the city view with the exhibition. *WARP + WEFT* will incorporate such a rooftop lounge as the apex of the textile exhibition. Another purpose for the rooftop lounge, is for the dyeing and drying of the textiles to occur on. This creates the opportunity for the viewers to **interact** with the dyeing processes. These design executions are presented in Chapter 7.

Precedent Study_ Design: Seating + Acoustic Absorption:

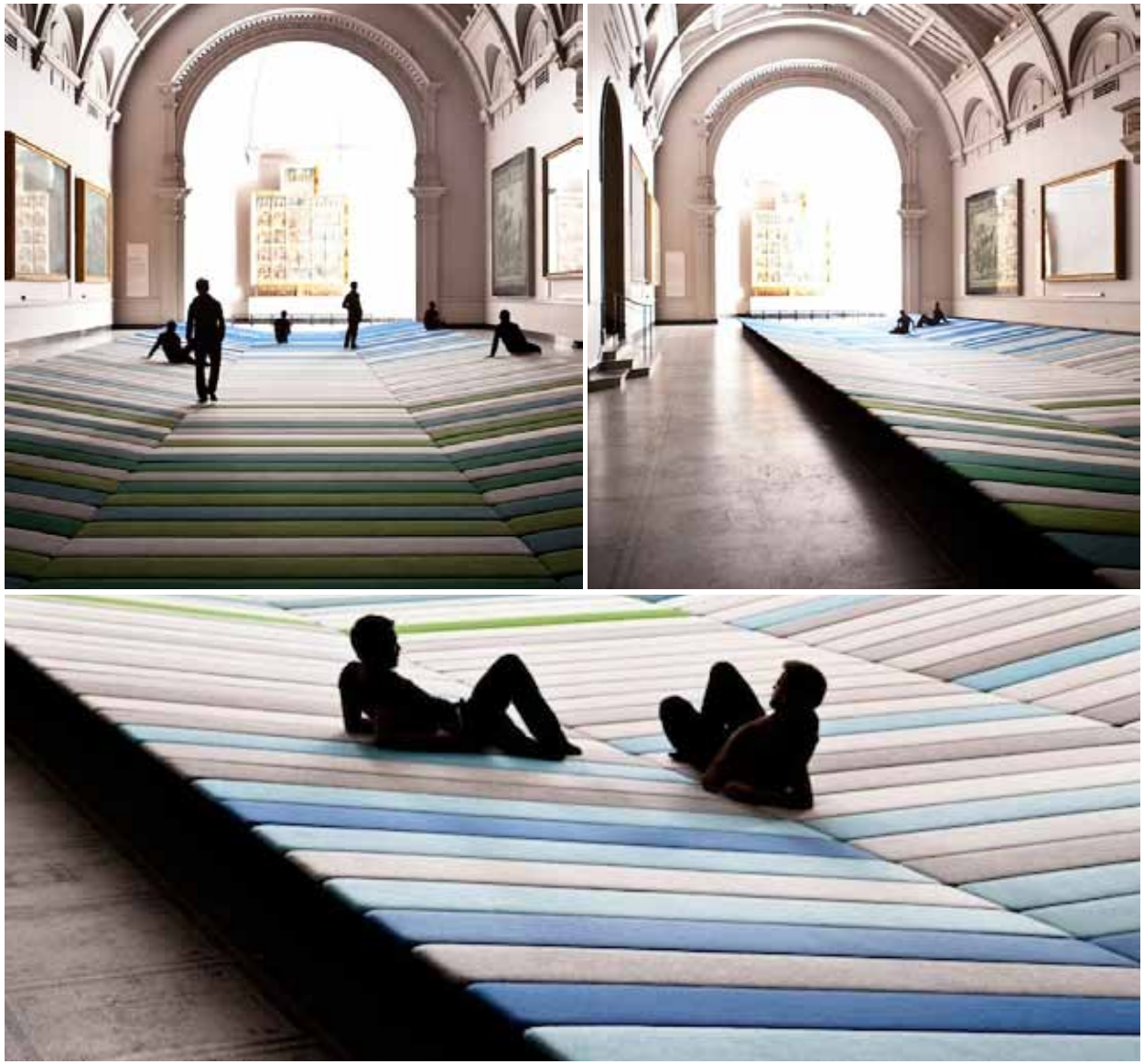


Figure 5.11: Collection of images of the Textile Field in the Victoria and Albert Museum, London. (Studio Bouroullec & V&A Images, 2011)

TEXTILE FIELD, VICTORIA & ALBERT MUSEUM; LONDON:

Designed by Ronan and Erwan Bouroullec nn collaboration with the textile manufacturer Kvadrat, 2011.

The seating in the exhibition space was informed by the Textile Field.

For the London Design Festival, the Victoria & Albert Museum commissioned Ronan and Erwan Bouroullec to make a temporary installation (Muuuz Magazine, 2011). The Textile Field, a 30 000mm x 8 000mm platform resembles an enormous mattress (Muuuz Magazine, 2011). This installation invites visitors to lie down for any period of time to stare at the Raphael exhibition, or to meditate and daydream. The Bouroullec brothers (2011) wrote the following about the Textile Field:

> *"An invitation to lascivious reverie. Our intention is to propose a different, casual approach to freely experience what can be a quite intimidating environment, such as a museum. We conceived an expansive, coloured foam and textile piece with gentle inclinations to produce a sensual field on which to comfortably lounge while meditating on the surrounding Raphael Cartoons. Everyone can immerse into this temporary installation, for a minute, an hour or more, that is the idea. No efforts, no apprehension just contemplation."*

The **lingering effect** that the Textile Field has on the visitors of the exhibition is highly desired in the *WARP + WEFT* textile exhibition. A similar seating will be introduced to enable visitors to **perceive the vertical exhibition** by lying down and looking up. Such a seating has the added advantage to providing **acoustic absorption** in the exhibition space. The execution of this seating in the vertical exhibition space is presented in Chapter 7.

Precedent Study_ Design: Exhibition Staircase:

HOT ROD HOUSE STAIRCASE; SEATTLE, WASHINGTON:

Designed by Tom Kundig, 2001-2006

Figure 5.12: Folded steel plate staircase by Tom Kundig. (Benschneider, 2006: 147)

This staircase influenced the design of the staircase in the textile exhibition space.

The staircase in the Hot Rod House is a simple bent steel construction. The bends in the steel gives the steel its strength. The staircase is a good example of Kundig's approach of "less doing more" (Ngo, 2006: 148).

Kundig's staircase influenced the structure of the proposed staircase in the textile exhibition space of the interior intervention. The purpose for structuring the staircase in the same manner is to create a similar **simplicity and continuity**. This staircase is required to be simple to function effectively as a **background** against which the textiles can be exhibited. The design of the staircase is presented in Chapter 7.

The **folds in the steel** can be compared to **folds and pleats** in textiles. This is an excellent example of how **textiles are interpreted** in interior architecture through the **translation of the unique characteristics** (folding and pleating) of textiles.

Precedent Study_ Detail: Exhibition Staircase:

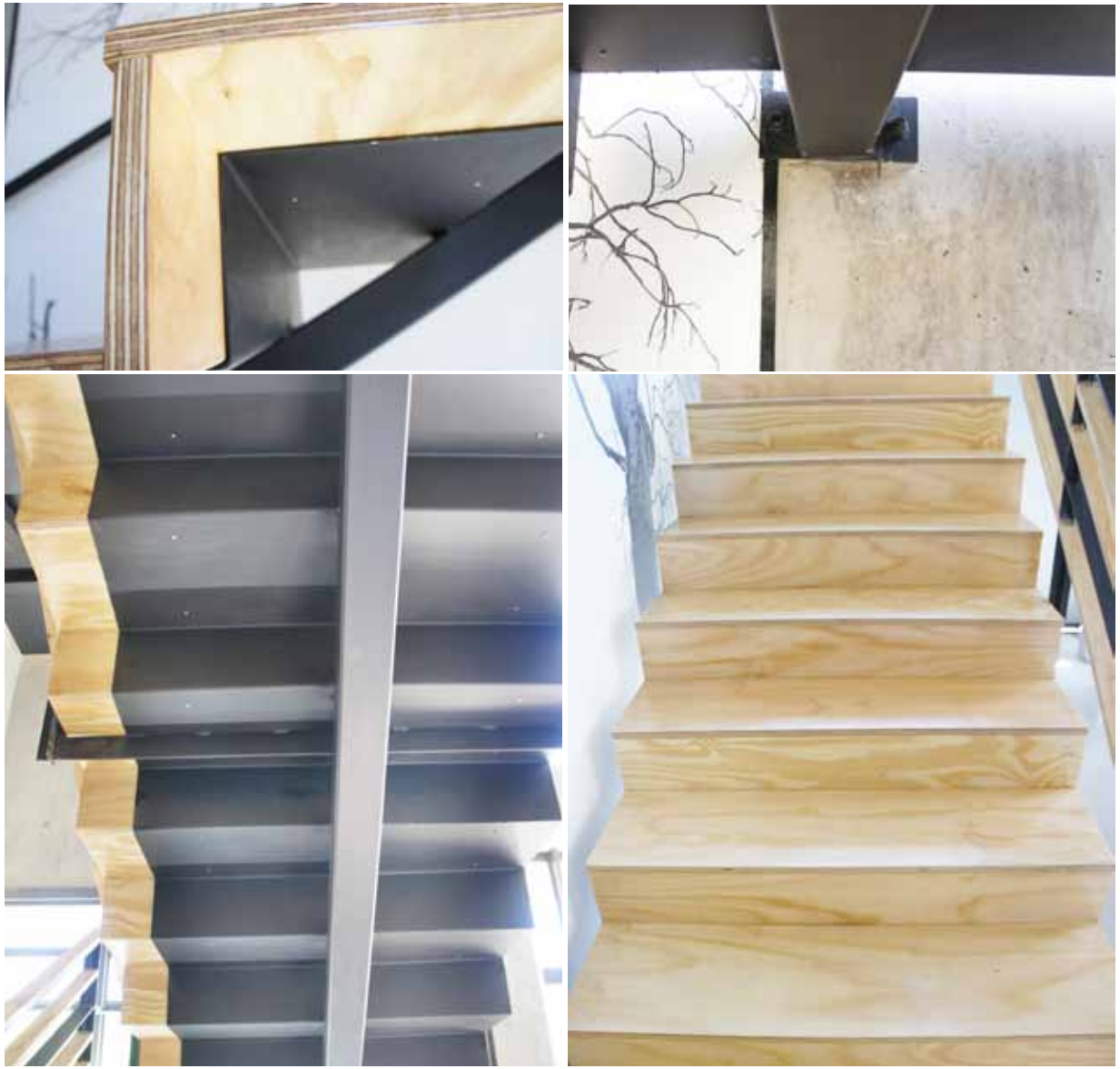


Figure 5.13: Photographs of the staircase in the NoviSkin building. (Raubenheimer, 2012)

NOVISKIN BUILDING (STAIRCASE); PRETORIA, BROOKLYN:

Designed by: Holm Jordaan Architects, 2012

The staircase in the NoviSkin building provided solutions to the design of the staircase in the textile exhibition space.

The folded steel construction of the staircase in the NoviSkin building is similar to the staircase in the textile exhibition space. The **bending of steel** for a support and **cladding** of the treads and risers with wood informed the proposed staircase. Wood is more **slip resistant** than steel and also creates **psychological warmth**, which is much needed in the space. The method of **removing the staircase from the walls** of the building and **extending the stinger** to the walls for **support** influenced the staircase design. The **handrail construction** influenced the construction of the **supports for the mesh cladding** in the final iteration of the staircase.

Precedent Study_ Design: Exhibition Grid Supports:

GARDEN OF EXILE. JEWISH MUSEUM. BERLIN, GERMANY:

Designed by Daniel Libeskind, 1999.

The Garden of Exile stimulated the design for the support of the grid structure in the exhibition space.

The Garden of Exile is designed to evoke strong emotional connotations, such as confusion (when looking around) and exaltation (when looking up) (Kroll, 2010). The emotional connotations are not desired in the exhibition space. However, the **language of the design** is influential. The **vertical pillar-like support structure** in the exhibition space was influenced by this precedent. The circular steel tubes in the textile exhibition space (onto which the steel wire rope is fixed), followed the **language of the concrete columns** into which the trees are planted.

Figure 5.14: Garden of Exile, Libeskind's Jewish Museum, Berlin. (Yang, 2008)

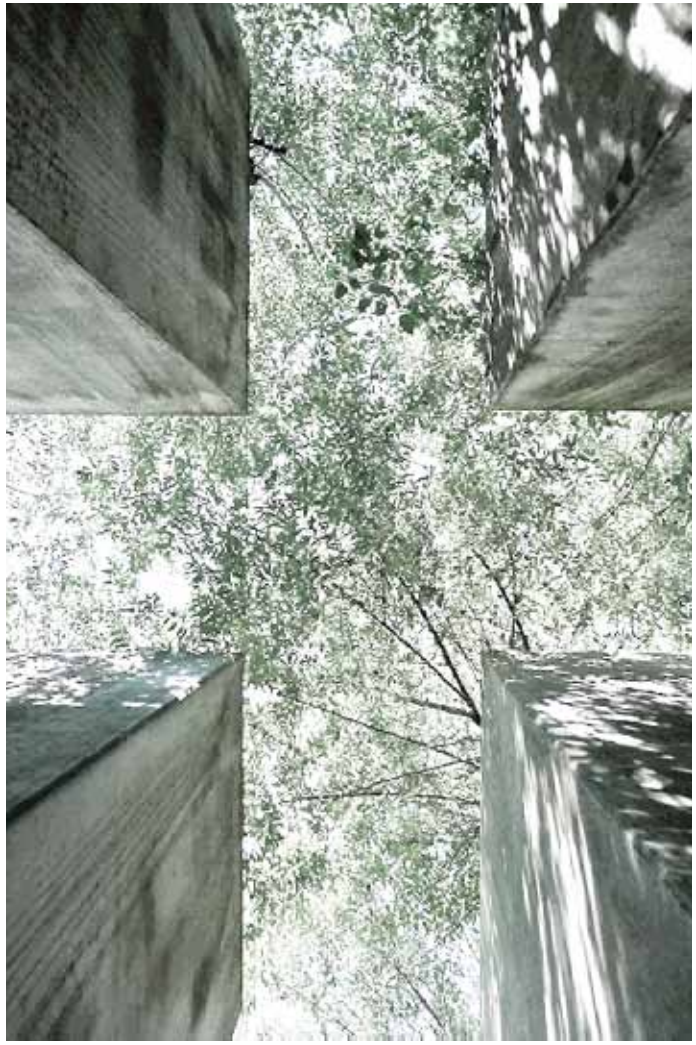


Figure 5.15: Garden of Exile, Libeskind's Jewish Museum, Berlin. (Kalden, 2012)

Precedent Study_ Design: Textile Workshop Workstation:

Figure 5.16: Workstation for the architecture students, Boukunde, University of Pretoria. (Kalden, 2012)

WORKSTATIONS, BOUKUNDE, UNIVERSITY OF PRETORIA:

Designed by Dokter and Misses, 2012.

Although these workstations designed are for architecture students, they are inspirational to the workstations in the textile making workshops.

The **workstations** in the studios at the Architecture Department of the University of Pretoria are good examples of workstations which can **adjust to the user's needs**. The **work surfaces** of the station can be **adjusted** to various angles. The workstation is supplied with a **credenza** which functions as **storage and an additional horizontal surface** to put equipment onto when the entire work surface is occupied. Both the table and the credenza have two legs on **casters** to allow **mobility**, as well as flexibility. These aspects influenced the design of the adaptable textile making workstations.

Precedent Study_ Design: Solar Screens:

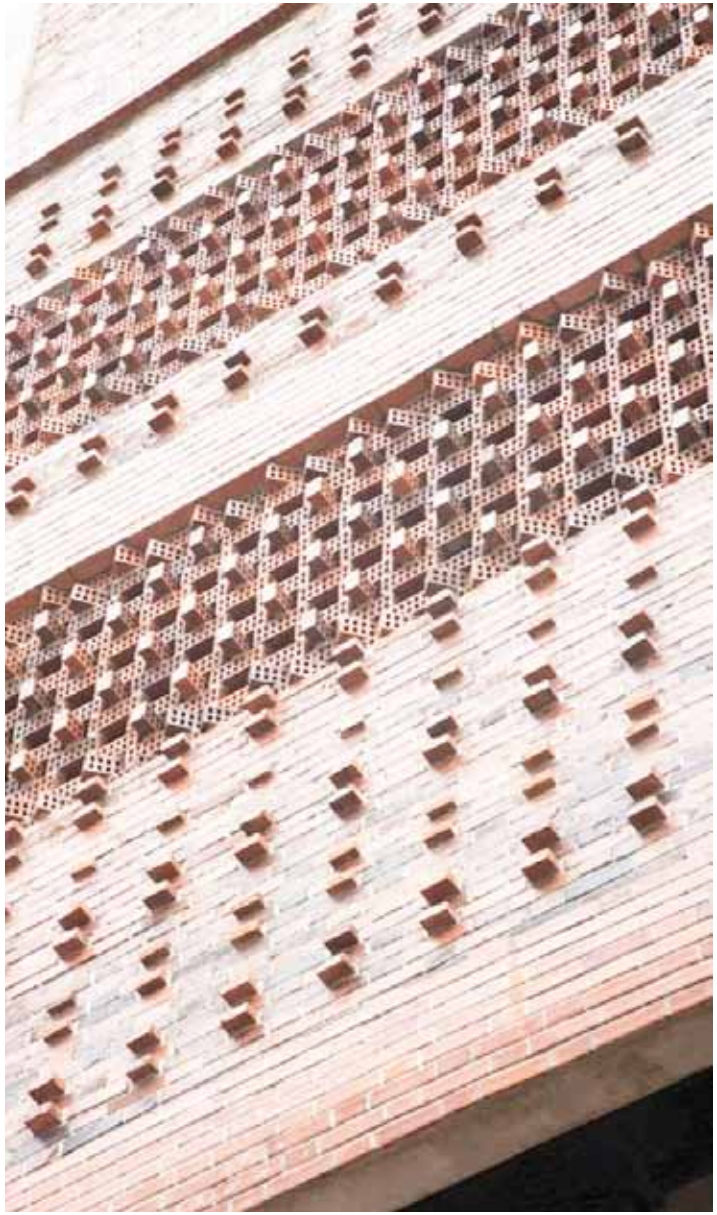


Figure 5.17: Woven face brick screens of the GMT Institute Of Property Management. (PLH Architects, 2012)

GMT INSTITUTE OF PROPERTY MANAGEMENT; JACARTA, INDONESIA:

Designed PLH Architects, 2012

The concept of weaving with bricks, to create porous walls as solar screens, is inspirational to the interior intervention.

Brick is a material which does not naturally have the **characteristics** of a material which is **traditionally woven,** yet this precedent shows that by **manipulating** the composition of the structure, **a woven impression** is created. This method, of c**reating a textile-like element** with a material which does not naturally have the **characteristics of a textile,** is a good example of **translating the unique characteristics of a textile** into interior architecture. The execution of the porous wall is presented in Chapter 7.

Precedent Study_ Design: Solar Screens:

Figure 5.18: Steel wire rope and climbing plant constructions. (Randerschall Partners AG, n.d.)

MFO-PARK; ZÜRICH, GERMANY:

Designed by Randerschall Partners AG, 2002.

The steel wire rope and climbing plant construction of the MFO-Park influenced the concept of a "living textile" screen.

The concept of growing climbing plants on a steel structure influenced the idea of creating a **"living textile" screen**. The principle of having a **steel structure** which is **filled by climbing plants** is similar to the construction of a textile. The **steel structure** is compared to the **warp yarns** which provide the structure to the material. The **plants** are compared to the **weft yarns** which are the filler yarns. This is a good example of **translating the structure of a textile into architecture.** The "living textile" screen is presented in Chapter 7.

Precedent Study_ Design: Ceiling structure + Lighting + Acoustic Absorption:

Figure 5.19: The plywood ceiling covering and shelving at Baker D. Chirico. (Bennets, 2012)

BAKER D. CHIRICO; CARLTON, AUSTRALIA:

March Studio, 2012

This precedent influenced the interior intervention by showing how to cover a hard, cold, unsightly ceiling with an element that provides warmth and character to a space. The lighting concept of the wooden structure is also relevant to the lighting concept of the interior intervention.

The wall and ceiling in the bakery is covered with an undulating CNC routed plywood structure, which defines the space and provide shelving for the bread (Foiret, 2012). This structure also creates a warm atmosphere in the space and is an effective way to hide services. The plywood structure is also efficient in concealing the acoustic insulation due to the fact that it is porous and will let the sound waves through to the insulation.

This concept is applied in the **workshops** and at the **walkways** over the multivolume as presented in Chapter 7 and 8. Due to the fact that the underside of the floors lab will be the unsightly, cold steel from the permanent shuttering of the floor slabs, a ceiling which creates a **warmer environment** is necessary. The wooden ceilings in the interior intervention will similarly **host services and acoustic insulation**.

The plywood ceiling covering is constructed with plywood members **interlinked perpendicular to each other**. This construction method is similar to the **construction of a textile** where the **yarns are interlinked perpendicular to each other**. This is an example of the **structural translation** of textiles into interior architecture.

The concept for the lighting in the precedent is to be **discreet** and at the same time **enhance** the plywood **structure**. The lighting is therefore **recessed into the plywood structure**. The **same concept** will be applied to the ceilings in the workshops and at the walkways over the multivolume spaces. The lighting concept and solutions are presented in Chapters 7 and 8.

Precedent Study_ Design: Exhibition Grid Mechanism+ Lighting:

Figure 5.20: TV on pulley. (Warchol, 2006: 167)

Figure 5.22: Section through double volume. (Kundig, 2006: 165)

Figure 5.21: Pulley Mechanism. (Bies, 2006: 166)

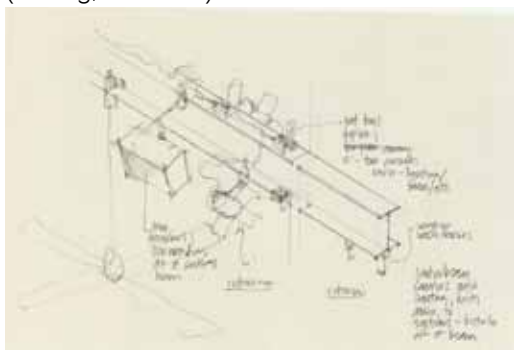


Figure 5.23: Hand sketch of the lights, fan and pulley mechanism. (Kundig, 2006: 166)

HOT ROD HOUSE PULLEY MECHANISM; SEATTLE, WASHINGTON:

Designed by Tom Kundig, 2001-2006

The mechanical method of pully-ing the flat screen TV up and down the double volume space, as well as the application of the spot-lights to illuminate the double volume, informed the detailed de-sign of the grid structure and pulley mechanism in the exhibition space.

The method by which the textiles in the **textile exhibition space** are **pulleyed**, to configure **different variations in hanging heights**, is in-spired by the pulley mechanism in the Hot Rod house by Kundig. The utilization of **stationary spotlights** to illuminate the double volume space is also used as inspiration for the **lighting in the exhibition space**. The execution of the textile pulley system and the lighting effect in the exhibition space is presented in Chapter 7.

Precedent Study_ Detail: Ceiling Structure + Acoustic Absorption:

Figure 5.24: Photographs of the ceiling structure in the NoviSkin building. (Raubenheimer, 2012)

NOVISKIN BUILDING (CEILING); PRETORIA, BROOKLYN:

Designed by: Holm Jordaan Architects, 2012

The ceiling at the NoviSkin building is a significant example for the ceiling construction in the textile making workshops.

This plywood ceiling, which **conceals the services** in the space, is an excellent source of examples of details for the **ceiling in the textile making workshops**. Similar wooden fins will be used to conceal the services, especially the **mechanical ventilation ducts** and the **acoustic absorptive material**. The detail solution of **cutting** into the wooden fins to fit around the supports will be applied to the design of the ceiling structure in the textile making workshops.

Precedent Study_ Detail: Textile and Steel Connection:

CENTRAL PARK APARTMENT, NEW YORK:

Designed by: Pasanella + Klein Stolzman + Berg Architects, 1999

This tightly stretched canvas on steel frames informed the detail design of the textile screens on the façades.

The construction methods of the **textile solar screens** on the façades, which protects the interior intervention, is inspired by the construction of these sliding panels. The textile screens protecting the interior intervention is fixed to the steel framework by **hooks** welded onto the steel frame and **eyelets** punched into the textile, similar to the example shown. (PKSB, n.d.)

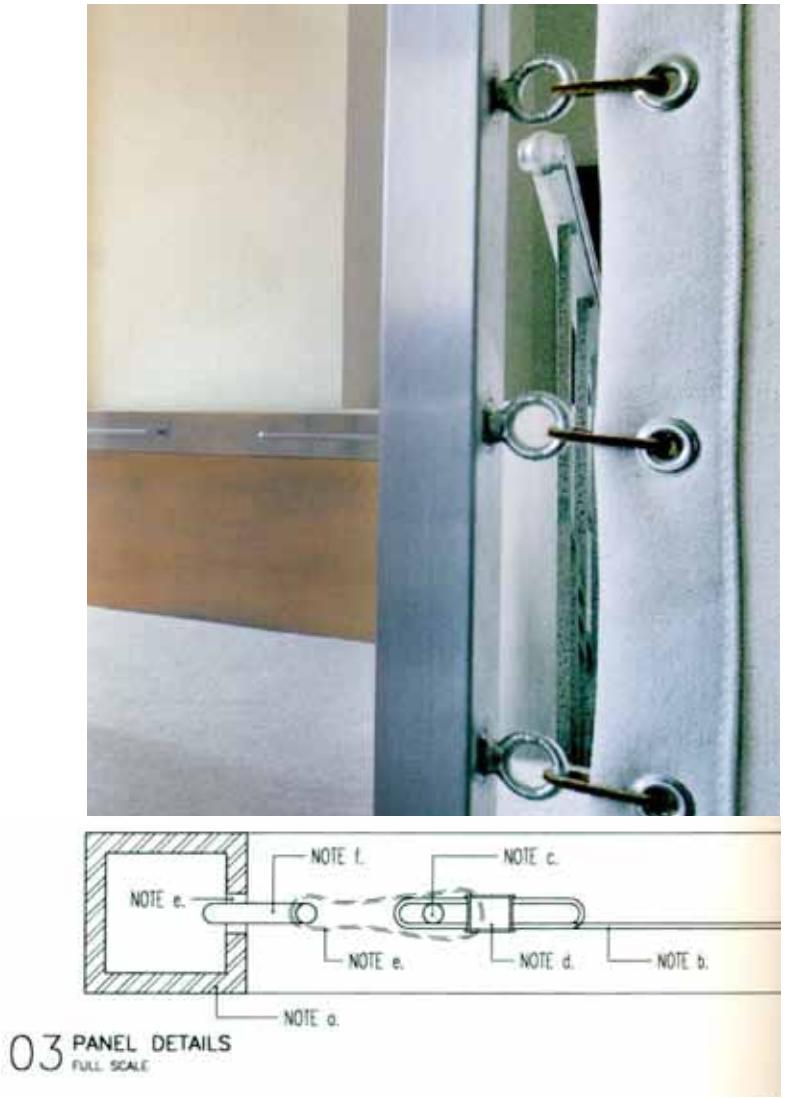


Figure 5.25: Photograph and detail drawing for the steel and textile connection. (PKSB, n.d.)

Conclusion:

The **precedent studies** presented in this chapter acted as local and international sources of **conceptual, design and technical inspiration**. The important influential aspect of each precedent, which has been presented, allows for the **elaboration on the conceptual approach, design and technical development** in Chapters 6 and 7.

DESIGN APPROACH:

This chapter explores the execution of the **approach to the design,** regarding the response to the architectural proposal, the intention of the intervention, the programmatic requirements, the design problem and hypothesis as well as the theoretical investigations described in Chapter 2 to 4. The design approach starts with the concept of **weaving the interior intervention** through the **existing architectural proposal**, after which the process of the **spatial arrangement** is discussed. The chapter continues exploring the notion of creating a **textile-related experience** as well as the creation of spaces which **stimulate collaboration**. Lastly, the response to the **design problem**, stated in Chapter 4, is explored. This design problem is explored by differentiating between spaces which act as **backgrounds** for the exhibition and production of textiles and spaces which become **textile-like**.

Conceptual Approach_ Response to Architectural Proposal:

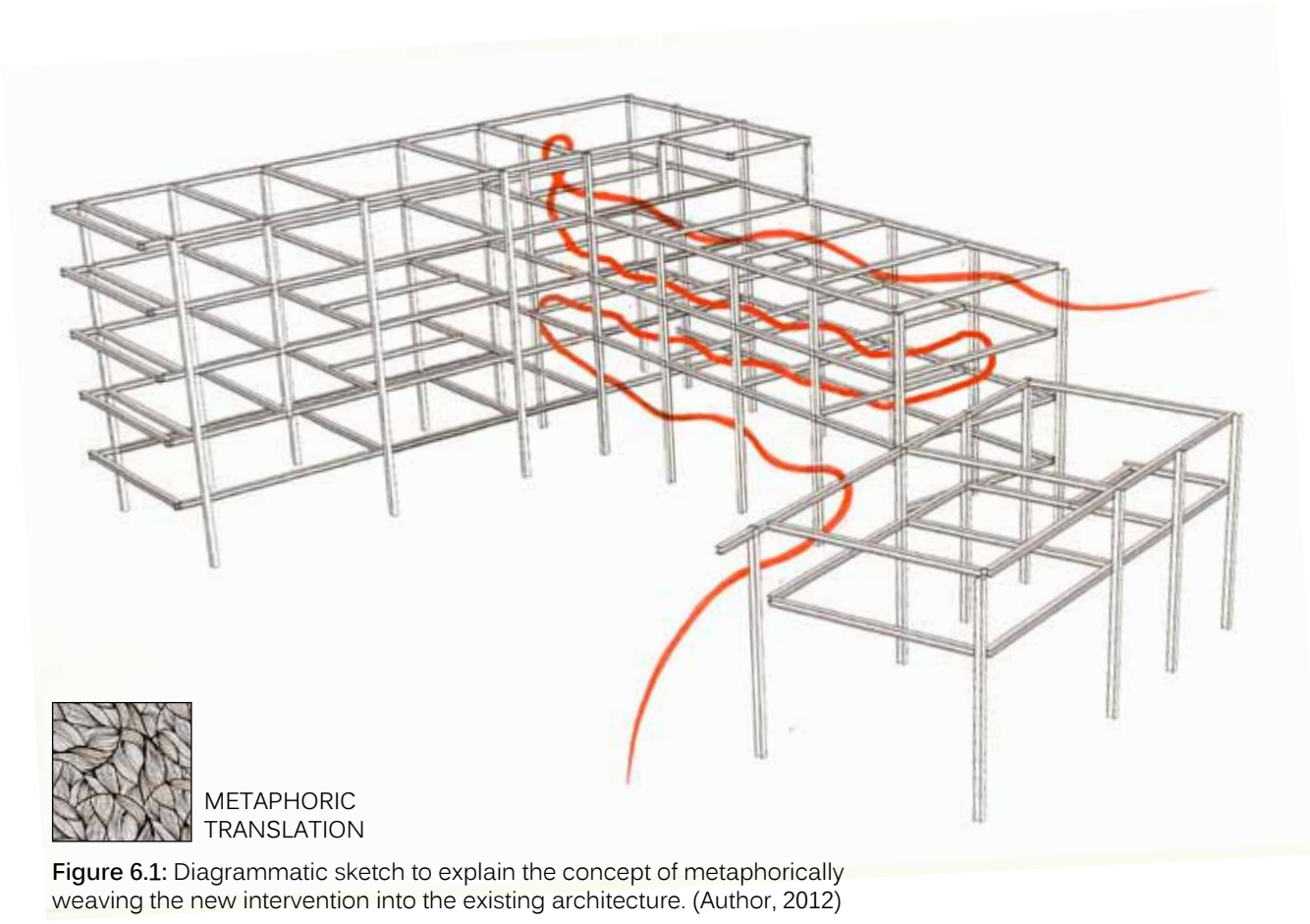


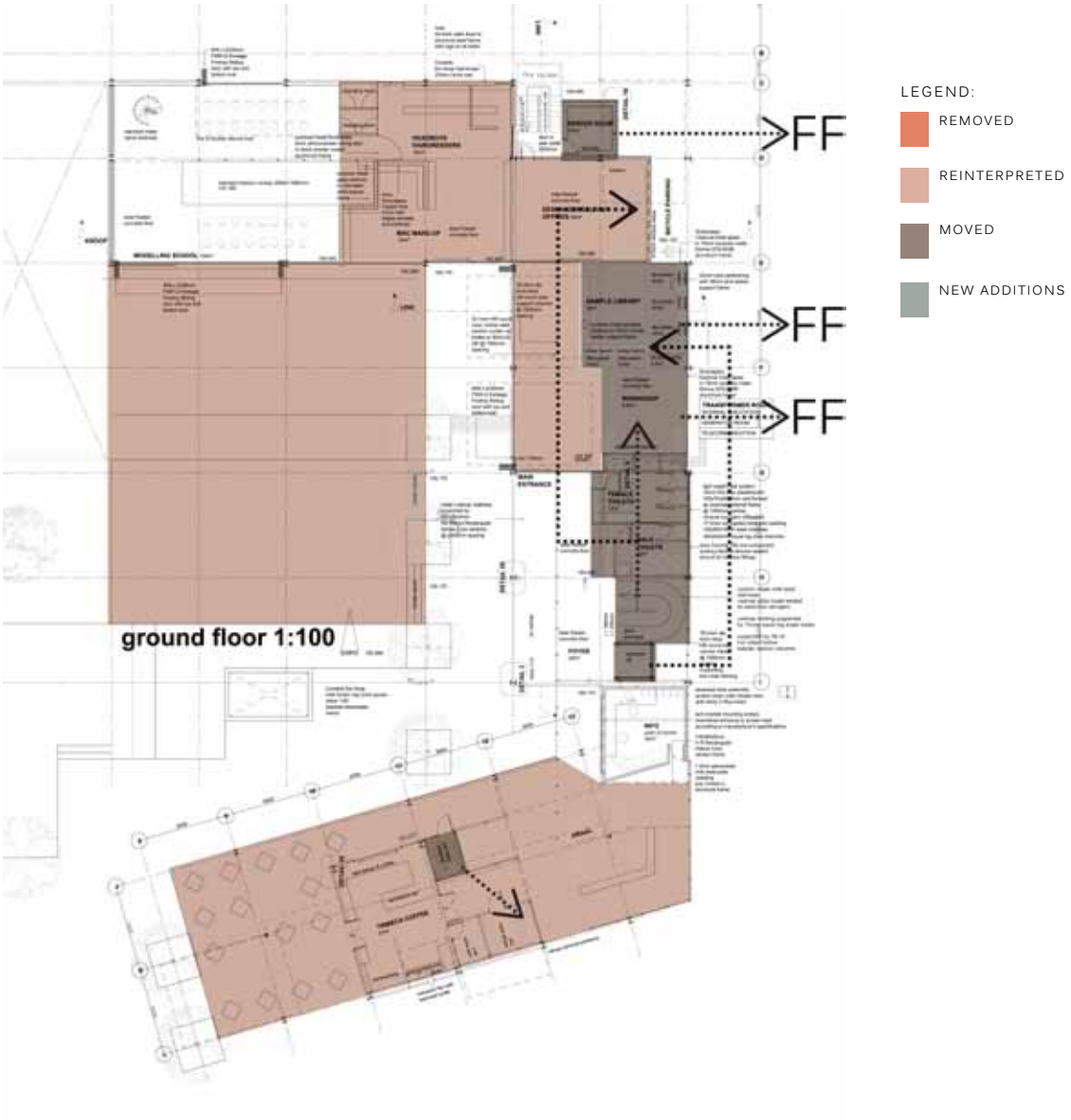
Figure 6.1: Diagrammatic sketch to explain the concept of metaphorically weaving the new intervention into the existing architecture. (Author, 2012)

WEAVING THE INTERIOR INTERVENTION INTO THE ARCHITECTURAL PROPOSAL:

The interior intervention aspires to **weave** through the architectural proposal. Figure 6.1 is a conceptual diagram to illustrate this idea. This concept is possible due to the fact that a **spatial "opening"** is created where the **unnecessary spaces** have been **taken out** of the architectural proposal to make space of the new intervention. These unnecessary spaces have been removed from the building in a similar manner that a **yarn can be pulled out of a piece of fabric**. The interior intervention can therefore be woven into the building just as a new **yarn can be woven into the gap left by the previous yarn**. The photographs shown in Figure 6.2 demonstrate this concept. This notion strengthens the possibility for the two programmes (fashion design and textile making) to mutualistically function in one building. The aim of weaving the interior intervention into the architectural proposal is a **metaphoric translation of textiles into interior architecture**. The **architectural proposal** is compared to the **warp yarns** (the structural yarns) of a textile and the **interior intervention** is compared to the **weft yarns**, which are the infill yarns.

Figure 6.2: Photographs demonstrating how a yarn can be pulled out of a fabric and be replaced with a new yarn. (Author, 2012)

Conceptual Approach_ Response to Architectural Proposal:



SPATIAL ARRANGEMENT:

To achieve the aspiration of **removing** the unnecessary spaces and **replacing** them with the textile making guild, a complex **spatial arrangement process** was followed. This process entailed removing the unnecessary spaces and replacing them with new functional spaces. However, by simply removing and adding spaces, an **illogical spatial progression** occurred. Thus, a process of **reinterpreting** the existing spaces was necessary, to **reorganize** the spaces within the existing building grid until the desired **spacial arrangement** and **spacial progression** was achieved. This reorganizing process was similar to the act of playing with a **sliding puzzle**, but instead of blocks being moved within a framework, spaces were moved within the grid structure of the building. The diagrammatic plans shown in Figures 6.3 to 6.5 explain the complex spatial arrangement process.

Figure 6.3: Diagrammatic plan indicating the methods of removing, shifting, interpreting and adding spaces. Plans are not to scale. (Author, 2012)

Figure 6.4: Diagrammatic plans indicating the methods of removing, shifting, interpreting and adding spaces. Plans are not to scale. (Author, 2012)

Figure 6.5: Diagrammatic plans indicating the methods of removing, shifting, interpreting and adding spaces. Plans are not to scale. (Author, 2012)

Design Approach: Spaces Allowing for Narration and Experience:

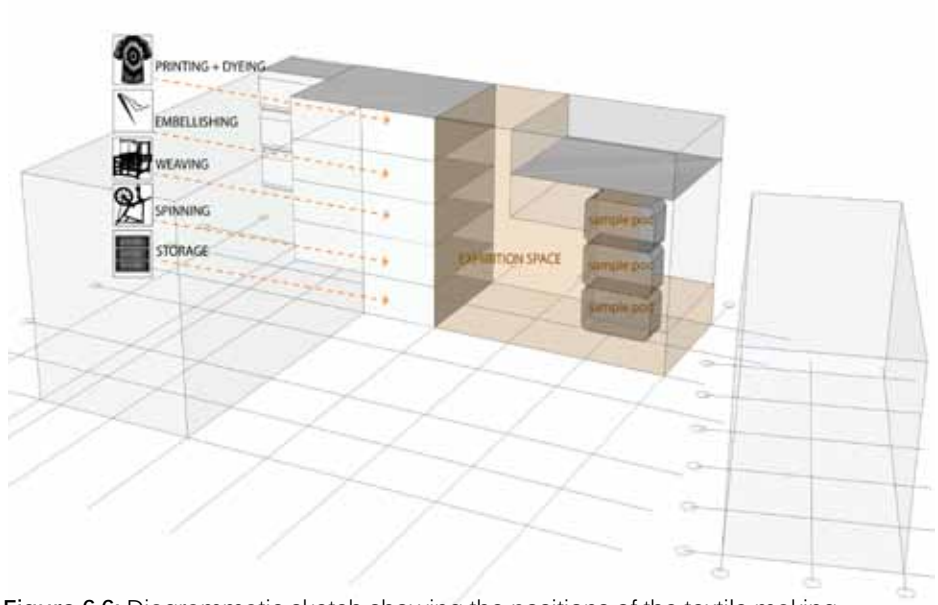


Figure 6.6: Diagrammatic sketch showing the positions of the textile making workshops. (Author, 2012)

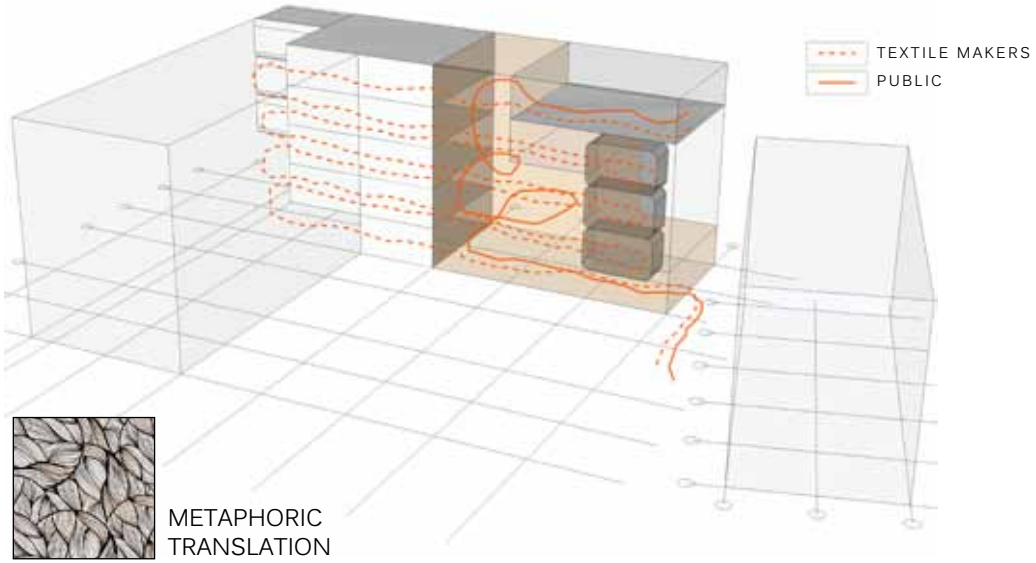


Figure 6.7: Diagrammatic sketch showing the theoretical concept of metaphorically weaving the new intervention into the existing architecture. (Author, 2012)

WEAVING THE INTERIOR INTERVENTION INTO THE ARCHITECTURAL PROPOSAL:

Shown in Figure 6.6 is the **position** of the textile making workshops, the exhibition space and the textile sampling pods within the architectural proposal. Figure 6.7 also diagrammatically shows the **realisation** of the concept of **weaving the interior intervention into** the existing architectural proposal. The concept of configuring the textile related spaces in a **continuous thread** through the building creates a **narrative experience** of the textile making process. The diagram indicates the narrative route followed by the **public** as a solid red yarn. The route utilized by the **textile makers** is indicated as a red dashed yarn. These narrative routes through the building contribute to the creation of a **spatial experience** which celebrates African textiles.

Design Approach: Spaces Allowing for Narration and Experience:

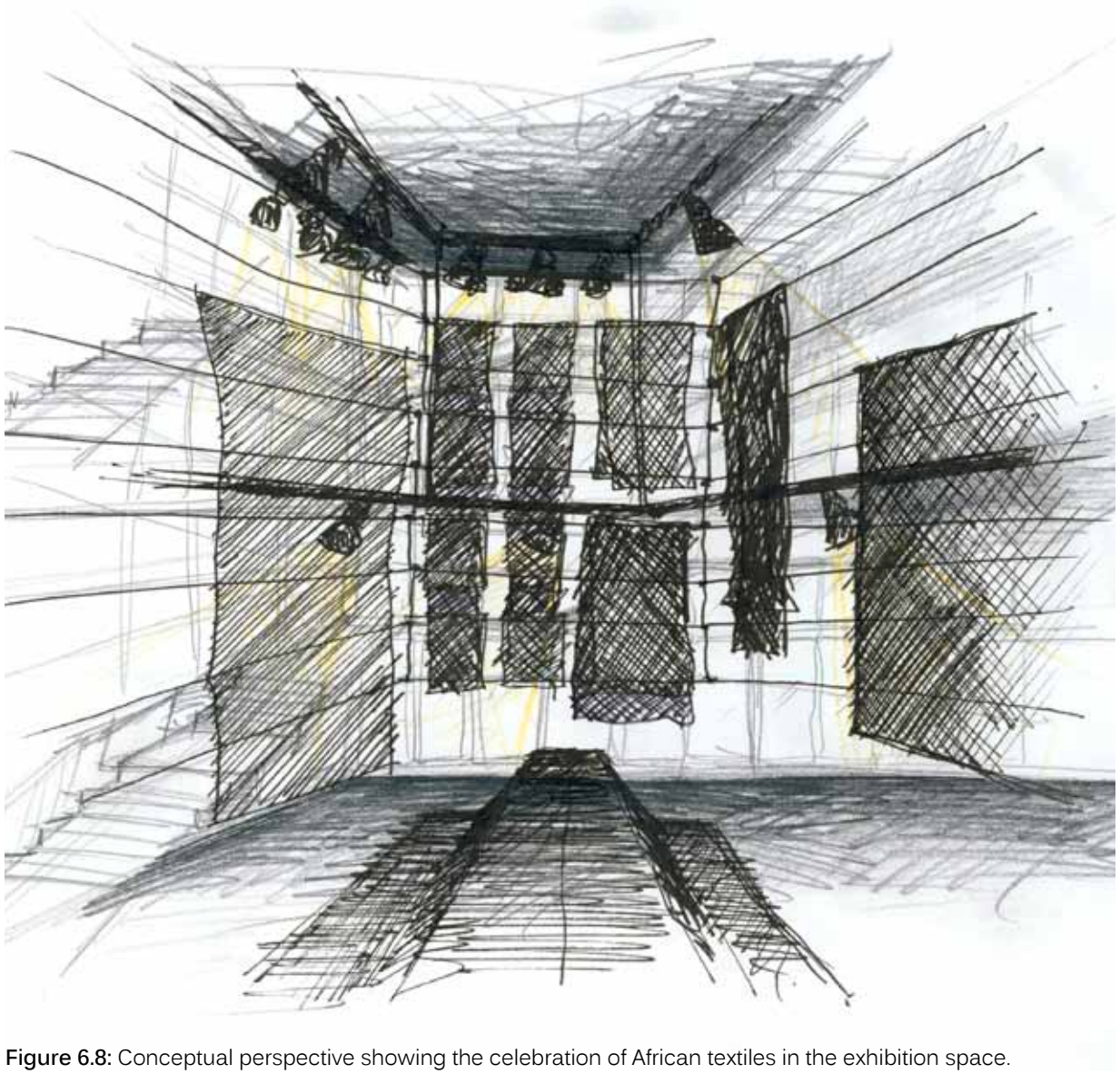


Figure 6.8: Conceptual perspective showing the celebration of African textiles in the exhibition space. (Author, 2012)

SPACES ALLOWING THE TEXTILE MAKING PROCESS TO BE NARRATED, EXPERIENCED AND REMEMBERED:

The interior intervention accommodating the celebration of African textiles, should allow the users to perceive the process as a **narrative** and as a **memorable experience**. For the users, especially the public, the encounter with the textile making interior intervention should be a lasting experience in **celebration of African Textiles**. Spacial experience is created through various factors defined in the statement below:

> *"Objects and surfaces, form and light, material and colour are often described as the ingredients for the design of the interior. They are used to construct space, its functions and appearance... The temporal, ephemeral, intangible elements and sensations within interiors, together with cultural connotations, preconceived knowledge and personal memories, also factor in the formation of interior atmosphere... I call such atmospheric influences, '**spatial software**'... If there is 'spatial software', then we can presume there also must be '**spatial hardware**', which pertains to what can be measured – the construction of the interior, the definition of boundaries, materials and details."*
> (Hinkel, 2008: 82)

The **spatial hardware** that will specifically contribute to the African textile experience consists of the **actual textiles** exhibited and the spaces created through the **textile-like** elements. The **sensory aspects** of textiles, the visual (texture, pattern and colour) as well as the **tactile** aspects will also significantly contribute to the spatial hardware in the interior spaces. The **spatial software** that will create the experience is the continuous textile making **process**, **sounds** produced by the process and the individual's **cultural connotations** with African textiles. The perspectives in Figure 6.8, 6.9 and 6.10 conceptually explores the creation of interior spaces which celebrates African textiles.

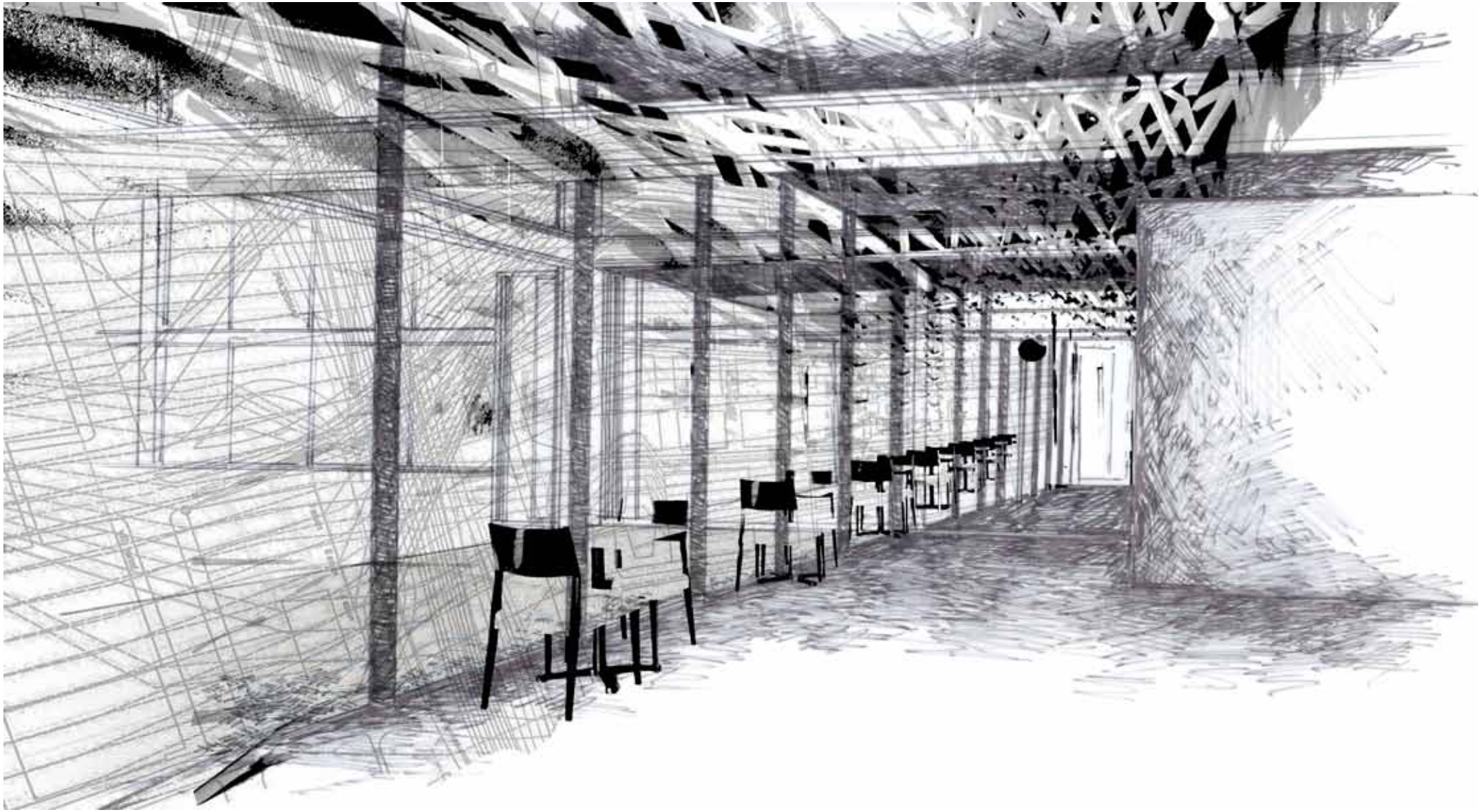


Figure 6.9: Conceptual perspective showing the celebration of African textile through the interior intervention. (Author, 2012)

Design Approach: Spaces Allowing for Narration and Experience:

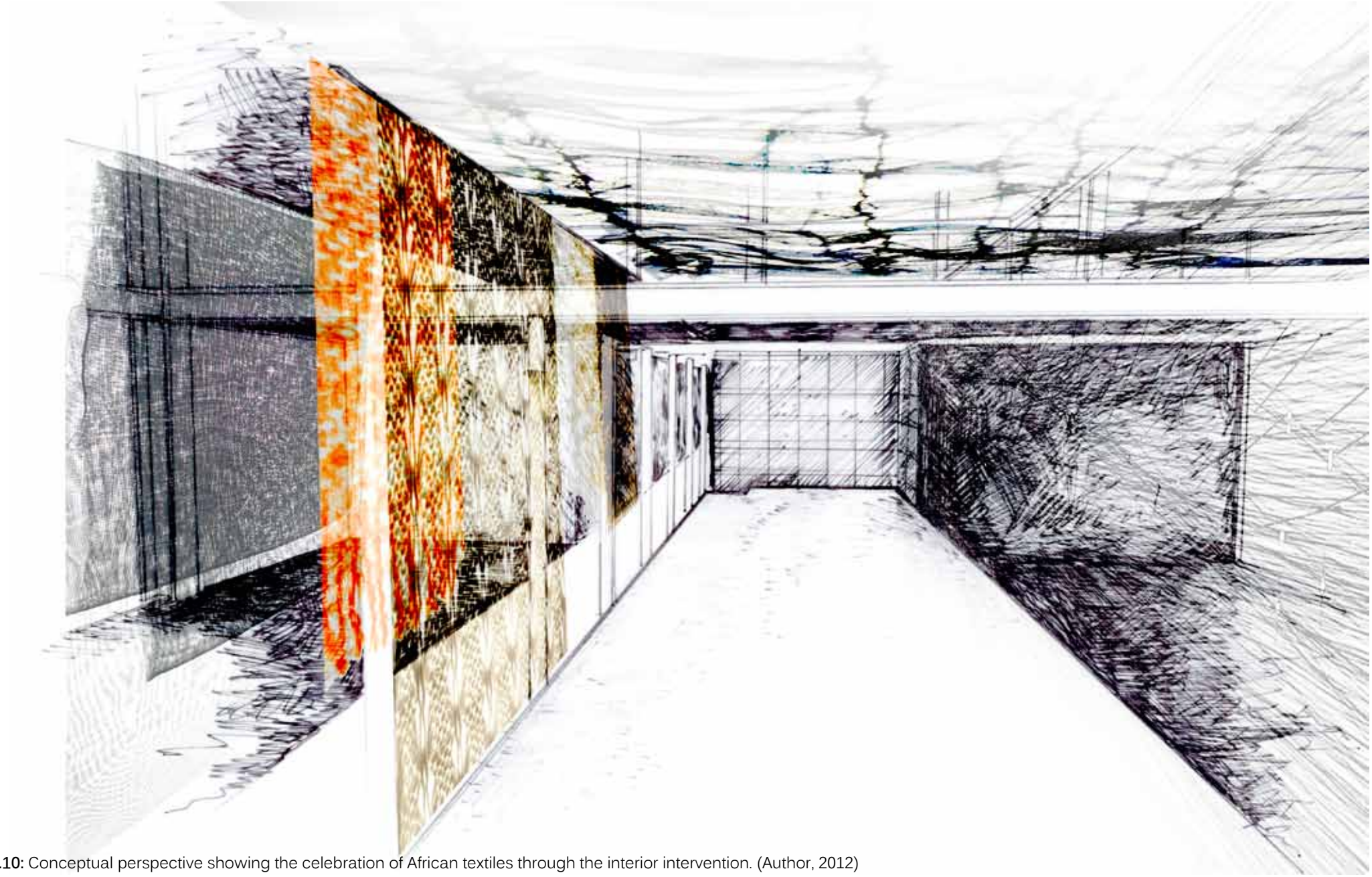


Figure 6.10: Conceptual perspective showing the celebration of African textiles through the interior intervention. (Author, 2012)

Design Approach: Spaces Facilitating Collaboration:

STIMULATION OF COLLABORATION THROUGH THE INTERIOR ARCHITECTURE:

The particular position of the textile making workshops in relation to the fashion design studios and the public exhibition spaces will allow for opportunities of **collaboration** between the fashion design students, the textile makers, the Pretoria Weavers Guild and the public.

Haworth Knowledge and Research Team (2010: 3) states that the reason for interacting within a working environment can either be **socially** or **work related**. Darling and Thorp (2011: 2) argue that interaction between people in a working environment occurs **verbally** and **non-verbally**. Haworth Knowledge and Research Team (2010: 4) also suggest that collaboration can occur **formally** or **informally**.

When the activity factors are combined with the formality factors, four types of collaborative spaces emerge, as shown in Figure 6.12. There spaces are: Spaces where discussion happens by chance, spaces where interviews or brainstorming sessions can be held. Spaces where formal seminars or demonstrations can be held as well as spaces where interaction occurs at the working stations. Similarly different spatial typologies emerge when the formality factors are combined with the communication factors as shown in Figure 6.13. These spaces are: Informal verbal discussion spaces, such as at a coffee shop. Spaces for formal verbal presentations relating to internal and external exhibition spaces and spaces where non-verbal internal communication occur, such as pin-up boards and mood boards. The **focus of the collaboration** between the textile makers and fashion design students would mainly be **informal productive collaboration** and **informal non-verbal** collaboration.

Informal productive collaboration occurs between the members of the **Pretoria Weavers Guild** and the **underprivileged textile makers** within the textile making workshops. This collaboration is stimulated through tables which can be grouped together or used separately. Also through the writing boards in the workshops, where ideas are shared or complex textile making methods are explained. **Informal productive collaboration** also occurs when the **fashion design students** and **textile makers** share ideas, or plan a project together. This collaboration is encouraged by placing the textile workshops opposite the fashion design studios, as shown in Figure 6.11.

Informal non-verbal collaboration occurs when the **textile makers** are aware of what the **fashion design students** are producing and what the **other textile makers** produce. This collaboration is enhanced by providing both the textile making workshops and fashion design studios with glass partitions, to create **visual interaction**. Also, pin boards are provided in the workshops where ideas and works in progress can be pinned to, to visually inspire the other textile makers.

As a result of fact that the building will function as a **traditional guild**, it is important to investigate the guild typology as a **contemporary collaborative working environment**.

> *"The term 'Guild' describes a new type of work setting that facilitates collaboration and knowledge building between peers. In one sense it represents a high-tech return to the idea of the medieval craft guilds...What matters most with this model is the proximity of those with similar attitudes and ideas to share."*
> (Myerson & Ross, 2006: 74)

When looking at examples of contemporary guild typologies presented by Myerson and Ross (2006: 81- 108) the following spatial characteristics defines a contemporary guild and will inform the design of the spaces within the interior intervention: The first characteristic is a balance between **productive** spaces, **contemplative** spaces and spaces for **social interaction**. The second important aspect is the fact that the **furniture** in the spaces are **adjustable** to stimulate **interaction** and **mobility** between users. Both these characteristics of a contemporary collaborative guild typology will be introduced into *WARP + WEFT.*

Design Approach: Spaces Facilitating Collaboration:

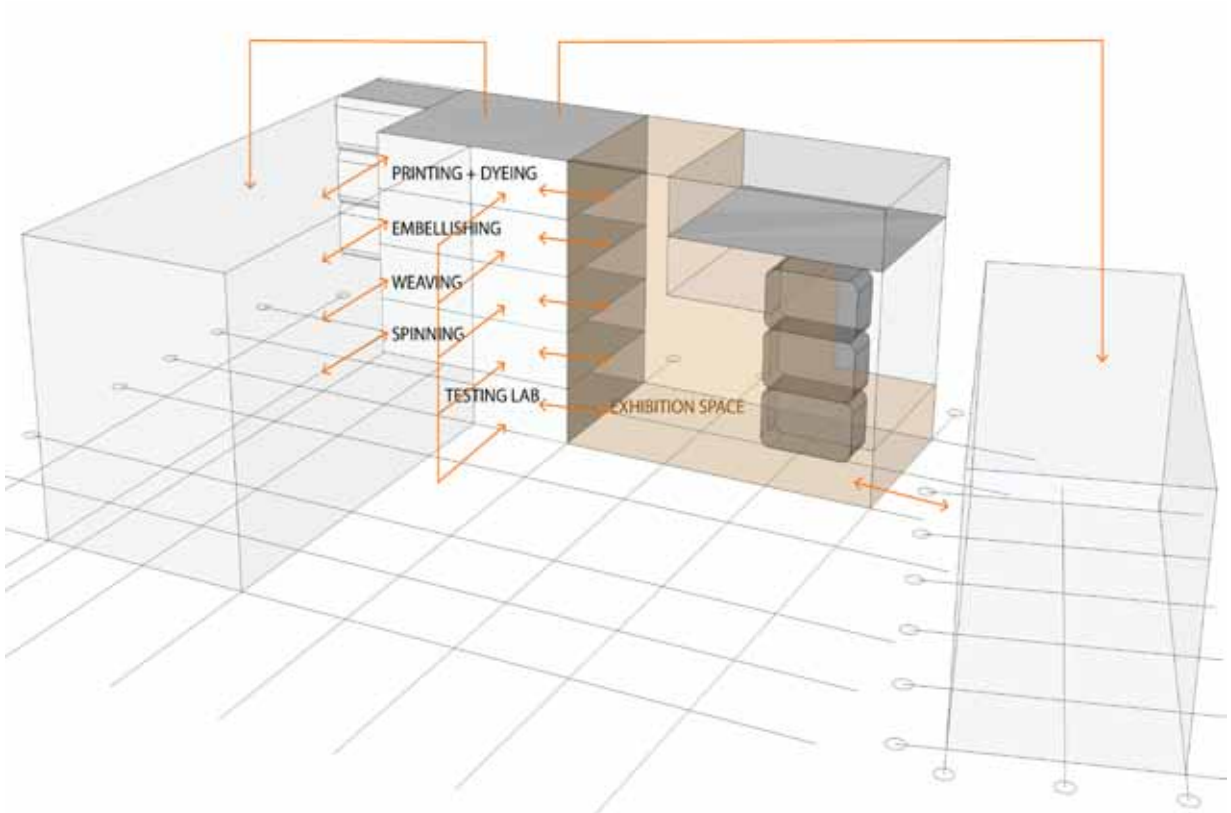


Figure 6.11: Diagrammatic sketch to explain the theoretical concept of collaboration between the user groups and the public in the exhibition space. (Author, 2012)

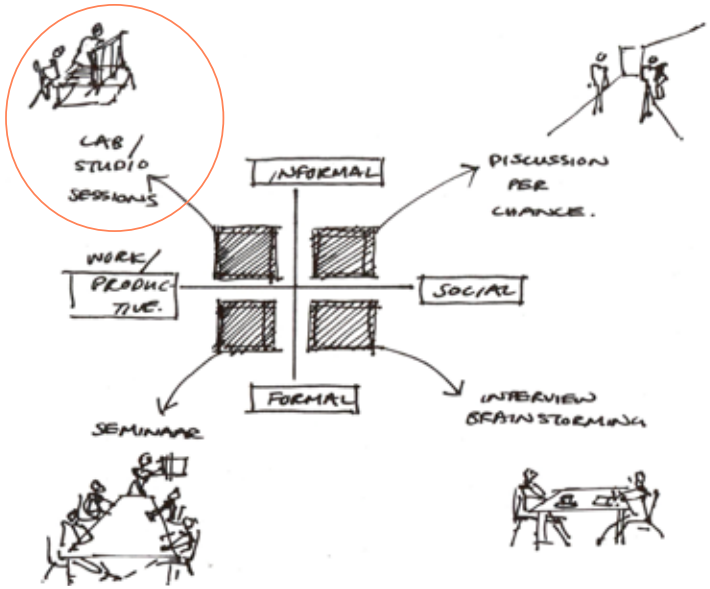


Figure 6.12: Collaboration which occurs when the activity factors are combined with the formality factors. (Author, 2012)

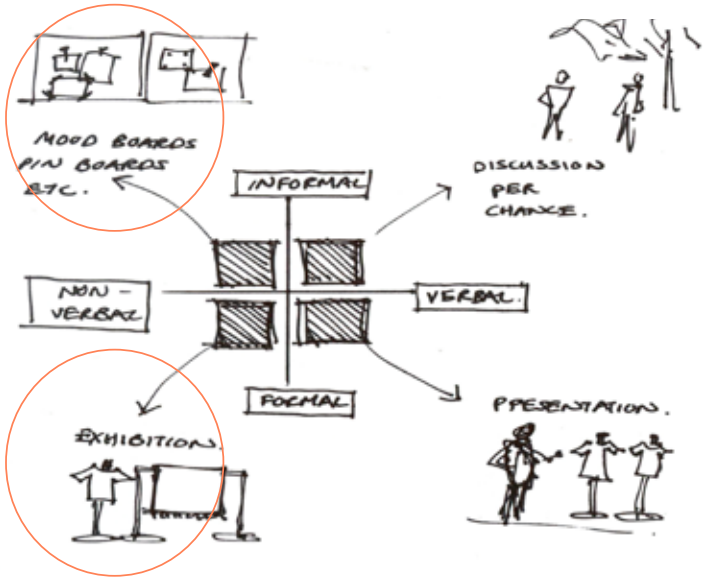


Figure 6.13: Collaboration which occurs when the communication factors are combined with the formality factors. (Author, 2012)

Design Approach: Spacial Differentiation:

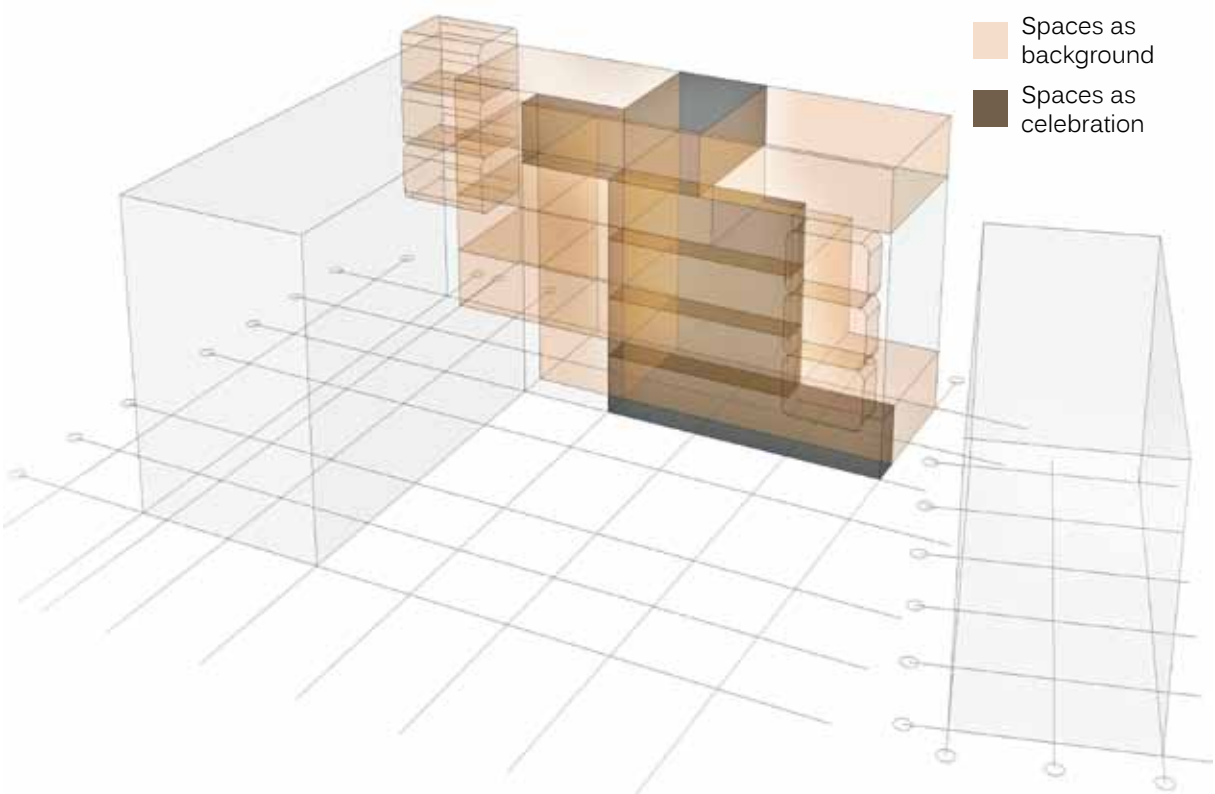


Figure 6.14: Diagrammatic sketch to explain the difference between the spaces within the interior intervention. (Author, 2012)

THE DIFFERENT ROLES OF THE SPACES WITH REGARDS TO THE CELEBRATION OF TEXTILES:

Of the various spatial typologies existing within the interior intervention, it is important to differentiate between the **role of the spaces**, due to the unique **design problem** established in Chapter 4. This design problem is the predicament of designing a facility **for** the celebration of textiles, **through** the celebration of textiles.

The **exhibition space,** which celebrates textiles by exhibiting them, should become a **neutral background** for the textiles. The textile **sample pods**, which celebrate textiles by showcasing them, should also act as a **neutral background** for the textiles. The interior architecture of the **workshops**, which celebrates textiles through the production of textiles, should also **not visually interfere or compete** with the textiles being produced.

The **rooftop lounge** and the **walkways** over the multivolume exhibition space **do not act as backgrounds** for textiles and can therefore celebrate textiles by **becoming textile-like**. In these spaces other materials which are not textile-related are translated and manipulated to become textile-like. To create a space which becomes textile-like, the second and fifth methods of translating textiles into interior architecture are the most important. These are the methods of **translating the structure or unique qualities** of textiles into the interior architecture. The design execution and technical investigation of both a space which acts as a background and spaces which is textile-like will be presented in Chapter 7.

Actual textiles will not only be exhibited, but also used for **functional requirements** within spaces, especially to solve the issues with regards to the architectural proposal, identified through the site analysis in Chapter 2. The design execution and technical investigation on the use of actual textiles for both exterior and interior applications will be presented in Chapter 7.

Conclusion:

By elaborating on all the **conceptual intentions, responses, design problems and theoretical investigations**, a design-basis is created. The importance of this chapter is the explanation of how **spaces are woven into the architectural proposal** and why. The significance of this chapter is also to explain the **positioning of the spaces** according to various conceptual approaches. The following chapter presents the final product as a **synthesis** of the aspects discussed in the previous chapters.

DESIGN EXECUTION AND TECHNICAL INVESTIGATION:

The execution of the **design**, together with the **technical investigation** is explained in this chapter. The explanation of the design and technical investigation is narrated according to the **spacial progression** of the interior intervention. The narrative starts with the experience of ap**proaching the building**, progression into the **exhibition space**, the **workshops**, the textile **sampling pods** and lastly onto the **roof space**. The important design elements within the spaces are elaborated upon, according to the following aspects:

- The **intention** of the design.
- The **inspiration** for the design.
- The **method of translating textiles**.
- The design development and **iterative processes**.
- The **design** execution and **technical** resolution.
- The significance of the selected **materials**.

The **plans and sections** showing the interior intervention are included in this chapter, as well as c**omparative images** between the design as it has been received from the architect and the design of the interior intervention. The plans and sections presented in this chapter can be comparred with the plans and sections of the architectural proposal presented in Appendix D. The chapter concludes with stating that the previously stated **design question** has been answered and the **hypothesis** is valid.

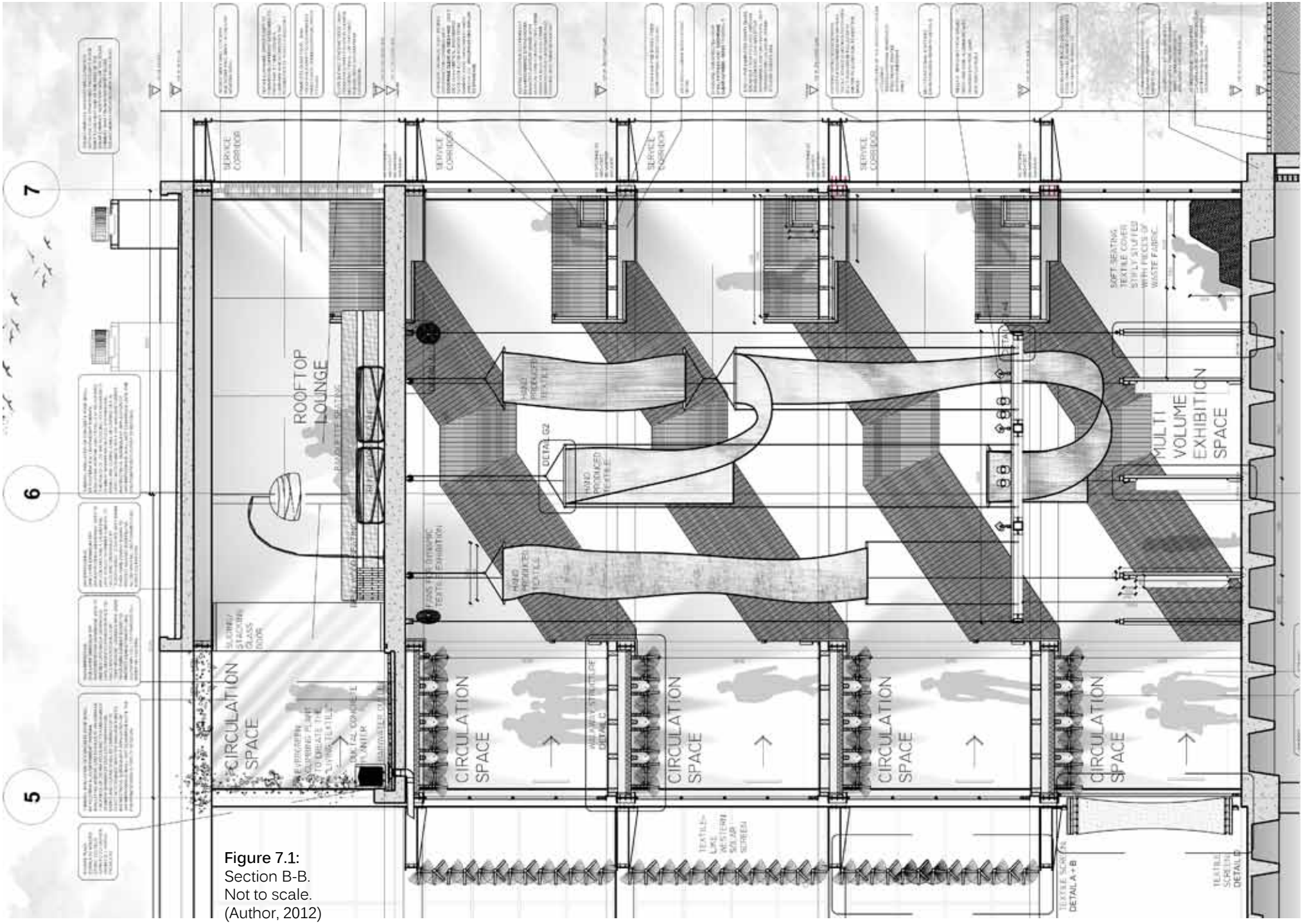


Figure 7.1:
Section B-B.
Not to scale.
(Author, 2012)

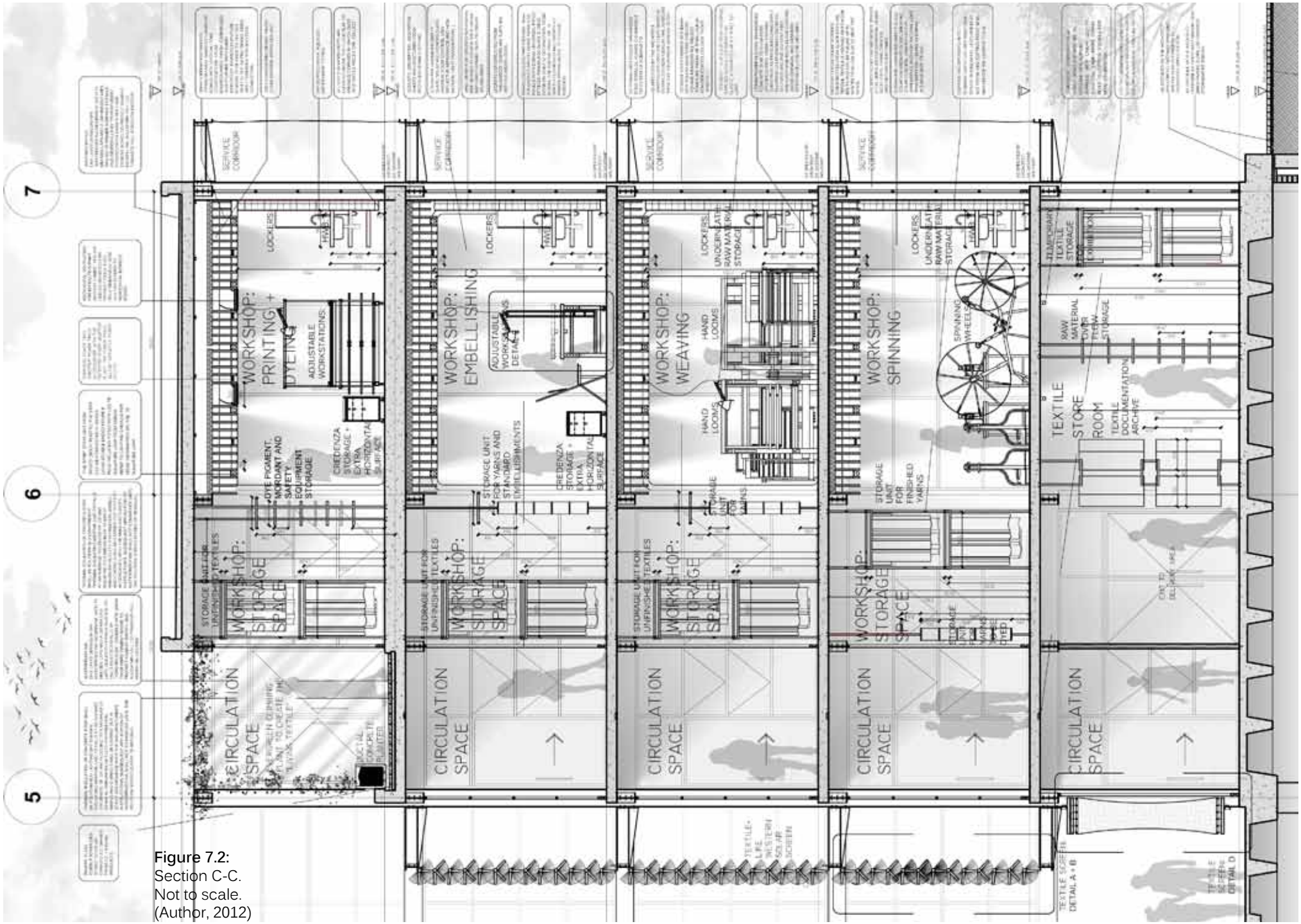


Figure 7.2:
Section C-C.
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(Author, 2012)

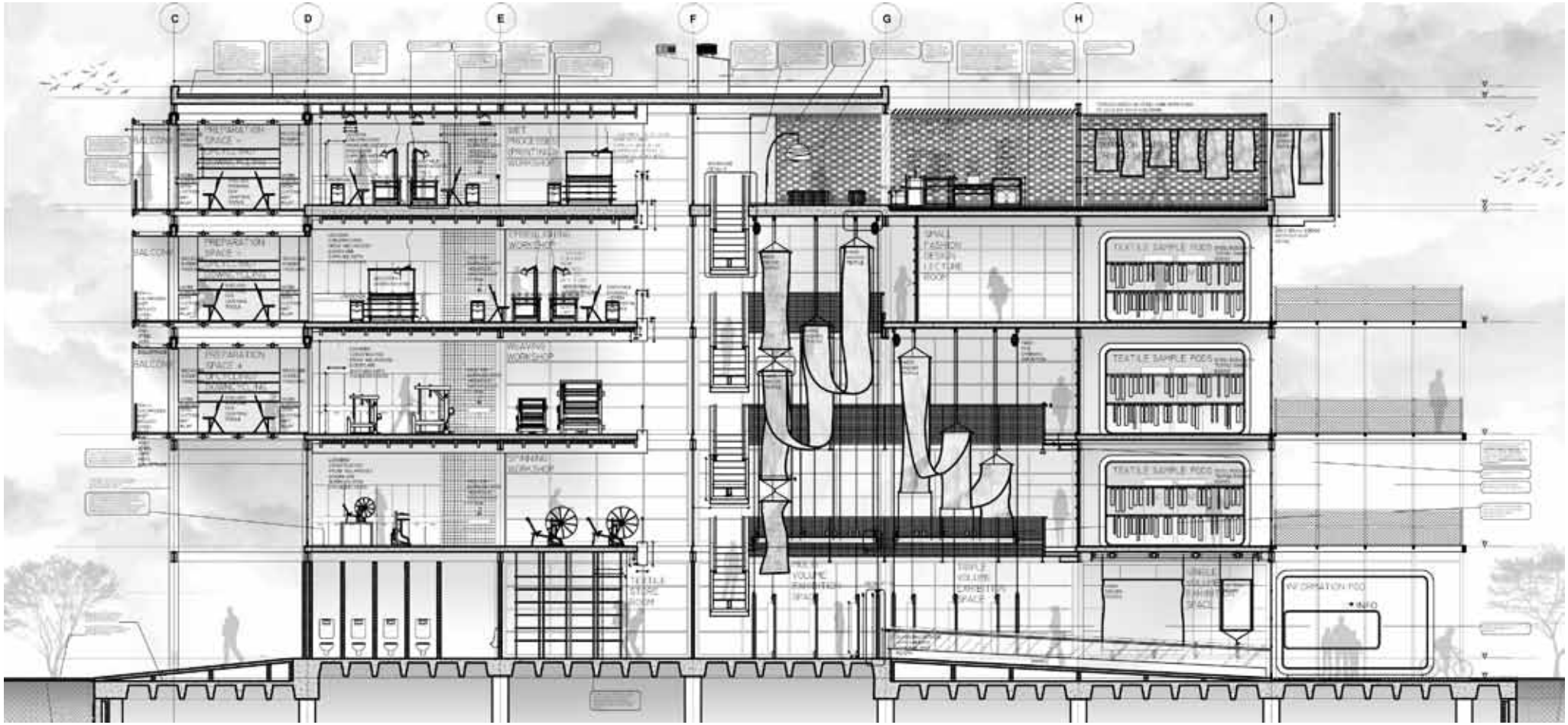


Figure 7.3: Section A-A, Not to scale. (Author, 2012)

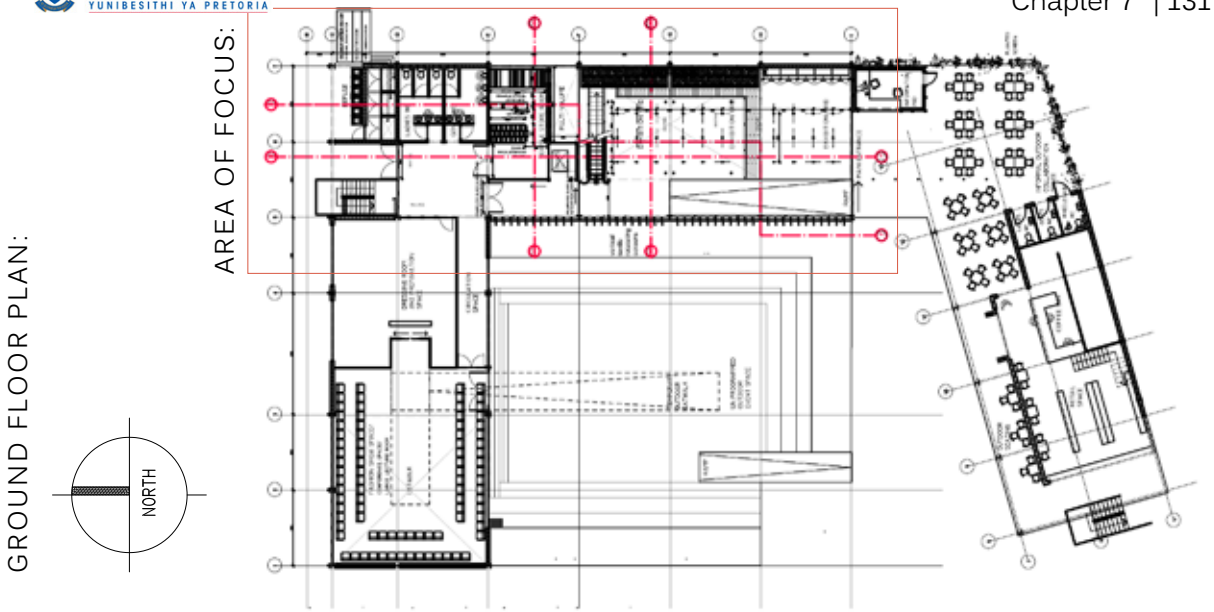


Figure 7.4: Ground floor plan. Not to scale. (Author, 2012)

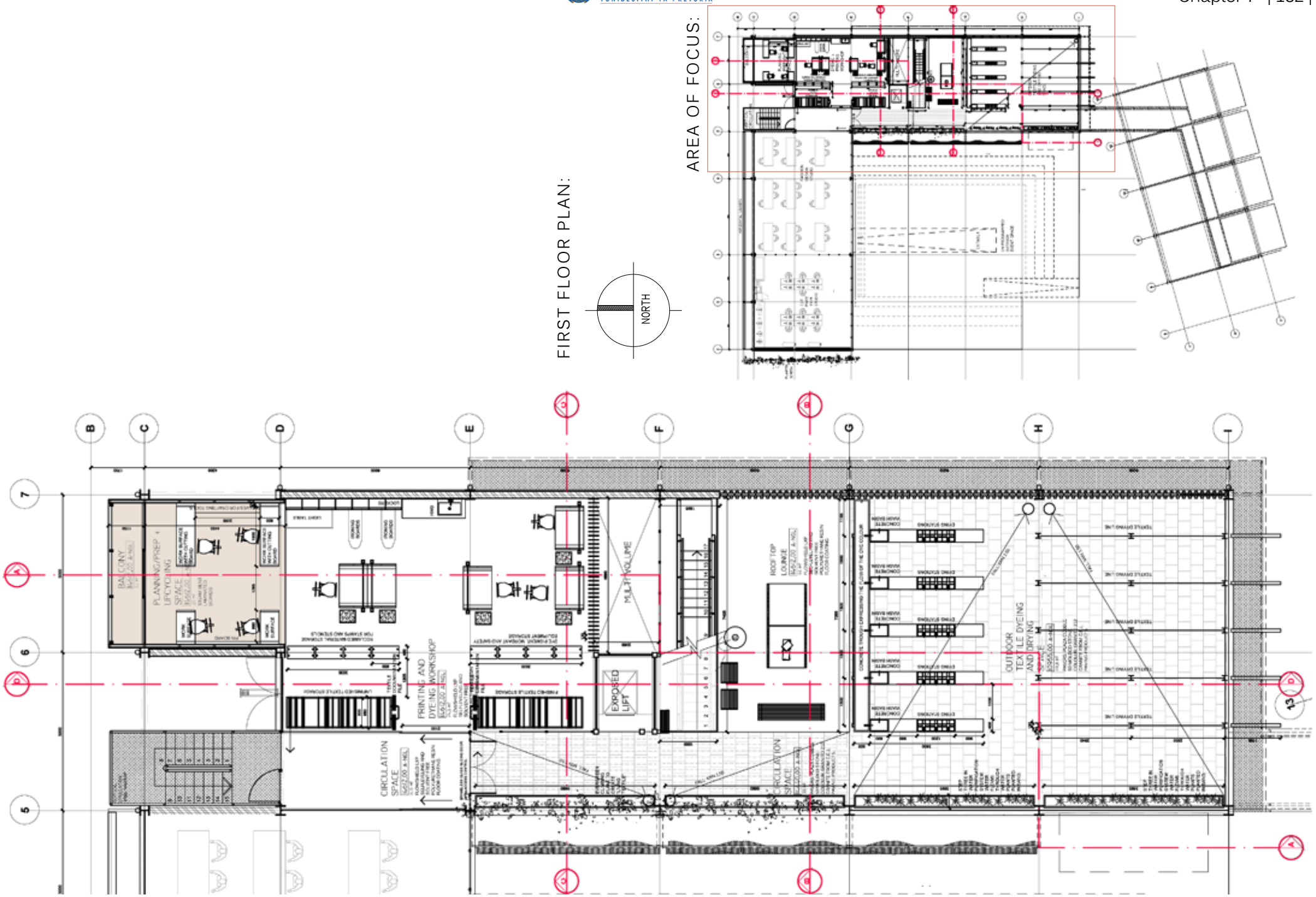


Figure 7.5: First floor plan. Not to scale. (Author, 2012)

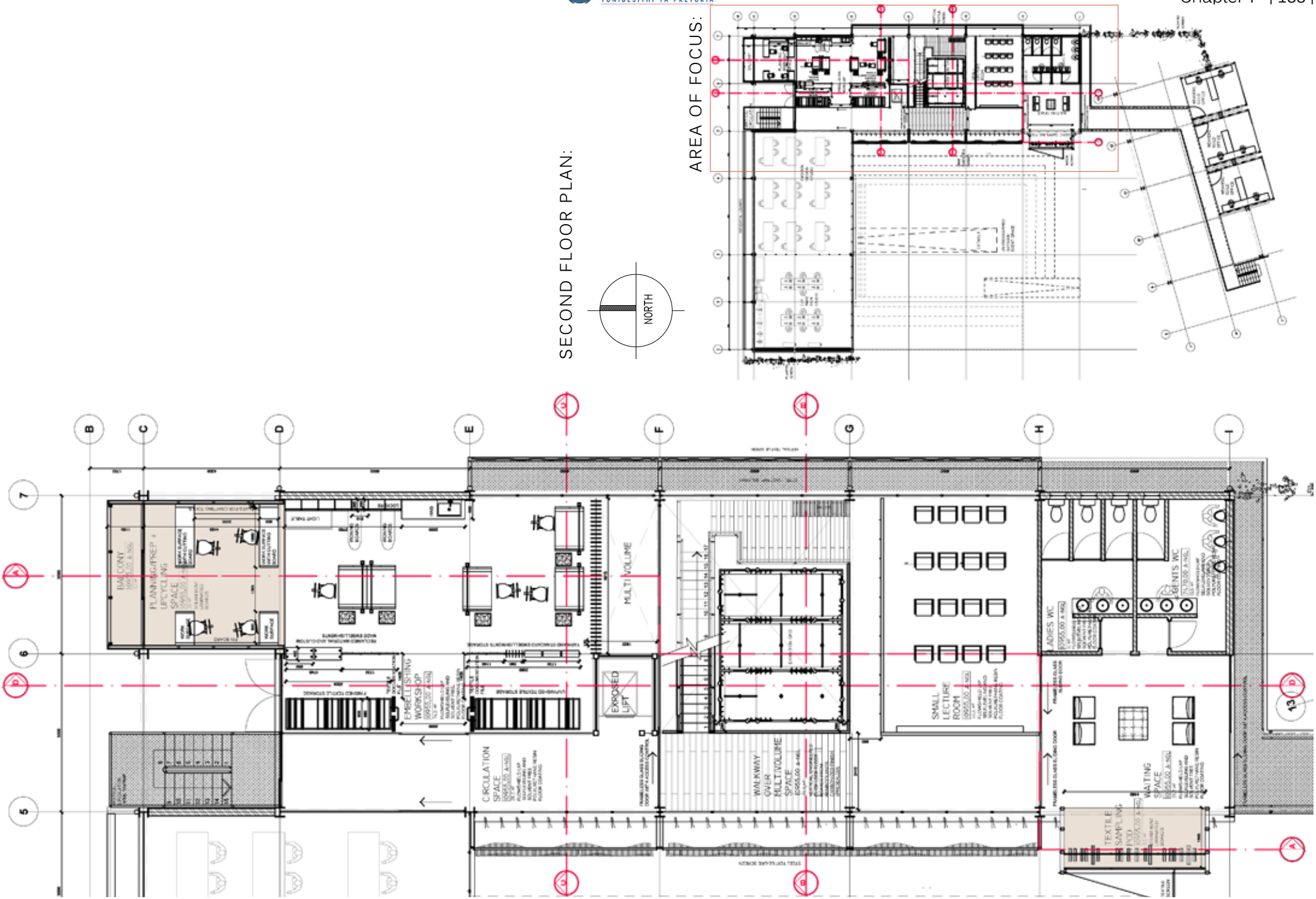


Figure 7.6: Second floor plan. Not to scale. (Author, 2012)

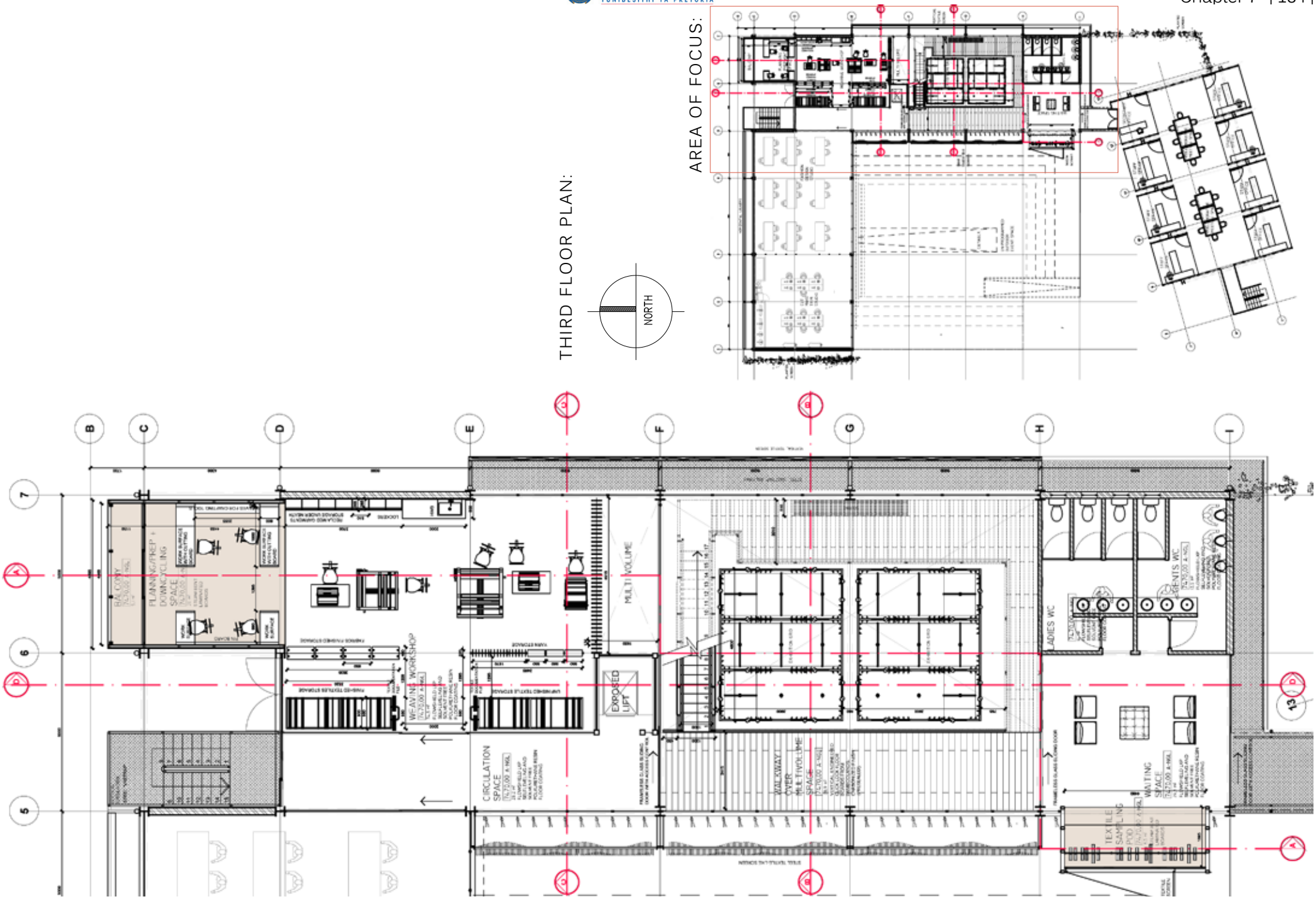


Figure 7.7: Third floor plan. Not to scale. (Author, 2012)

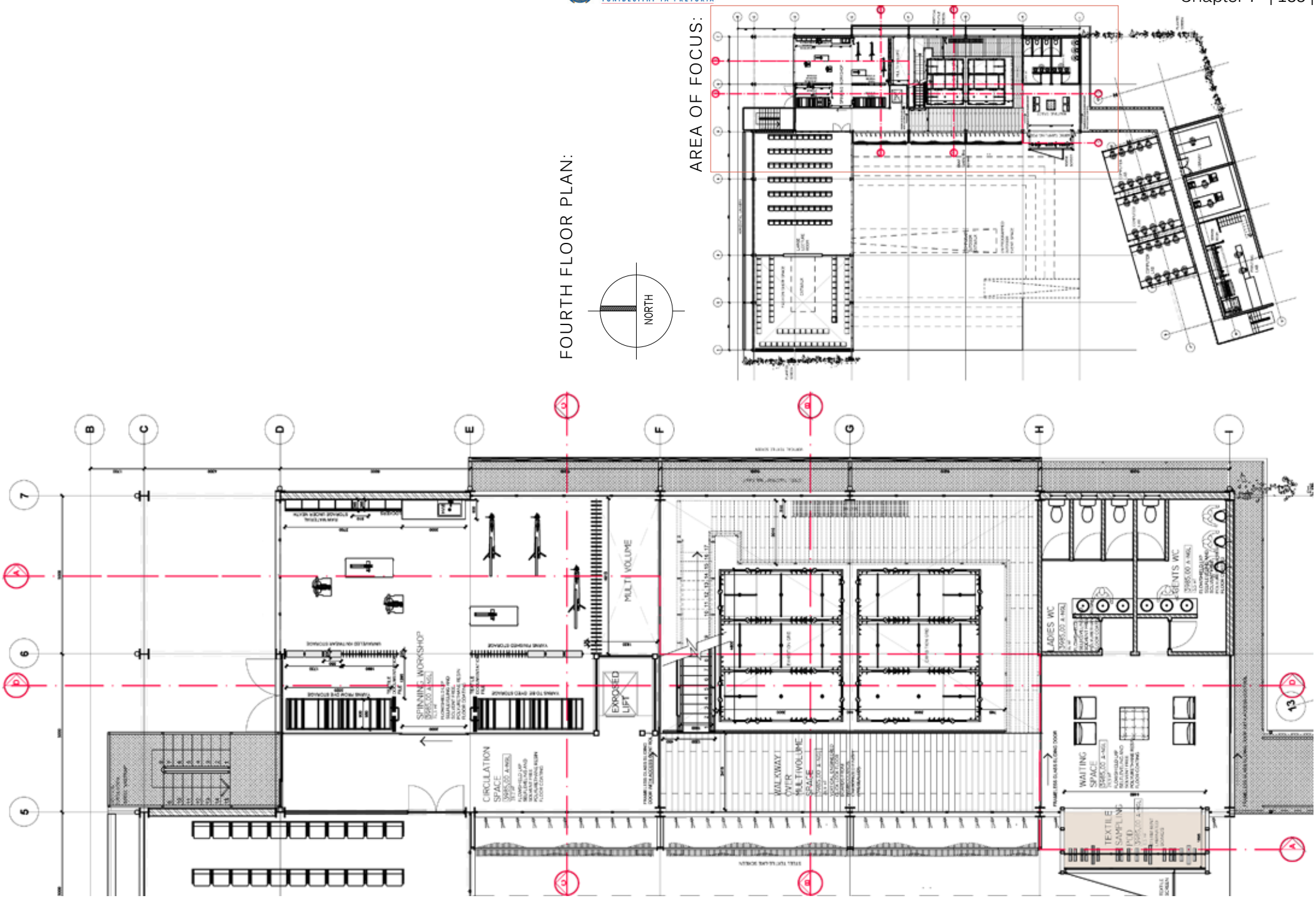


Figure 7.8: Fourth floor plan. Not to scale. (Author, 2012)

Figure 7.9: Perspective showing the interior spaces prior to intervention. (Author, 2012)

Figure 7.10: Perspective showing the interior spaces after intervention. (Author, 2012)

Comparison:

COMPARISON BETWEEN THE ARCHITECTURAL PROPOSAL AND THE INTERIOR INTERVENTION:

Figure 7.9 and Figure 7.10 show two perspective views into the building as a comparative analysis of the building before and after the interior intervention. The first perspective shows the **architectural proposal**, **untouched** by the proposed interior intervention. The second perspective shows the architectural proposal with the **interior intervention**.

The spaces within the interior intervention are positioned according to a specific **order**. **Vertical circulation** now takes place within the **exhibition space**, to allow a more **diverse spatial experience** of the exhibition within this multivolume space. This also allows the everyday users to **experience** and **interact** with the textile exhibition during vertical circulation through the building. The WC's on the ground floor has been relocated in closer vicinity to the fashion show space. This allows the single volume e**xtension of the exhibition space** to be directly adjacent to the entrance. By merging the staircase with the exhibition space the **WC's** on the upper storeys can be positioned closer to the entrance, which provides a larger area for the exhibition space. The **triple volume** space proposed by the architect of the building has been **extended through to the rooftop**, in order to link the rooftop space with the exhibition space. This extension increases the **scale and volume** of the exhibition space, which allow for the exhibition of **long, flowing textiles. It also** creates a **dramatic effect** which contributes to a **multiplicity of spatial experience**. The workshop spaces are linked throughout with a multivolume void which is **torn** away from the exhibition space in order to insure a **clear distinction** between these spaces. A portion of this **multivolume tear** also functions as the shaft for the glazed lift.

Figures 7.11 and 7.12 is a comparison of the western façade prior to intervention and after intervention is also shown. These views are similar to that which one will see as one approaches the building. This comparison shows how the solar screens have been improved. The solar screens also indicate the position of the interior intervention within the architectural proposal.

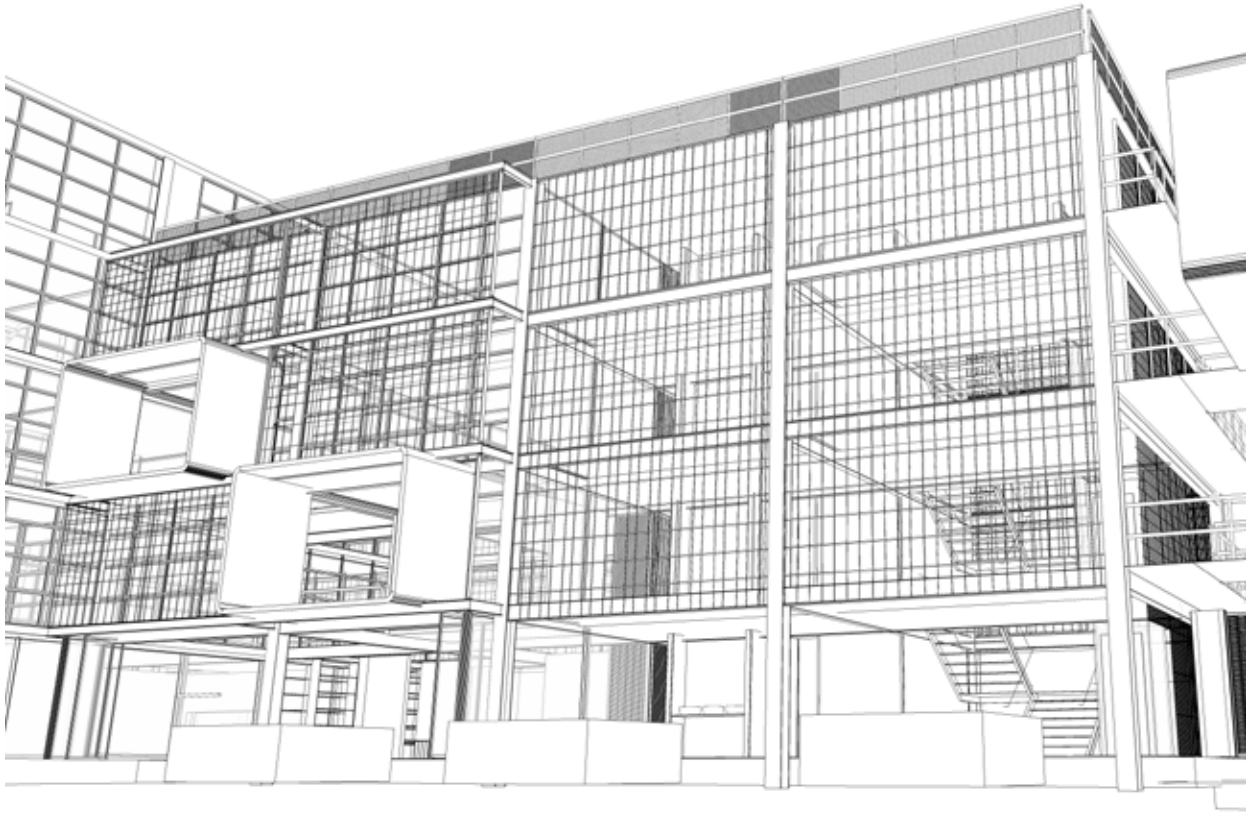


Figure 7.11: Perspective showing the western façade prior to intervention. (Author, 2012)

The Interior Intervention:

APPROACHING THE INTERVENTION:

As one approaches the architectural proposal in which the interior intervention, *WARP + WEFT* is woven into, **an awareness of textiles** is already stimulated as shown in Figure 7.12. This awareness is created through the **solar screens** on the façades, which act as a protective secondary skin to the building. A textile awareness is also established through a glimpse of the **dyed and printed textiles** drying on the roof.

EXTERIOR SOLAR SCREENS:

The **textile solar screens** on the western ground floor façade act as **branding and signage** elements to the people approaching and passing by the building. A **transition** between the exterior and the interior is established through the screens, considering that from either the inside or outside one **perceive glimpses** of the other side. These screens are an exterior **extension** of the interior textile exhibition. The solar screens work together with the adaptable canvas skins on the pods, proposed by the architect, to act as branding elements. Both the screens and the pods can be used for advertising and marketing purposes as explained in Chapter 2. In a similar manner that the canvas skins on the pods portray the activities and interests of the Clothing and Consumer Science Department, the solar screens portray the activities and interests of the textile making guild, *WARP + WEFT*.

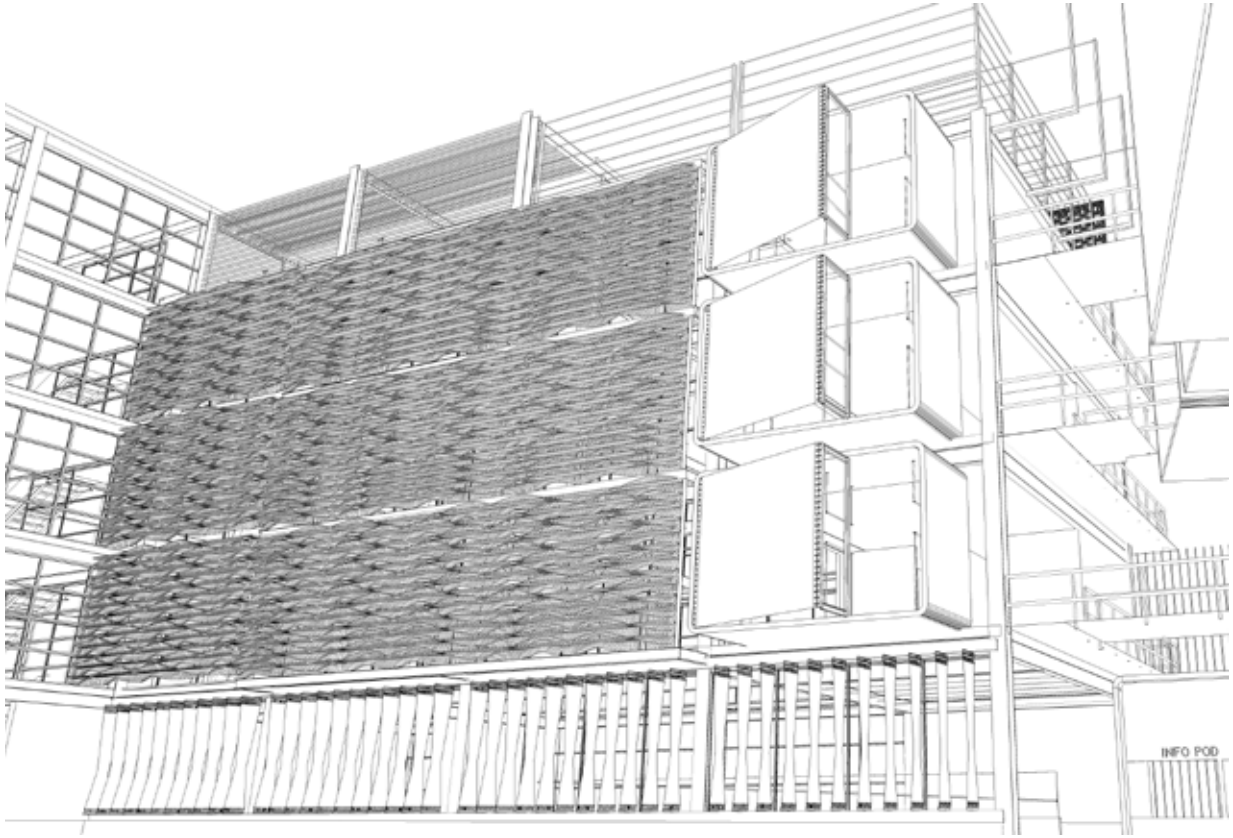


Figure 7.12: Perspective showing the western façade after intervention. (Author, 2012)

The textile screens on the pods act as clues to the celebration of traditional African textiles occurring within the building. This is because the **screens to the pods** are another example of **textiles being used for a solar screen.** While blocking undesired western sun, soft southern light is allowed to enter the pods through the openings of the screens.

The screens which extend from the walkways are constructed to resemble a textile hanging from the façade and to convey the **abilities of textiles**. Therefore these screens also act as clues to the activities within the intervention. The screens **unravel** towards the bottom to translate the roughness, irregularity and flaws of traditional African handmade textiles.

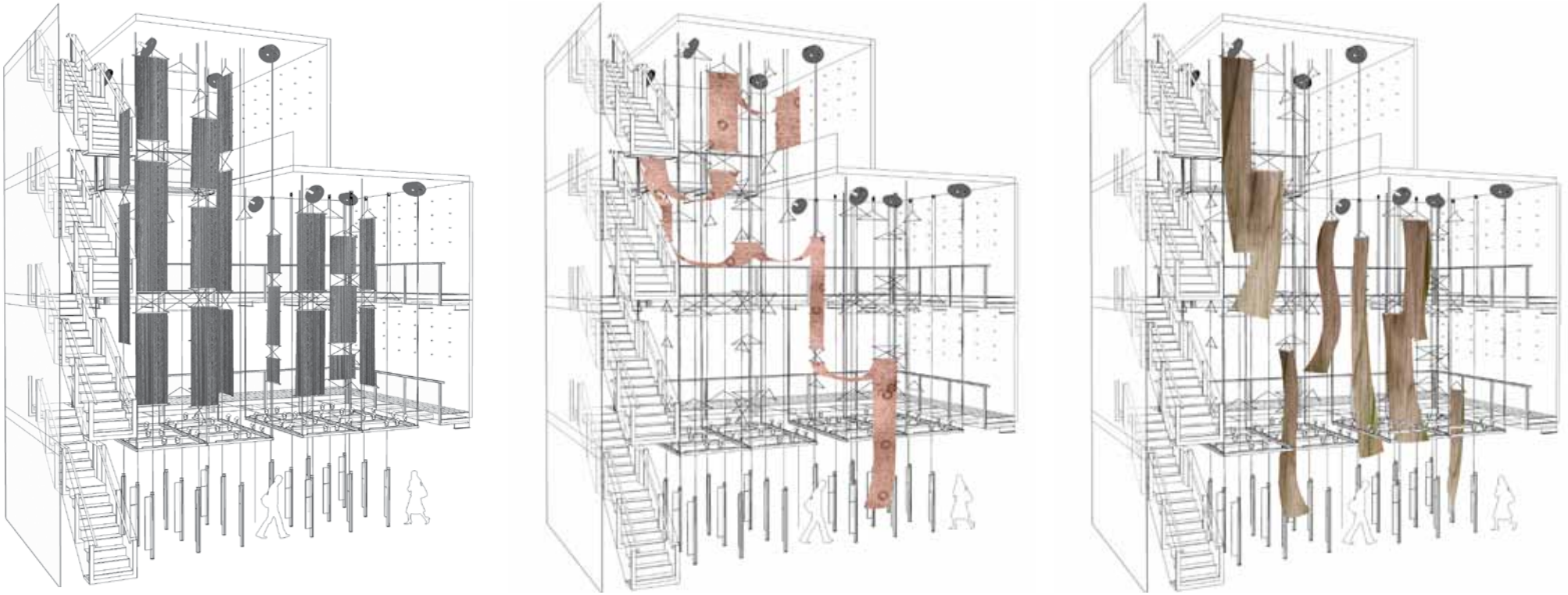
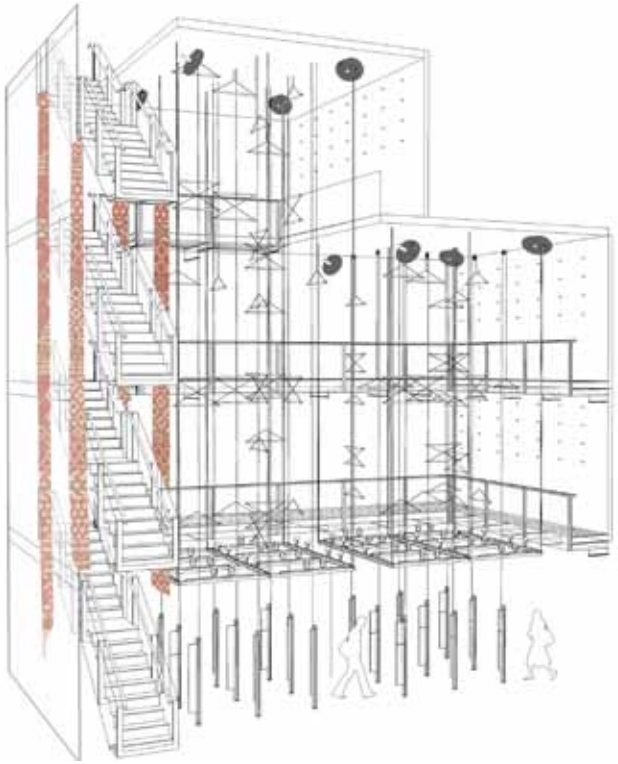
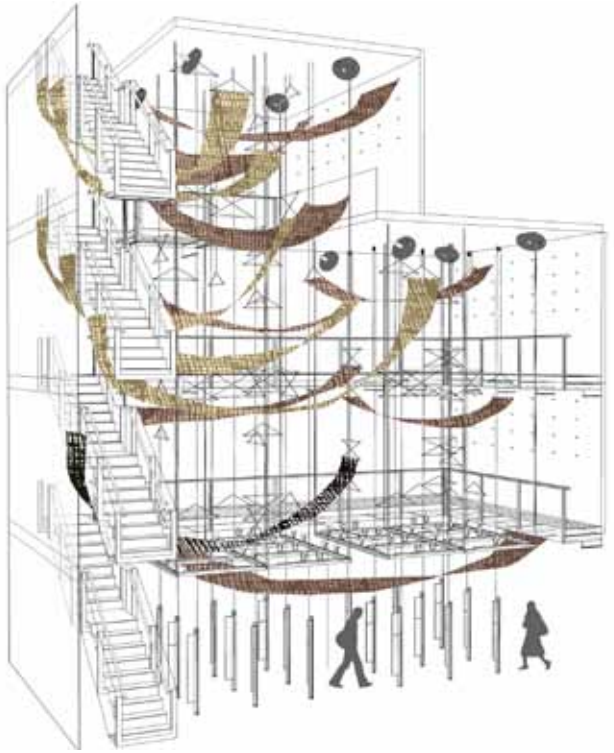


Figure 7.13: Perspectives showing the versatility of the exhibition space. (Author, 2012)

The Interior Intervention:





THE TEXTILE EXHIBITION SPACE:

As one enters the **textile exhibition space**, the interior celebration of African textiles is experienced through the textiles being exhibited, the textiles being produced and through the elements in the spaces which are textile-like (as shown in Figure 7.14).

The exhibition space (Figure 7.15) is a **multivolume, vertical space** in which textiles are suspended on a steel wire rope grid. A **staircase** circulates around the suspended textiles, all the way to the **rooftop space**. The staircase allows one to perceive the exhibition from **different levels and angles**. This notion is especially important, considering that the textiles will not be exhibited in a conventional manner, but in different **unconventional configurations** as shown in Figure 7.13. The landings of the staircase is designed to allow the viewers to linger on a specific level, sit down or touch the textiles within reach. For visitors who are not able to use the staircase, a **glass lift** is provided. The glass lift is carefully positioned to enable a good view into the textile making workshops as well as into the exhibition space.

As one ascends up the staircase, not only is the **exhibited textiles** perceived, but also the whole **textile making processes** through the views into the adjacent workshops spaces, as shown in Figure 7.16. At the bottom of the vertical exhibition space, located underneath the exhibition grid are **soft seats** which resemble giant mattresses. The function of these seats is to allow the viewers to **observe** the suspended textiles from an **unconventional angle**. This encourages visitors to **relax and linger** in the exhibition space and soak up the entire experience. These seating elements are examples of the interior **application of textiles** to enhance the textile experience. These seating elements also function as **acoustic absorbents** in the exhibition space.

The **walkways,** which stretch across the multivolume exhibition space, provide the ideal opportunity to express the notion of a building element becoming **textile-like**. These walkway structures are similar in construction to the exterior solar screens which are extensions of the walkway structures.

Figure 7.14: Perspective showing the entrance into the exhibition space. (Author, 2012)

Figure 7.15: Perspective showing the walkways over the exhibition space. (Author, 2012)

Figure 7.16: Perspective showing the view into the workshops. (Author, 2012)

Figure 7.17: Perspective showing the rooftop textile dyeing space. (Author, 2012)

The Interior Intervention:

Figure 7.18: Contrast between background colour selection and the textiles. (Author, 2012)

THE WORKSHOP SPACES- INTERACTION WITH ACTUAL TEXTILES:

In the **workshops**, which can be viewed from the exhibition space (Figure 7.16), the **hand production** of textiles is celebrated. As one ascends through the exhibition space, the textile making process (from spinning and weaving to embellishing as well as printing and dyeing) is perceived through the large frameless glass partitions. All the workshops are **similar** with regards to **spatial layout, the floor finishes, ceiling design, lockers and hand wash basins**. The differentiation in the workshops occurs only with the **equipment** and the various **storage units**. The similarity is necessary so that the workshops can easily host **another or new textile making programme** in the future. For example, the weaving workshop can easily become a 3D printing workshop in future; only the equipment and specialized storage facilities need to be changed or removed. The **ceilings** in the workshops are constructed from engineered strand-woven bamboo fins which host the **lighting, power supply** and the **acoustic absorption**.

THE ROOFTOP EXTENSION:

When one reaches the **apex of the staircase** in the **textile exhibition space**, one steps out onto the **roof space** as shown in Figure 7.17. This roof space is designed to be the **climax** of the textile exhibition. The roof space consists of a covered **lounge** and an open-air textile **dyeing and drying** space. The aim of this extension of the exhibition is to create an opportunity for the textile makers and the exhibition viewers to **engage**. It also creates a tranquil **space of repose** where a viewer can enjoy the view over Hatfield and **reflect** on the exhibition, before descending through the exhibition space.

THE TEXTILE SAMPLING PODS:

The t**extile sampling pods** are **simple functional** spaces which showcase samples of conventional textiles and textiles produced at *Warp + Weft*. The sampling pods serve as inspiration and sources of information for both the use of the fashion design students and the textile makers. The pods' interior is finished with **steam bent plywood cladding** as proposed and specified by the architect (Stegmann, 2008: 128). The textile samples are suspended from **simple steel rails** with **lighting incorporated** in the rail construction, likewise to the storage units in the textile making spaces.

THE INTERIOR INTERVENTION IN GENERAL- MATERIAL SELECTION:

The general impression of the interior environment is a **neutral environment** which is **accentuated** by the textiles being made or exhibited and through the textile-like spatial elements (as shown in Figure 7.18). The interior intervention can be **distinguished** from the architectural proposal through the use of **texture**. As stated in Chapter 2, the building is **monotonous in texture**, making use of mostly cold, flat, smooth surfaces. The interior intervention is **rich with texture and colour** provided by the textiles being produced, exhibited or used as a construction material. The elements which are textile-like, also introduce **texture and softness** through the manipulation of conventional hard and smooth materials.

The **floor slabs** are 200mm 20MPa cast in situ concrete with a Flowshield LXP self levelling polyurethane resin coating. This coating is chose for its resistance to acid (Flowcrete, 2011). Acid resistance is necessary for the possibility of acid dye being spilled on the floors. The **vertical partitions** are facebrick, drywalls or frameless glass. The **glazing** to the exterior is Smartglass Solar Vue laminated coated safety glass. Solar Vue have the ability to reduce glare, to allow high natural light transition and simultaneously provide solar control and UV protection (PG Glass, 2012). UV protection is necessary for the protection of the exhibited textiles.

The **important spaces and elements** within the spaces are further presented as **detail design explorations** and **technical investigations**. These important spaces and elements are: The dyeing stations; the workshops; the western solar screens as an extension of the walkways; the western ground floor textile solar screens; the walkway structure; the exhibition grid; the staircase and the workshop workstations.

The Rooftop Space:

Figure 7.20: Inspirational Photograph. (Author, 2012)

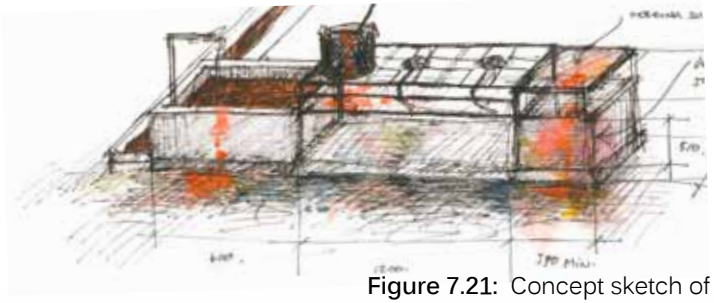
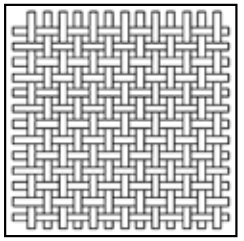


Figure 7.21: Concept sketch of the dyeing station. (Author, 2012)

Metaphor

Structure



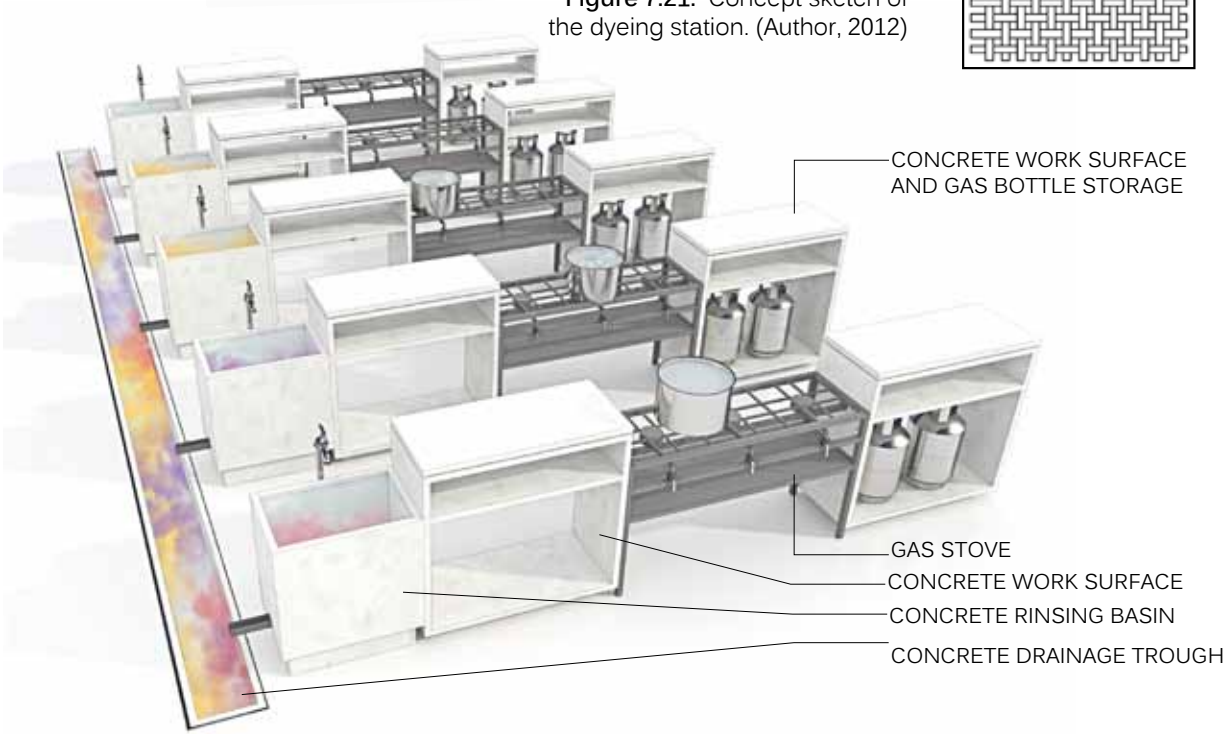


Figure 7.19: Perspective of the dyeing station showing the trough with the dye water. (Author, 2012)

THE DESIGN INTENTION:

The intention of the **rooftop space** is to celebrate the **dyeing and drying** processes. The r**ooftop lounge** provides possibilities to further **explore the translation of textiles** into architecture through materials which, in their conventional use, do not have the characteristics of a textile.

THE TEXTILE INSPIRATION:

The inspiration for the dyeing stations is the **flow of the dye pigment** on a textile as shown in Figure 7.20. This notion is celebrated by allowing the **concrete to be stained** by the dye. The dye water also flows in a **trough** before running down the down pipes to **express the flowing and merging of colours**.

THE DESIGN EXECUTION:

The **covered lounge space** is screened by a **woven brick wall** on the eastern side and a **"living textile" screen** on the western side. Figure 7.17 shows this space. The woven brick wall is an example of a **stereotomic material** which, in its conventional use in construction, does not have the **characteristics of textiles**. However, by **manipulating** it in order to r**esemble a woven textile**, the brick screen becomes textile-like. This brick wall has a **rhythm, translucency and porosity** similar to a woven textile. It represents the **translation of the unique characteristics** of textiles into interior architecture. The living textile screen is an **interpretation of the warp and weft structure** of a textile as shown in Figure 7.17. The **structure** on which the plant climbs is compared to the **warp** yarns of a textile which provides the structural base of the textile. The **plants** are compared to the **weft** yarns, which are the infill yarns. The furniture in the lounge is chosen due to the fact that their structure resembles the **parallel yarns interlinking on a loom** (Figure 7.17). This is an example of a **metaphoric translation of textiles** into interior architecture.

The drying and dying space of the textiles is the **climax of the celebration** of the textile making process, as shown in Figure 7.17. The textile drying space is very **dynamic** due to the steam rising from the dyeing pots on the gas stoves, the swaying of the drying textiles in the wind and the coloured water running in the shallow trough, staining the concrete as it flows. The conceptual drawing in Figure 7.21 shows how the concrete will stain.

The Textile Making Workshops:

THE DESIGN INTENTION:

The **textile making workshops** are designed to be **functional spaces**, not expressing textiles, but functionally s**upporting the production** of hand-made contemporary African textiles.

THE DESIGN EXECUTION:

Productive spaces and s**torage spaces** are incorporated into the workshops. The storage spaces function as the **in- and out-boxes** of the workshops, where produced textiles and yarns can easily be **collected** by textile makers from the workshops above or below.

The **combination of storage units** in the workshops differ according to the processes in the workshops. In general, the storage units consist of units to **hang finished** and **half finished textiles** on as well as different units to **store different thicknesses of yarn** in. Units with **magnetic strips** onto which the **tins with embellishing material** are placed are also supplied. **Shelves** are provided to store boxes containing all other **miscellaneous materials and equipment** such as **dyes, mordants, safety equipment and raw material**. **Boxes on wheels** are provided in the spinning and weaving workshops, to **store raw material** while working. Some of the workshops are also equipped with **light tables**. The storage units are designed as **suspended elements** bolted to the floor and ceiling, to resemble the **tensile character of the exhibition grid** and to be easily removable or replaceable.

Included with the **productive spaces** are the **pods** on the northern façades of the workshops. These pods are used for the **planning, preparation, up-cycling and downcycling** activities. In the s**pinning workshop**, reclaimed knitted garments are downcycled by unravelling the garment to retrieve the usable yarns. For the **weaving process**, old garments and reclaimed material are torn and cut into strips to weave with. The upcycling process in the **embellishing workshop** includes the production of embellishments from waste material, such as beads made from paper. **In the dyeing and printing workshops**, reclaimed material such as wooden blocks or plastic sheets are upcycled to become stamps and stencils to print the textiles with.

Actual textiles or **textile-like elements** are **not used** in the workshops. This is to **avoid visual confusion** between the textiles being part of the interior architecture and the textiles being produced.

The Textile Making Workshops:

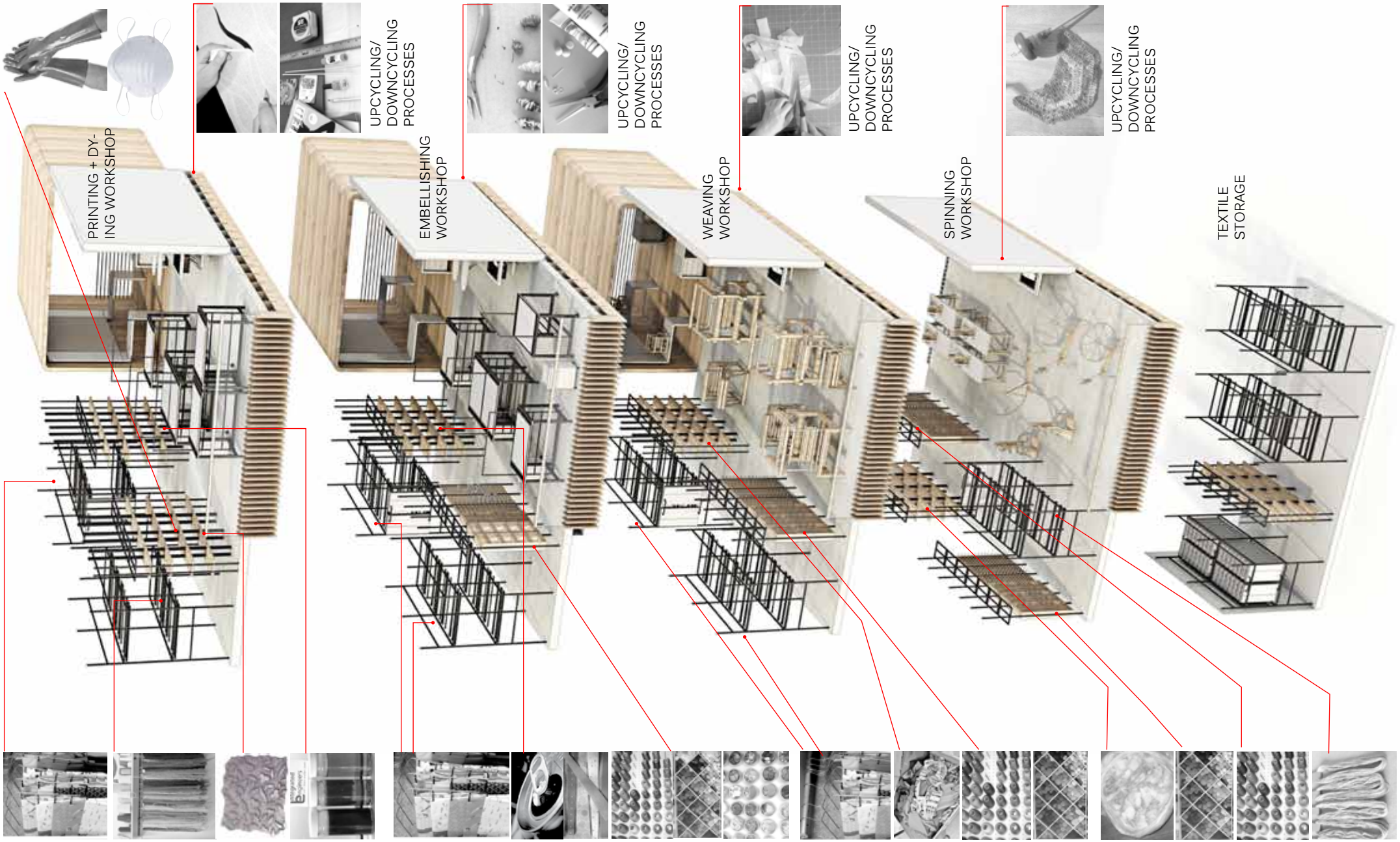
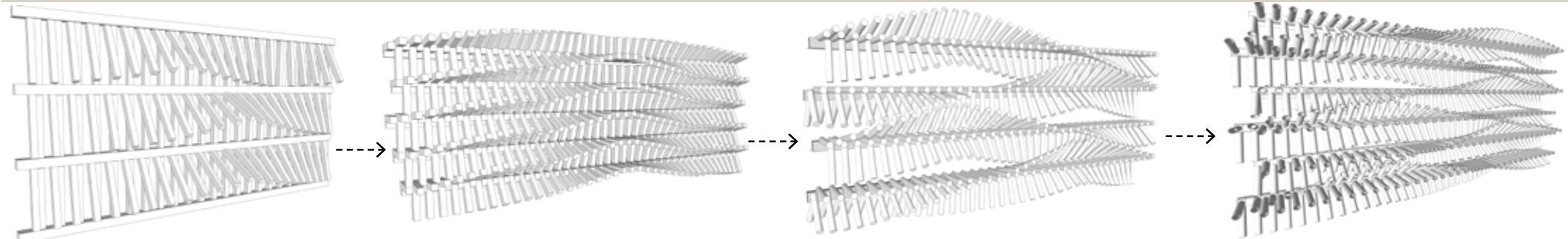


Figure 7.22: Explosion of the workshop spaces indicating the storage facilities. (Author, 2012)

TEXTILE INSPIRATION:

Figure 7.23: Inspirational photos of textiles. (Author, 2012)

ITERATIVE PROCESS:



INVESTIGATION 1: Long square elements. Construction not resulting in desired softness.

INVESTIGATION 2: Short square elements. Construction not resulting in desired irregular movement.

INVESTIGATION 3: Short round elements. Problematic construction- difficulty in fixing round members to the rectangular support at various angles.

INVESTIGATION 4: Short round elements. Construction solved: Rotating pipe construction.

Figure 7.24: Iteration of the textile-like solar screen. (Author, 2012)

DESIGN EXECUTION:

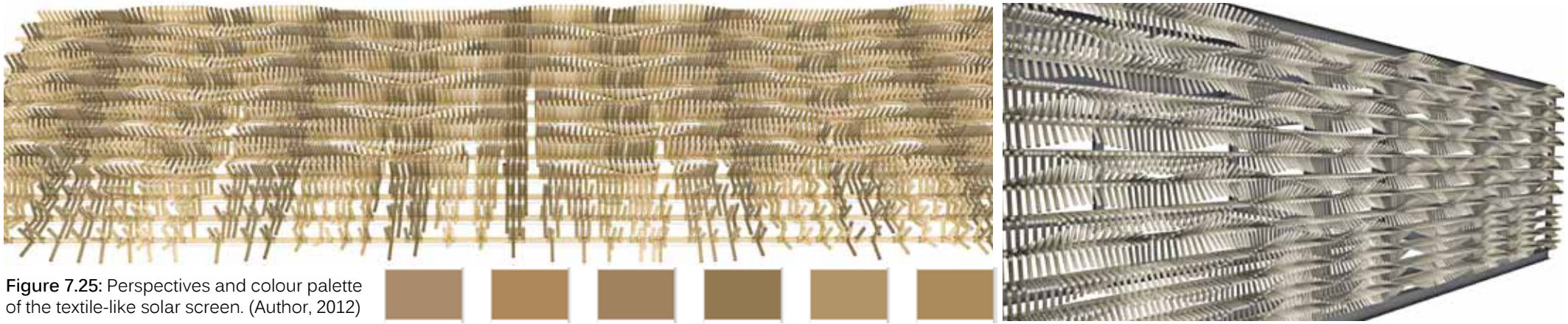
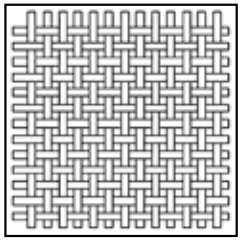


Figure 7.25: Perspectives and colour palette of the textile-like solar screen. (Author, 2012)

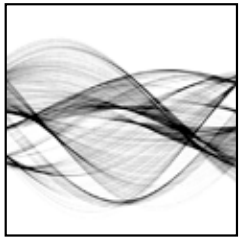
The Western Textile-like Solar Screen:

THE DESIGN INTENTION:

Structural Translation



Unique Abilities.



The intention of the **western textile-like solar screen** is to provide **solar protection** for the textile exhibition space throughout the year. (Refer to Figure 7.27.) The screen, which is an extension of the walkway structures, provides an opportunity to create an element which **resembles the appearance** and **characteristics** of textiles, because it is **not visually interfering** with the textiles being exhibited or being produced.

THE TEXTILE INSPIRATION:

Textiles' ability to **screen** sun is the main inspiration; therefore the aspiration is to create a screen which resembles a giant **textile hanging from the building**. Figure 7.23 shows the images of the inspirational textiles. This is an example of **translating the structure of textiles into interior architecture**. Similarly to a textile, the screen is a **functioning whole**; constructed from **many individual parts**. As a conceptual exploration, pieces of textiles were glued onto the working model (Figure 7.23), to inform the design. The screen is further inspired by the ability of textiles to **flow, ripple, be porous, be soft and to unravel**. The **unravelling** is specifically referring to the **irregularity** of traditional African textiles. The elements within this structure are manipulated according to a **rhythm** which can be compared to the **rhythm** in a **plain weave** as shown in Table 2 of Appendix B.

THE DESIGN EXECUTION:

The design developed through an **iterative process** as indicated in Figure 7.24. Initially, the design was executed through long square members, but this construction method was not viable and the screen did not represent the desired **softness**. After studying the design for the UK Pavilion by Thomas Heatherwick, presented in Chapter 5, the members were **shortened** to create a **softer effect**. The construction method was also changed in an attempt to make the construction more viable. The result of these two changes was better, but still did not convey the desired softness. The members in the screen were then changed **from square to round**, which conveyed the desired softness. **Round** members are also more representative of the **fibers in a textile**. However, the **construction** method was still **problematic** due to the fixing of round members to the rectangular support at different angles. The final design iteration then explored the use of a **pipe construction** for the support elements and for the individual members. This construction method was the most viable and allowed for easy rotation of the elements into the various angles. Figure 7.28 shows the construction of the screens.

THE MATERIAL SELECTION:

According to the information presented by the CES Edupack 2011 (CES Edupack, 2011), a **comparative table** for possible **material selections** could be executed. Considering the comparison presented in the table, (Table 7.1), **powder coated steel hollow tubes** are the most suitable option. The **high maintenance factor** for the timber options and the fact that the timber options do not have good **weather resistance** confirmed steel as the better option. Although the initial cost for steel is slightly higher than for the timber options, the maintenance cost of steel is much lower. The extremely high cost of stainless steel reduced the options to galvanised and powder coated or painted steel. The **monotonous grey appearance** of galvanized steel is undesirable and **painting** steel is too **maintenance intensive** therefore, powder coated steel is the most suitable material for the screens. The powdercoating **colour pallet** is presented in Figure 7.25 and the solar screen is showed in its context in Figure 7.26.

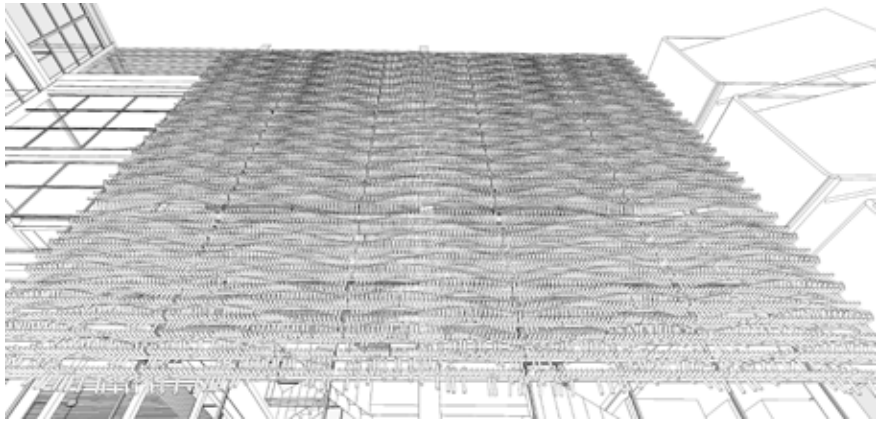


Figure 7.26: Perspective of the textile-like solar screen in context. (Author, 2012)

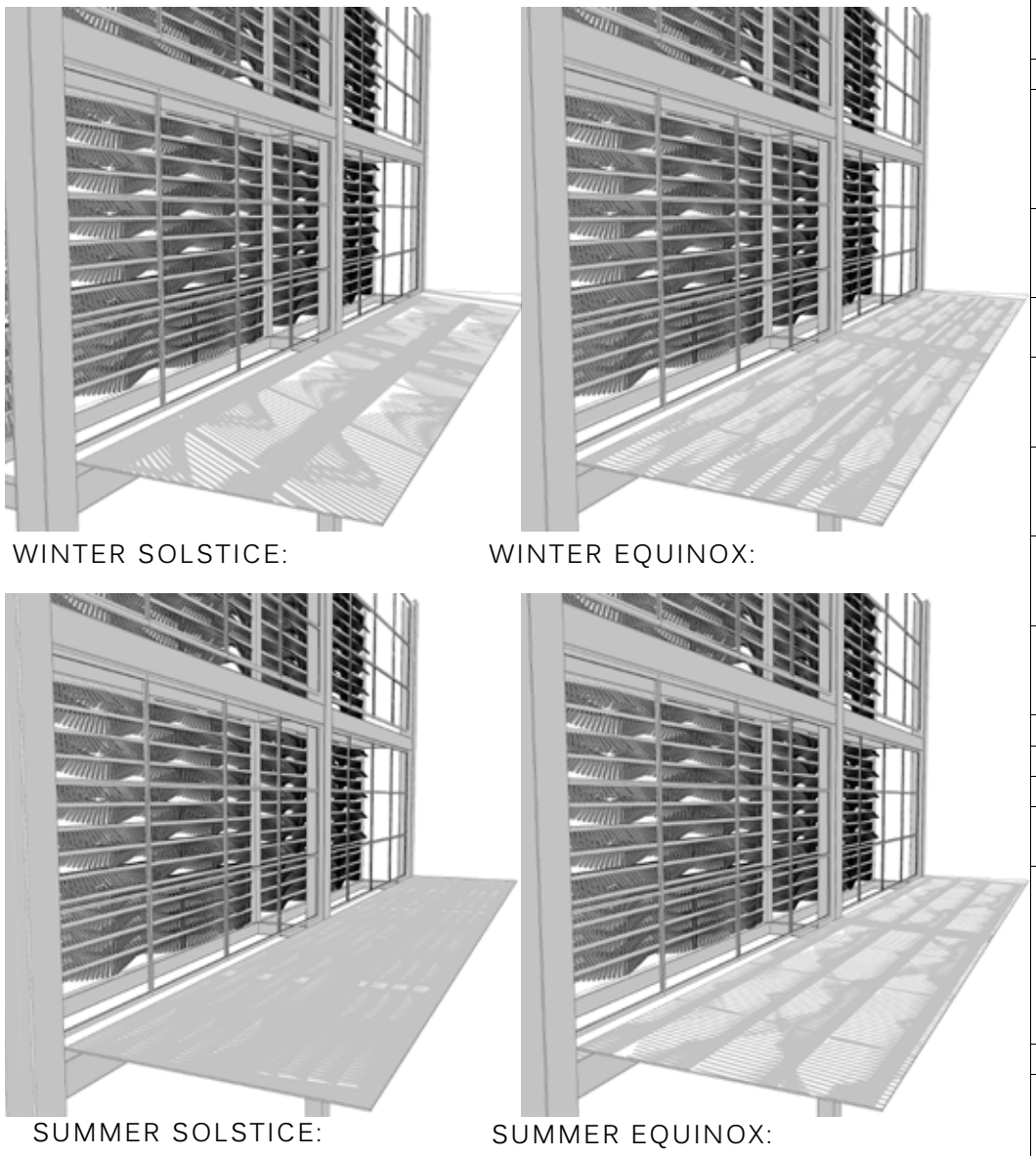
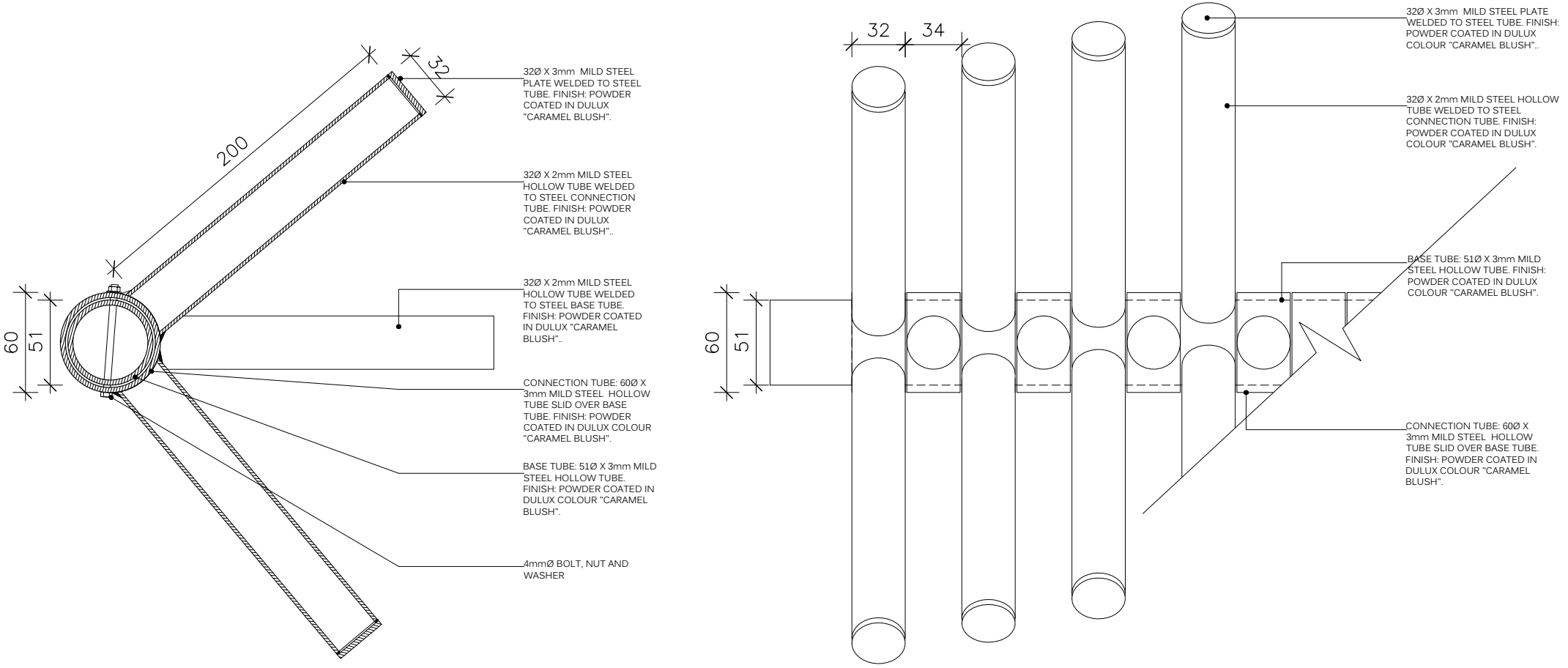


Figure 7.27: Perspectives showing the ability of the solar textile-like screens to block the western sun. (Author, 2012)

Criteria:	Shorea (Meranti Family):	Pinus Elliotii / Taeda (SA Pine)	Galvanised Steel Hollow Tubes	Low Carbon (Mild) Steel	Stainless Steel
Quantity per unit	2x 32ø x 200mm	2x 32ø x 200mm	2x 34ø x 200mm	2x 34ø x 200mm	2x 34ø x 200mm
Price	R9.56 – R14.3 ZAR/kg	R4.78 - R9.56 ZAR/kg	R5.20 – R5.72 ZAR/kg	R4.67- R5.14 ZAR/kg Higher if powder coated	R36.30 – R39.90 ZAR/kg
Durability (rain water)	Limited	Limited	Excellent	Acceptable Excellent if powder coated	Excellent
Durability (UV radiation)	Good	Good	Excellent	Excellent	Excellent
Embodied energy (primary production)	7.2 - 7.96 MJ/kg	7.2 - 7.96 MJ/kg	24.4 – 27 MJ/kg	29 - 35 MJ/kg	77.2 – 85.3 MJ/kg
CO_2 footprint (primary production)	0.427 - 0.472 kg/kg	0.427 - 0.472 kg/kg	1.54 – 1.7 kg/kg	2.2 – 2.8 kg/kg	4.86 – 5.37 kg/kg
Fine machining energy per (unit wt removed)	8.41 – 9.3 MJ/kg	8.56 – 9.46 MJ/kg	4.28 – 4.73 MJ/kg	3.9 - 4.32 MJ/kg	2.61 – 2.89 MJ/kg
Fine machining CO_2 per (unit wt removed)	0.631 – 0.697 kg/kg	0.642 – 0.719kg/kg	0.321 – 0.355 kg/kg	0.293 – 0.324 kg/kg	0.196 – 0.217 kg/kg
Recycle	No	No	Yes	Yes	Yes
Downcycle	Yes	Yes	Yes	Yes	Yes
Biodegrade	Yes	Yes	No	No	No
Renewable resource	Yes	Yes	No	No	No
Maintenance factor (1= low, 5= high)	4- Need varnish every few years	4- Need varnish every few years	1- No repeated protection needed	2- Additional once-off protection against water needed. (Powder coating)	1- No repeated protection needed
Maintenance cost	Very High	Very High	Very Low	Low- (Once- off)	Very Low
Desired colour/ texture/ psychological warmth	Yes	Yes	No	No Yes –if powder coated.	No

Table 7.1: Material comparison for textile-like solar screen. (Author, 2012)



DETAIL: A_ SECTION
SOLAR SCREEN CONNECTION

DETAIL: A_ ELEVATION
SOLAR SCREEN CONNECTION

Figure 7.28: Detail drawing of the textile-like solar screen. Not to scale. (Author, 2012)

TEXTILE INSPIRATION:

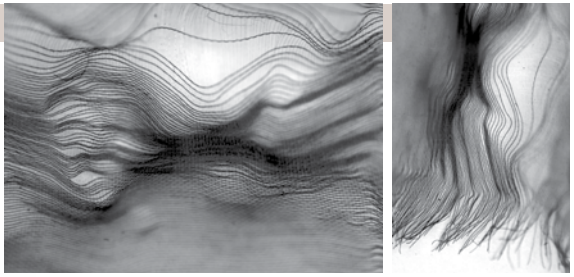


Figure 7.31: Inspirational photographs. Author, 2012)

DESIGN EXECUTION:

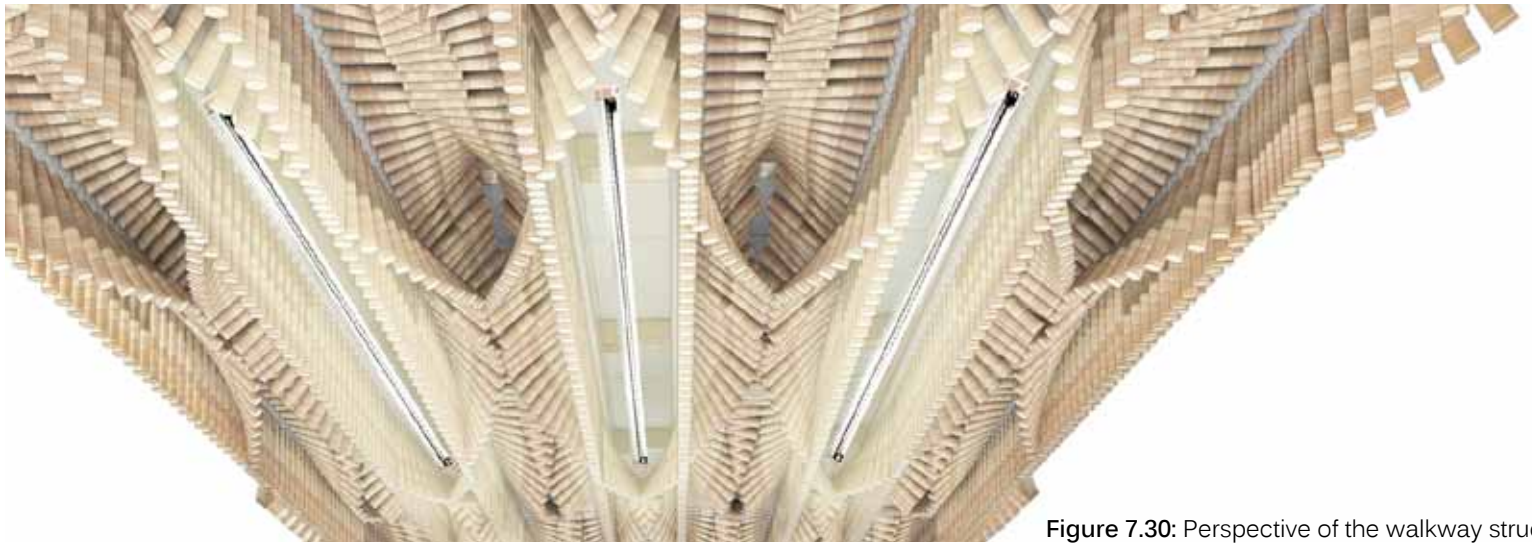
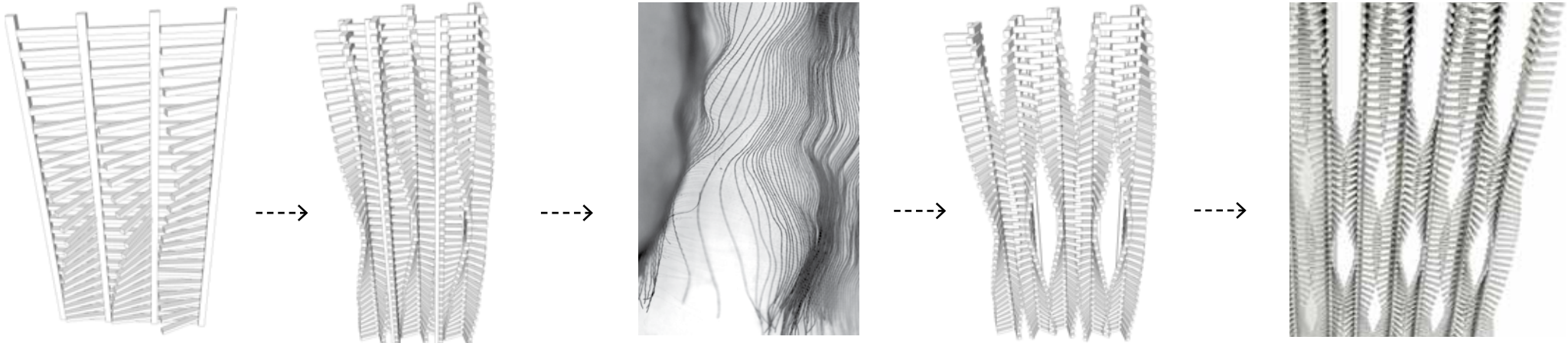


Figure 7.30: Perspective of the walkway structure. (Author, 2012)

ITERATIVE PROCESS:



INVESTIGATION 1: Long square elements. Construction not resulting in desired softness.

INVESTIGATION 2: Short square elements. Construction not resulting in desired opening of the structure.

INVESTIGATION 2: Photos of textiles with openings in the structure.

INVESTIGATION 3: Short round elements. Difficulty in fixing.

INVESTIGATION 4: Short round elements. Rotating pipe construction.

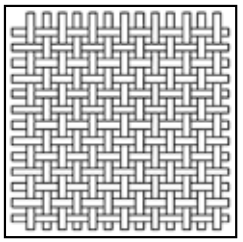
Figure 7.29: Design development of the walkway structure. (Author, 2012)

The Walkway Structures:

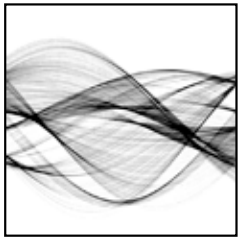
Figure 7.33: Recycled denim acoustic absorption. (Sound Away, 2012)

Figure 7.32: Explosion of the walkway structure. (Author, 2012)

Structural Translation



Unique Abilities.



THE DESIGN INTENTION:

The intention of the **walkway structures** is to provide an alternative to the **problematic steel "vastrap" walkways** proposed by the architect. The walkway structures should also include **acoustic absorption** for the textile exhibition space.

THE TEXTILE INSPIRATION:

Similarly to the previously discussed screen structure, the walkway structure consists of many **small elements** which **acts together as a whole**. This is an example of **translating the structure of textiles** into interior architecture. The walkway structure is also inspired by the ability of textiles to **flow, ripple, be porous, be soft and to be pulled open**. The imitation of the ability of textiles to be **pulled open** (Figure 7.31) is very important, because it allows for the **lighting** in the structure to shine through. The elements within this structure are manipulated according to a **rhythm** which can be compared to the **rhythm** in a **plain weave** which is shown in Table 2 of Appendix B.

THE DESIGN EXECUTION:

The design developed through an **iterative process** similar to the iterative process of the previously described screens. The shorter pipe construction was also the most appropriate design. The walkway structure hosts **recycled denim acoustic absorptive** sheets, as shown in Figure 7.33 (Sound Away, 2012).

THE MATERIAL SELECTION:

Powder coated steel cannot be used for the walkway structure as it has been used for the previously described screens. A material such as timber, which creates **psychological warmth,** is needed in the interior environment to contrast the hard, cold, smooth and monotone materials of the architectural proposal. The choice of timber is limited to the available **S.A. Pine** and **Meranti** members. **Meranti** is the better option, because it is a **harder wood** than S.A. Pine. The timber is protected with clear *GRIPSEAL* wood sealant, due to its **environmental responsibility** (GRIPSEAL, 2012). The floor boards are constructed from **engineered strandwoven bamboo floor boards**. Bamboo is a suitable material, due to the material's **environmental responsibility** (Bamboolands, 2012).

The Walkway Structures:

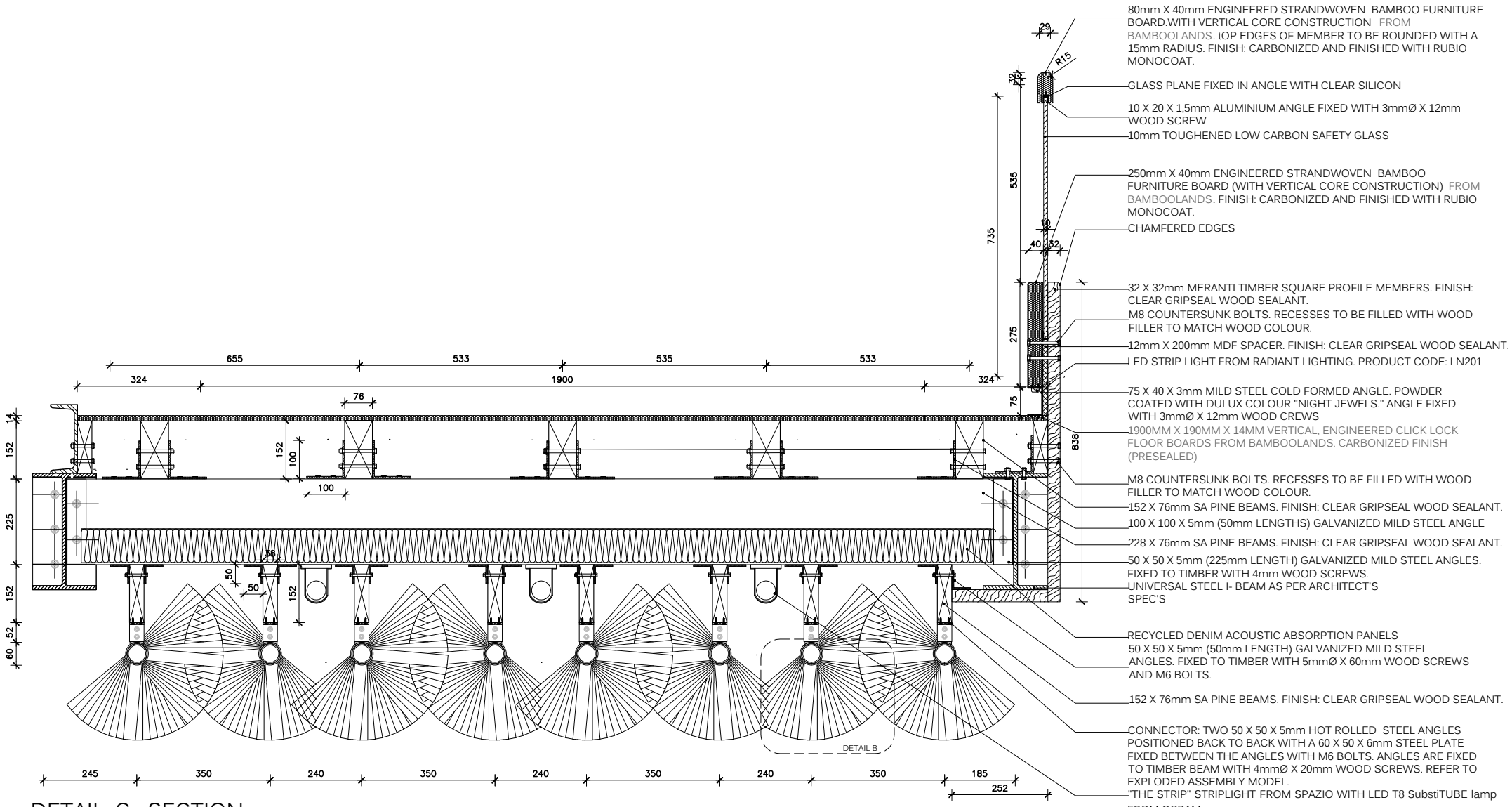
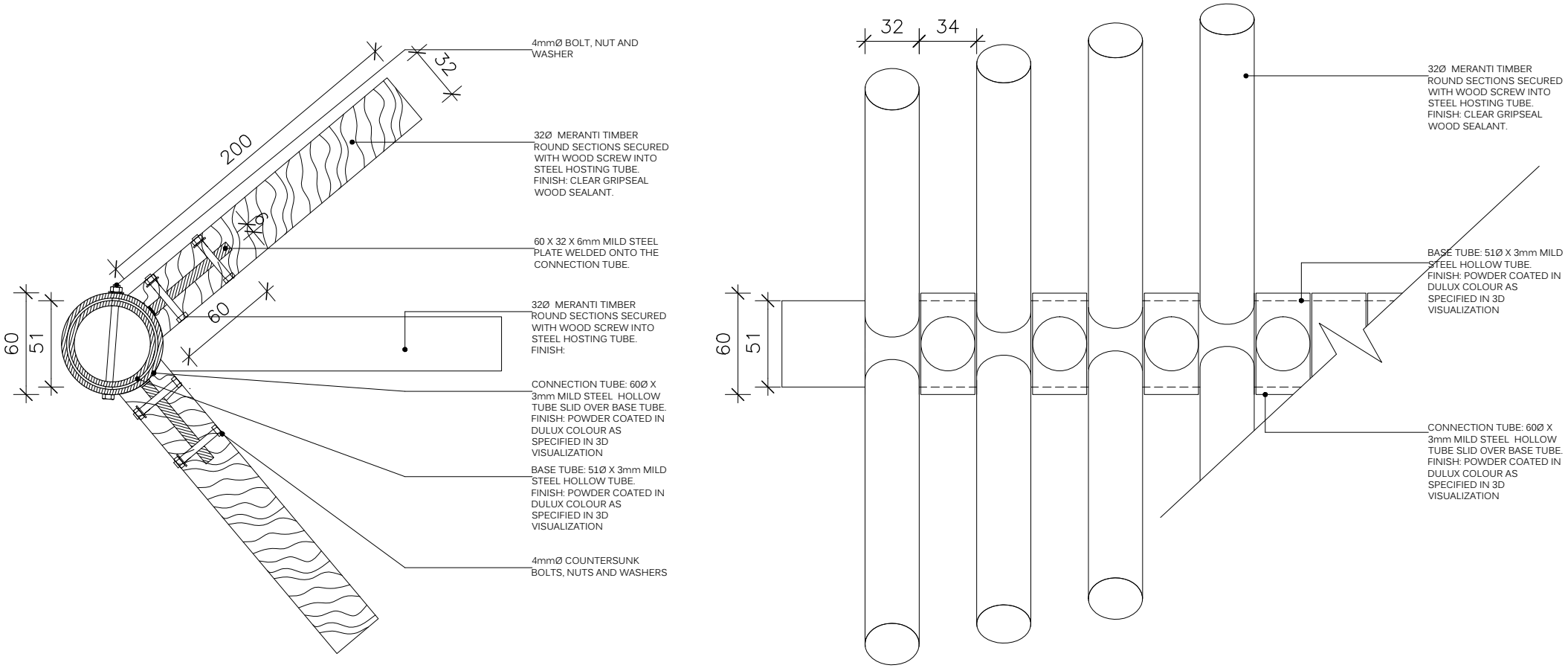


Figure 7.34: Detail drawing of the walkway structure. Not to scale. (Author, 2012)



DETAIL: B_ SECTION
WALKWAY CEILING CONNECTION

DETAIL: B_ ELEVATION
WALKWAY CEILING CONNECTION

Figure 7.35: Detail drawing of the walkway structure detail. Not to scale. (Author, 2012)

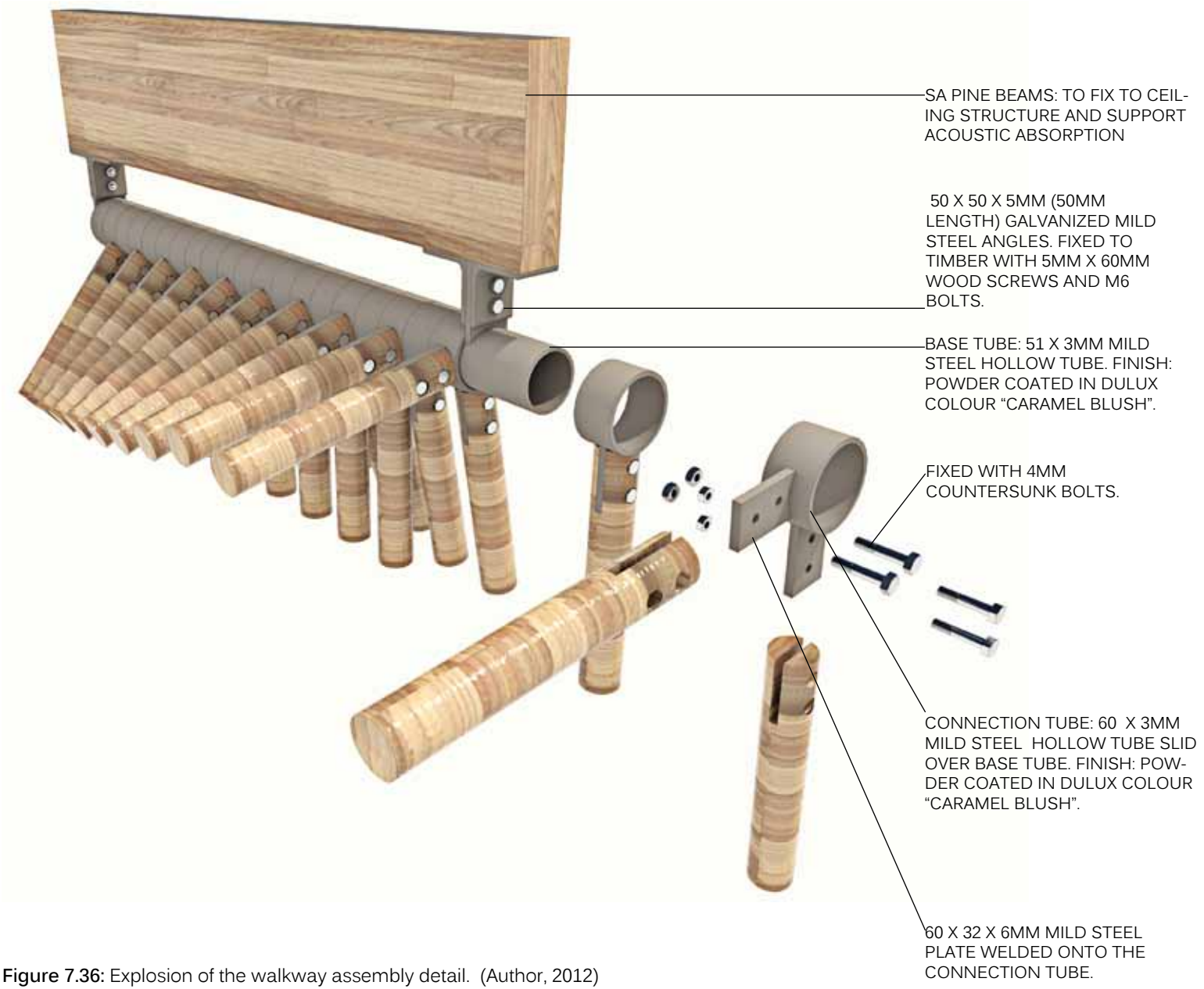
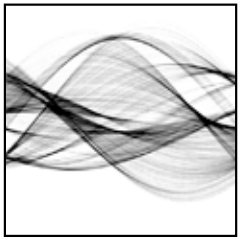


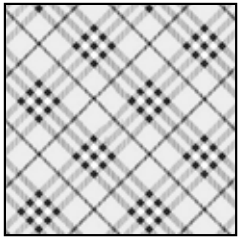
Figure 7.36: Explosion of the walkway assembly detail. (Author, 2012)

Ground Floor Textile Solar Screens:

Unique Abilities.



Actual Textiles

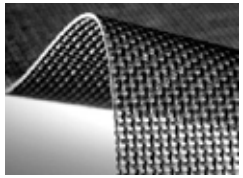


TEMPORARY/ TESTING:

HANDMADE TEXTILES:
For texting UV resistance.

(Warchal, 2010).

LONG LASTING:



BATYLINE TEXTILE:
Oeko-Tex® label (confidence in textiles – tested for non-toxic substances). Batyline is 100% recyclable. Organise collection networks for composite materials at the end of their life. UV resistance, tear-resistant, good shape retention, easy to maintain (Serge Ferrari, 2012).

(Serge Ferrari, 2012)

PORTRAYING INFORMATION:

RIPSTOP CANVASS:
Printable
Tear resistance
UV resistant.

(Author, 2012).

Figure 7.37: Explosion of textile solar screen. (Author, 2012)

THE DESIGN INTENTION:

The intention of the **solar screens** on the ground floor is to **protect** the interior from undesired western sun throughout the year, but still allow people in the public courtyard to **view glimpses** of the interior textile exhibition.

THE TEXTILE INSPIRATION:

The inspiration for these screens was the **solar screening ability** of woven textiles. The connection detail of the screens is inspired by the small holes often occurring on the side of textiles called the **selvage**. Another aspect of textiles, which influenced the design of the screens, is the fact that textiles do not **stretch** if it is cut **parallel** to the warp and weft yarns, but if it is cut **diagonally** to the warp and weft yarns, the textile has the ability to stretch. All of these inspirational aspects of textiles are examples of the **translation of the unique abilities** of textiles into interior architecture.

THE DESIGN EXECUTION:

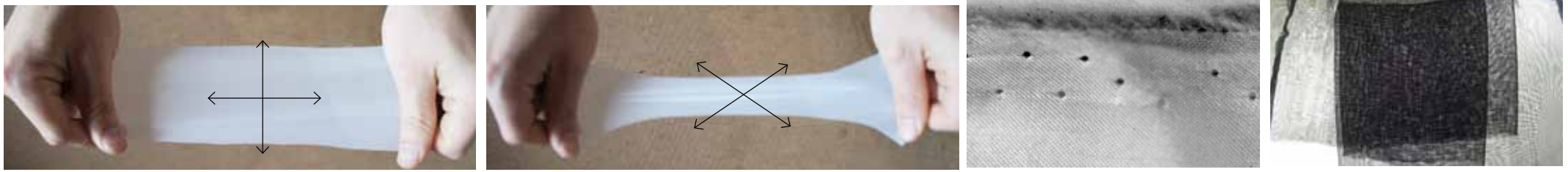
The screens consist of a steel profile construction onto which **textiles** can be **stretched** by **hooking** the textile onto the steel frame. The upper part of the steel frame is **rotatable** which allows the fabric to be **twisted** into various angles and configurations. This adjustability of the screens is desirable in that it enables the screens to be used for **different functions**. The screens can be used to **test the performance** of various textiles in the outdoor environment and as an **exterior extension** of the interior exhibition. **Printed canvas** can be stretched onto the frame to act as **advertisements** for upcoming exhibitions and events. **Information** on the current textile **exhibition** can also be portrayed on the printed canvas. These screens provide an opportunity to utilize odd pieces of hand woven textiles and off-cuts from larger textiles.

THE MATERIAL SELECTION:

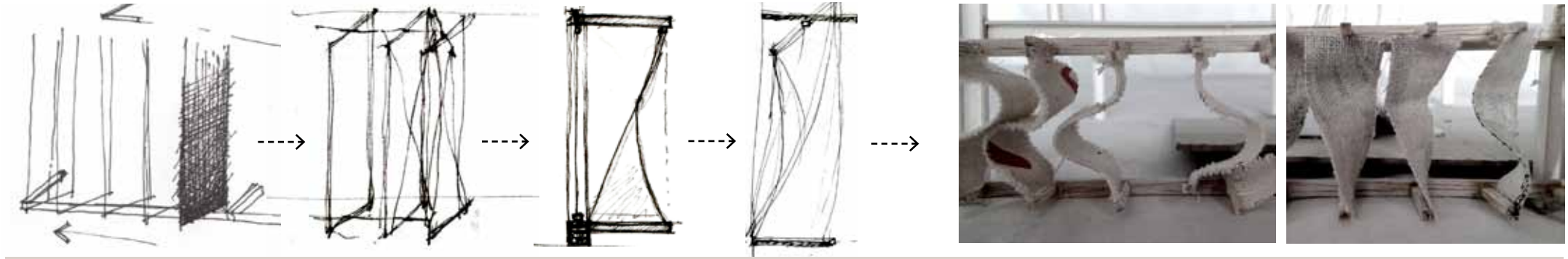
Galvanized steel profiles are used for the framework. The textiles for the screens are a **variety of textiles**, depending on the specific purpose. **Handmade textiles** can be used for a short period, or if the **UV resistance** of a handmade textile need to be tested. **Batyline** can be used if the screens are **exposed to UV** for a long period of time. **Ripstop canvas** can be used if a **printed finish** is desired. Refer to Figure 7.40.

Ground Floor Textile Solar Screens:

TEXTILE INSPIRATION:



CONCEPTUAL DEVELOPMENT:



DESIGN EXECUTION:

Figure 7.38: Inspirational photographs, conceptual exploration and perspective of the textile solar panels. (Author, 2012)

Ground Floor Textile Solar Screens:

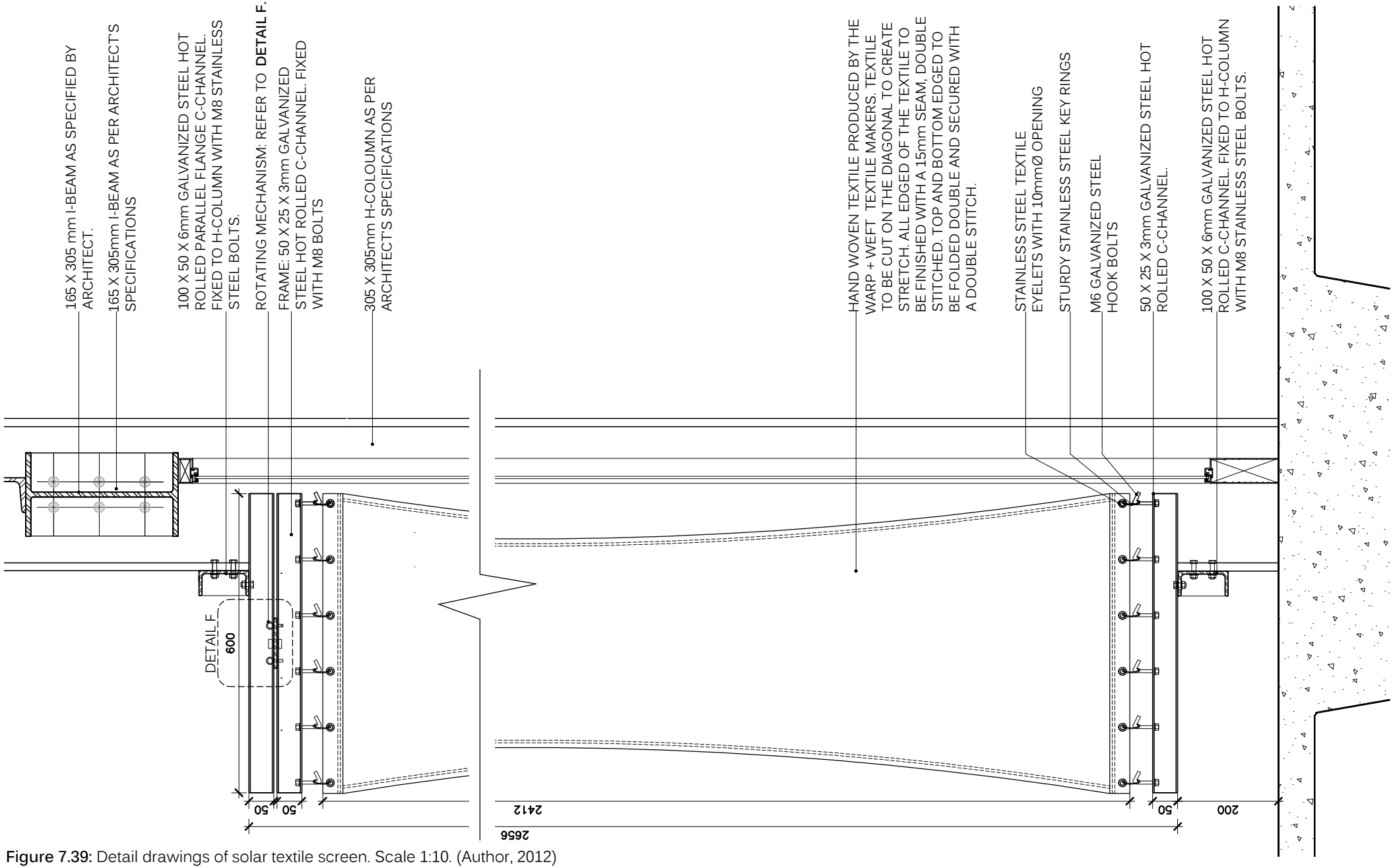
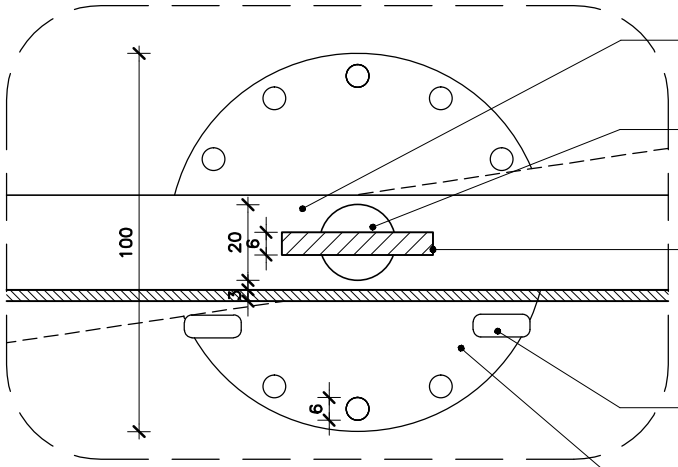


Figure 7.39: Detail drawings of solar textile screen. Scale 1:10. (Author, 2012)



FRAME: 50 X 25 X 3mm GALVANIZED STEEL HOT ROLLED C-CHANNEL. .

20Ømm SOLID GALVANIZED STEEL ROUND BAR PROVIDED WITH A 6mm SLID. ROUND BAR IS WELDED TO THE TOP C-CHANNEL

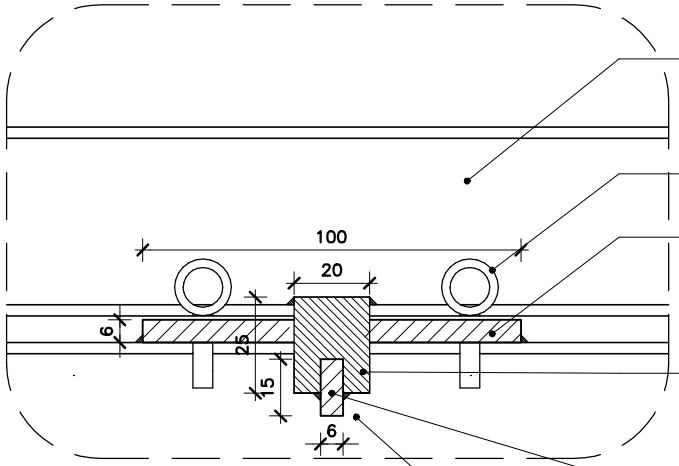
40 X 15 X 6mm GALVANIZED STEEL PLATE TO PREVENT C-HANNEL SLIPPING THROUGH THE SOLID ROUND BAR. POSITIONED INTO THE SLID IN THE SOLID ROUND BAR AND WELDED TO THE SOLID ROUND BAR.

M6 GALVANIZED STEEL EYE BOLTS USED FOR PEGS

100Ømm X 6mm GALVANIZED STEEL PLATE WITH 6mm HOLES DRILLED FOR THE PEGS. WELDED TO BOTTOM (ROTATABLE) STEEL C- CHANNEL

DETAIL: F_ PLAN
ROTATING MECHANISM
SCALE 1:2

*NOTE: ALL WELDING TO BE DONE BEFORE HOT DIP GALVANIZING IS DONE.



FRAME: 50 X 25 X 3mm GALVANIZED STEEL HOT ROLLED C-CHANNEL.

M6 GALVANIZED STEEL EYE BOLTS USED FOR PEGS

100Ømm X 6mm CIRCULAR GALVANIZED STEEL PLATE WITH 6mm HOLES DRILLED FOR THE PEGS. WELDED TO BOTTOM (ROTATABLE) STEEL C-CHANNEL

20Ø X 25mm SOLID GALVANIZED STEEL ROUND BAR PROVIDED WITH A 6mm SLID. ROUND BAR IS WELDED TO THE TOP C-CHANNEL

40 X 15 X 6mm GALVANIZED STEEL PLATE TO PRENET C-HANNEL SLIPPING THROUHG THE SOLID ROUND BAR. POSITIONED INTO THE SLID IN THE SOLID ROUND BAR AND WELDED TO THE SOLID ROUND BAR.

FRAME: 50 X 25 X 3mm GALVANIZED STEEL HOT ROLLED C-CHANNEL.

DETAIL: F_ SECTION
ROTATING MECHANISM
SCALE 1:2

Figure 7.40: Detail drawings of rotation mechanism. Scale 1:2. (Author, 2012)

TEXTILE INSPIRATION:

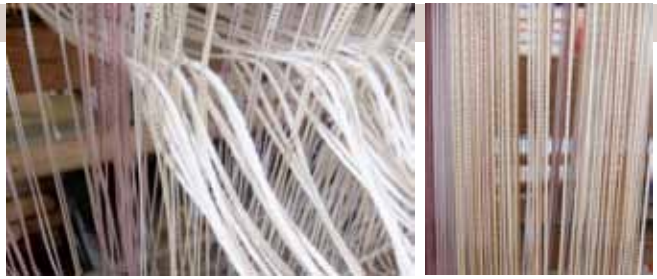


Figure 7.42: Inspirational photos. (Author, 2011)

CONCEPTUAL DEVELOPMENT:

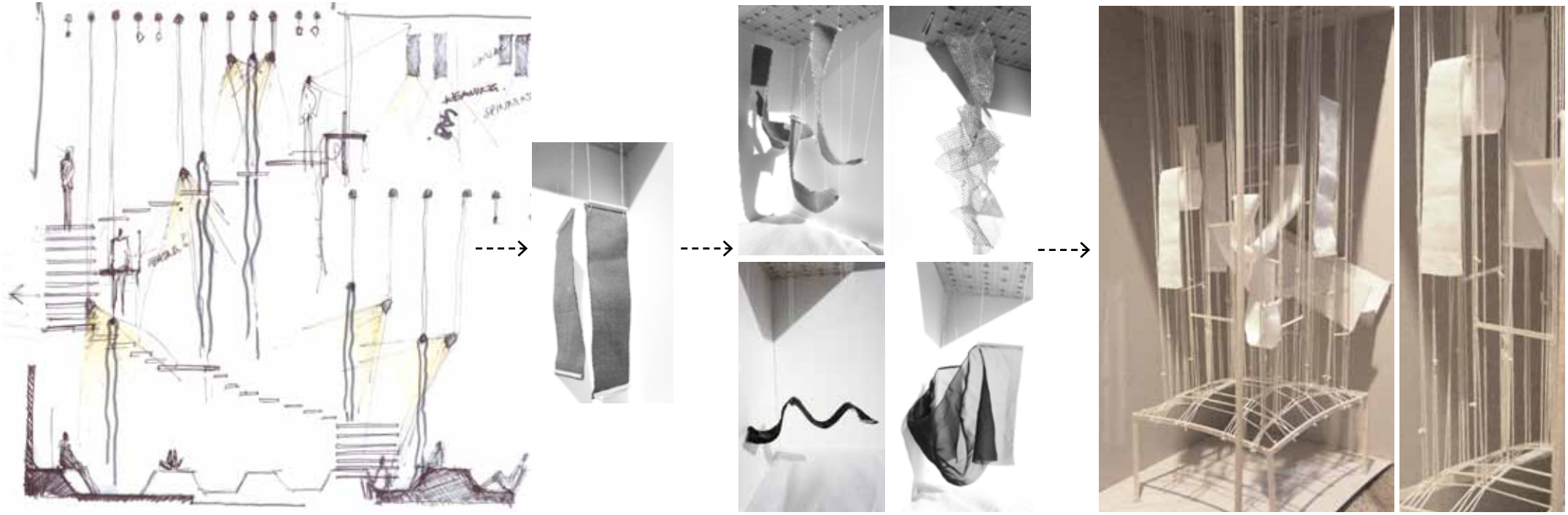


Figure 7.41: Design exploration of the element on which the textiles are exhibited. (Author, 2012)

The Exhibition Grid:

Metaphor

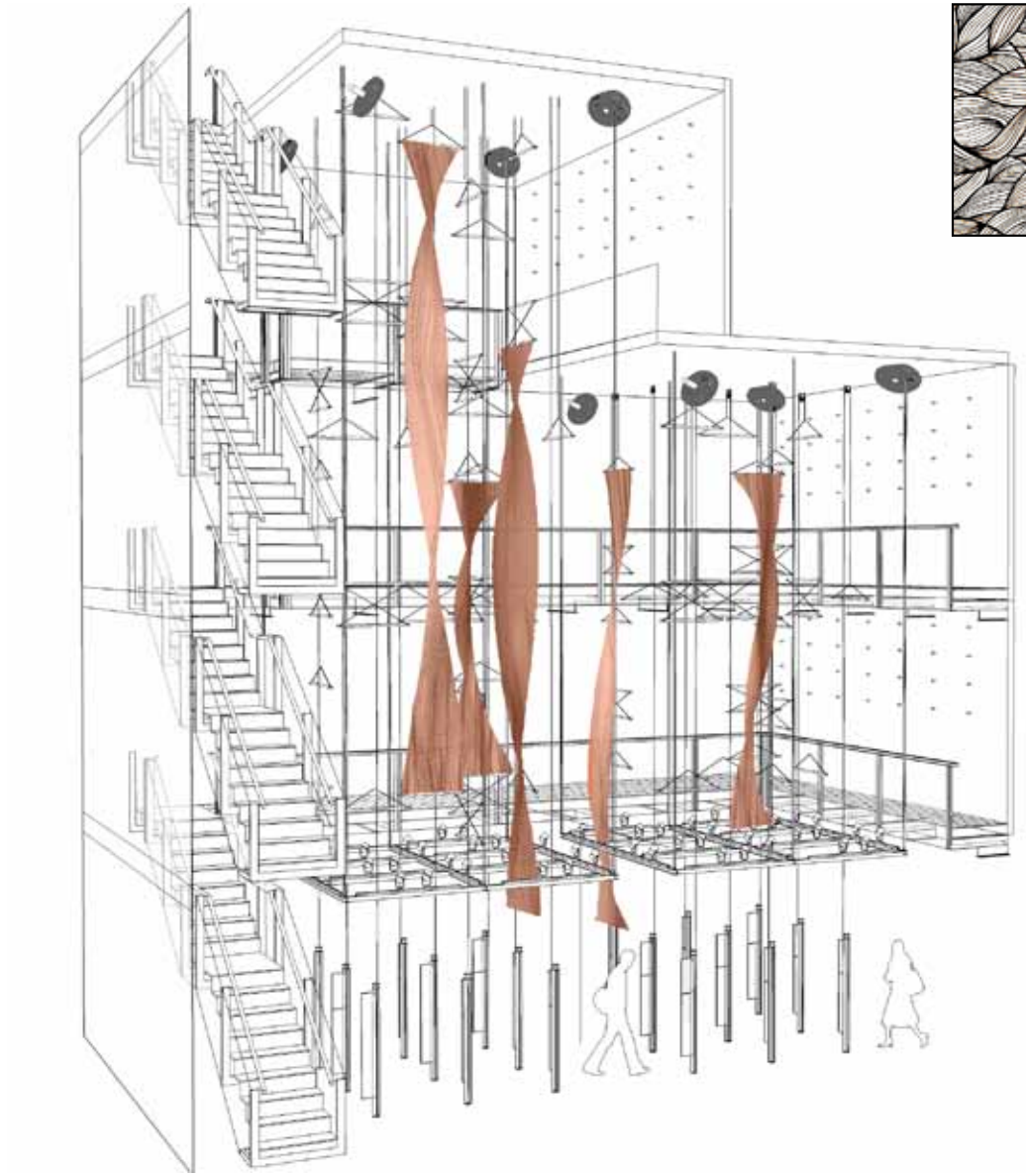


Figure 7.43: The textile exhibition grid. (Author, 2012)

THE DESIGN INTENTION:

The intention with the design of the **exhibition grid** is to provide an **unobtrusive element** onto which the textiles can be exhibited in as **many different ways** as possible. The design of the element should **not visually compete** with the textiles being exhibited.

THE TEXTILE INSPIRATION:

The stretched **warp yarns** on a hand loom (**Figure 7.42**) inspired the notion of using **steel wire rope in tension**, spaced according to a specific grid. The steel wire rope exhibition grid can therefore be compared to the **warp yarns on a loom** and the textiles interweaving the grid can be compared to the **weft yarns interweaving** the warp yarns. This is an example of the **metaphoric translation of textiles** into interior architecture.

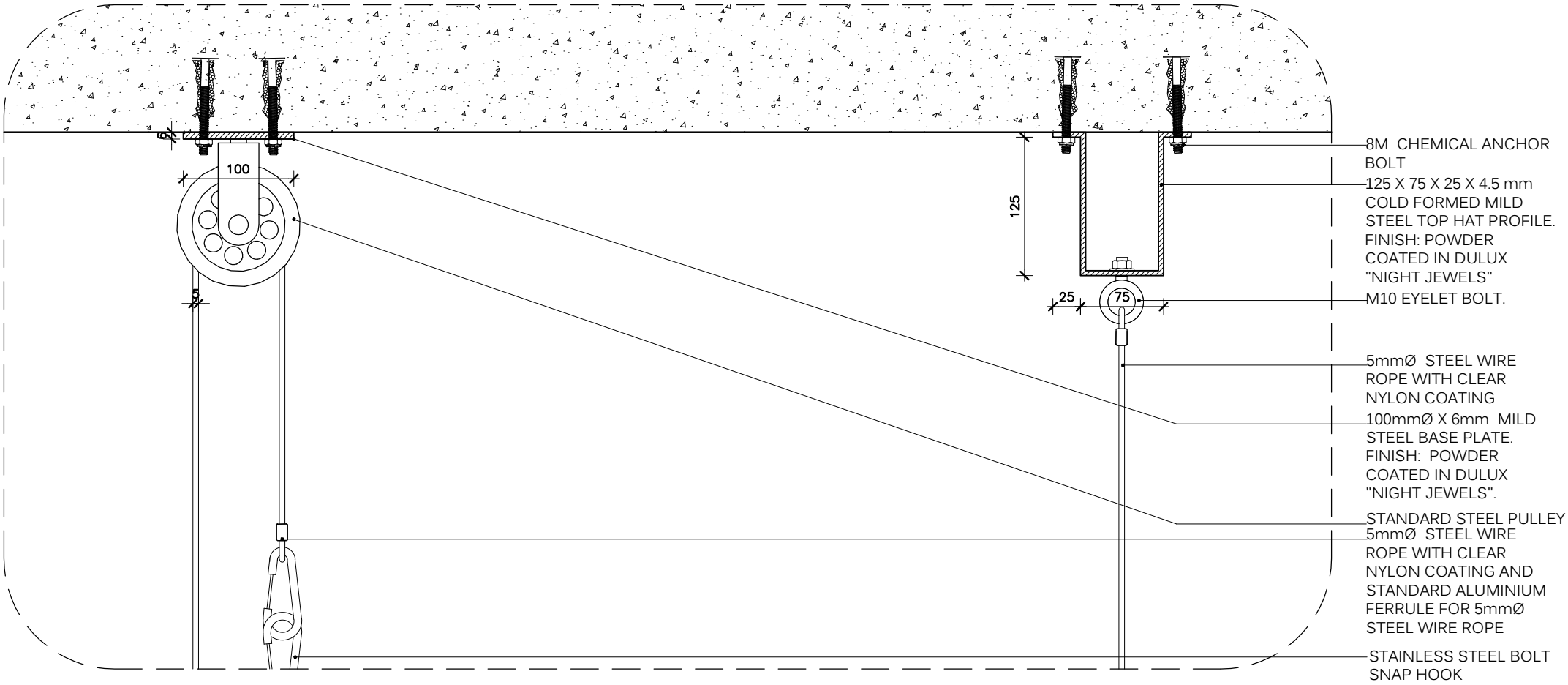
THE DESIGN EXECUTION:

The design notion for the exhibition grid is to function similarly to **hoisting flags**. The exhibition grid consists of a series of **pulleys**, **steel wire rope cables** and elements on the cables onto which the textiles are fastened. The grid structure incorporates **fans** to create a **dynamic exhibition**, expressing the **movement of textiles**. **Spotlights**, on a track, are provided to illuminate the textiles either from the **back or from the front**. The initial design only allowed textiles to be hanged vertically and straight and did not allow for the celebration for various hanging configurations. The grid structure allows the textiles to be fastened at multiple levels to allow **interesting hanging configurations**. Figure 7.41 shows the design development of the structure. The sizes of the grid structure are based on the common **widths of a loom**, which is 600mm, 900mm and 1200mm (van Rensburg, 2012).

THE MATERIAL SELECTION:

Steel wire rope is an appropriate material choice, because it very similar to **yarn** in its construction and nature.

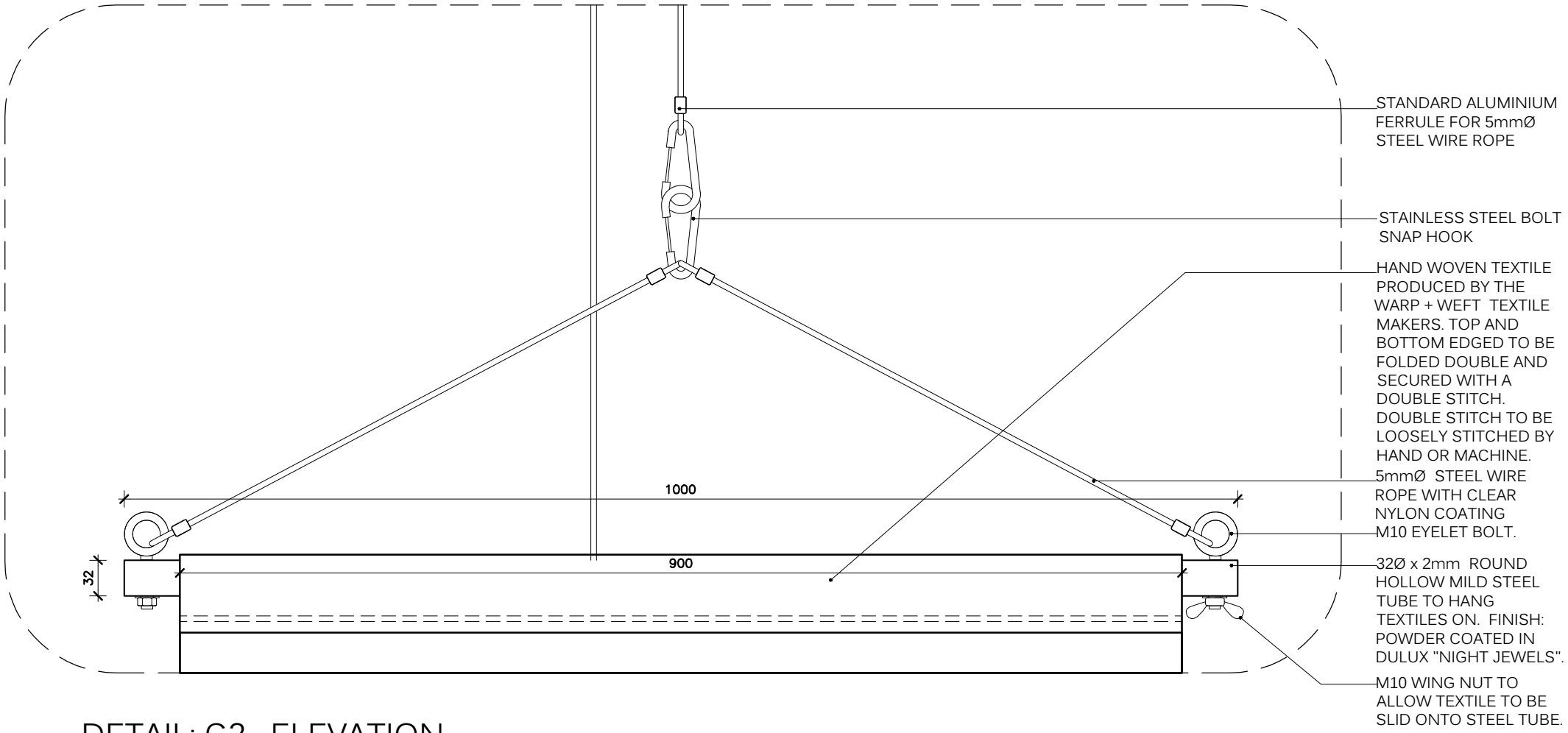
The Exhibition Grid:



DETAIL: G1_ ELEVATION
EXHIBITION GRID AND CEILING CONNECTION
SCALE 1:5

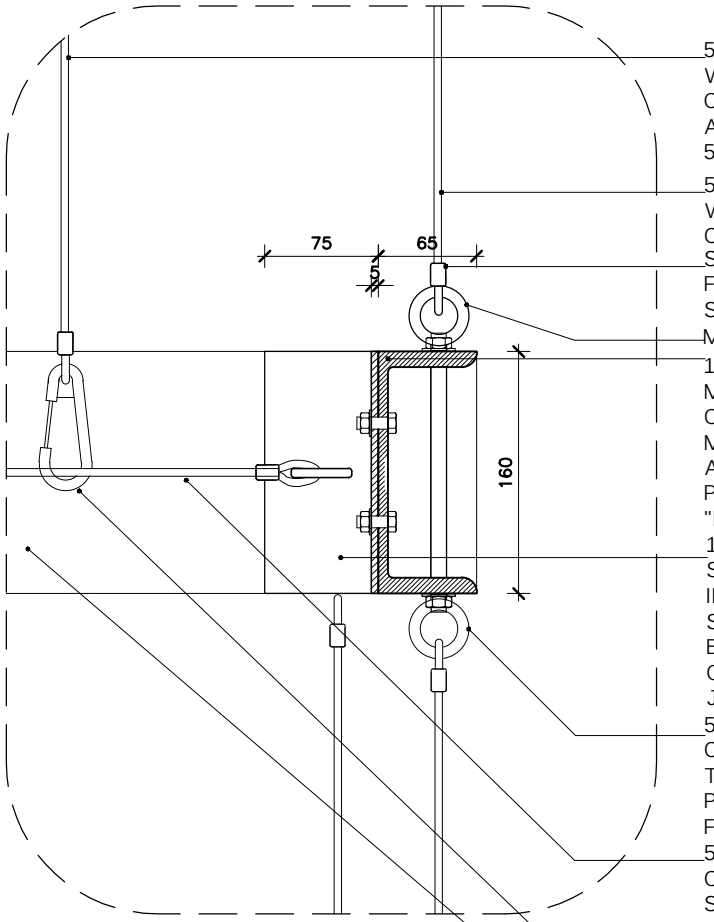
Figure 7.44: Detail drawings of the textile exhibition grid. Scale 1:5. (Author, 2012)

The Exhibition Grid:



DETAIL: G2_ ELEVATION
EXHIBITION GRID HANGER DETAIL
SCALE 1:5

Figure 7.45: Detail drawings of the textile exhibition grid. Scale 1:5. (Author, 2012)



5mmØ STEEL WIRE ROPE WITH CLEAR NYLON COATING AND STANDARD ALUMINIUM FERRULE FOR 5mmØ STEEL WIRE ROPE

5mmØ STEEL WIRE ROPE WITH CLEAR NYLON COATING

STANDARD ALUMINIUM FERRULE FOR 5mmØ STEEL WIRE ROPE

M10 EYELET BOLTS.

160mm X 65mm X 6.5, 10.4mm MILD STEEL HOT ROLLED C-CHANNEL FRAMEWORK. ALL MEMBERS IN THE FRAMEWORK ARE WELDED TOGETHER. FINISH: POWDER COATED IN DULUX "NIGHT JEWELS".

100mm X 50mm X 4.5mm MILD STEEL HOT ROLLED ANGLE (CUT IN 160 SECTIONS). BOLTED TO STEEL FRAMEWORK WITH M8 BOLTS. FINISH: POWDER COATED IN DULUX "NIGHT JEWELS".

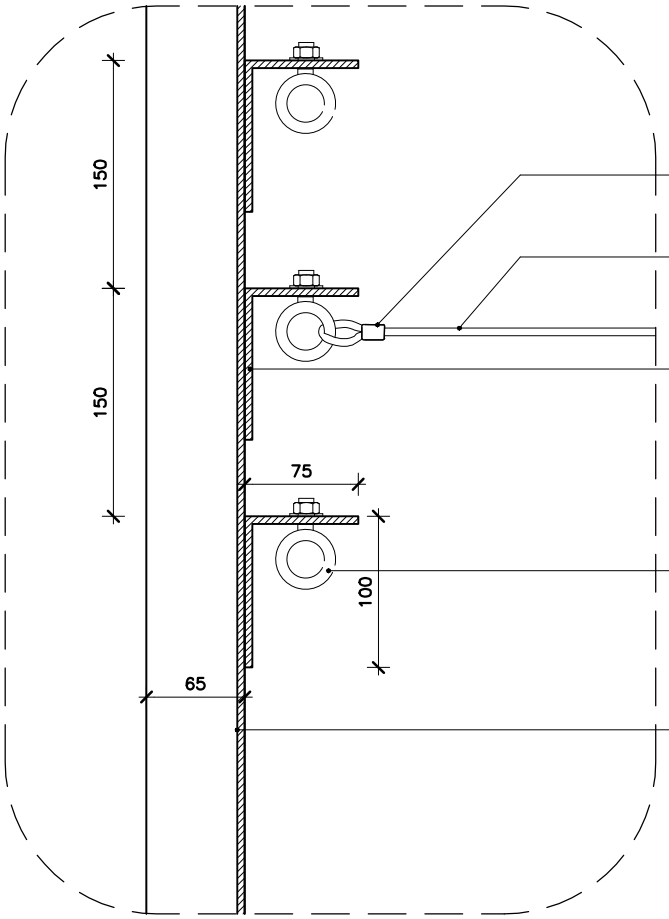
5mmØ STEEL WIRE ROPE WITH CLEAR NYLON COATING. FIXED TO M10 EYELET BOLT. TO BR POSITIONED BEHIND THE BOLT FROM ABOVE.

5mmØ STEEL WIRE ROPE WITH CLEAR NYLON COATING AND STANDARD ALUMINIUM FERRULE FOR 5mmØ STEEL WIRE ROPE

STAINLESS STEEL BOLT SNAP HOOK

100mm X 50mm X 5mm MILD STEEL HOT ROLLED RECTANGULAR HOLLOW TUBE FRAMEWORK. ALL MEMBERS IN THE FRAMEWORK ARE WELDED TOGETHER. FINISH: POWDER COATED IN DULUX "NIGHT JEWELS".

DETAIL: G3_ ELEVATION
EXHIBITION GRID STABILIZING DETAIL
SCALE 1:5



STANDARD ALUMINIUM FERRULE FOR 5mmØ STEEL WIRE ROPE

5mmØ STEEL WIRE ROPE WITH CLEAR NYLON COATING

100mm X 50mm X 4.5mm MILD STEEL HOT ROLLED ANGLE. WELDED TO STEEL FRAMEWORK. FINISH: POWDER COATED IN DULUX "NIGHT JEWELS".

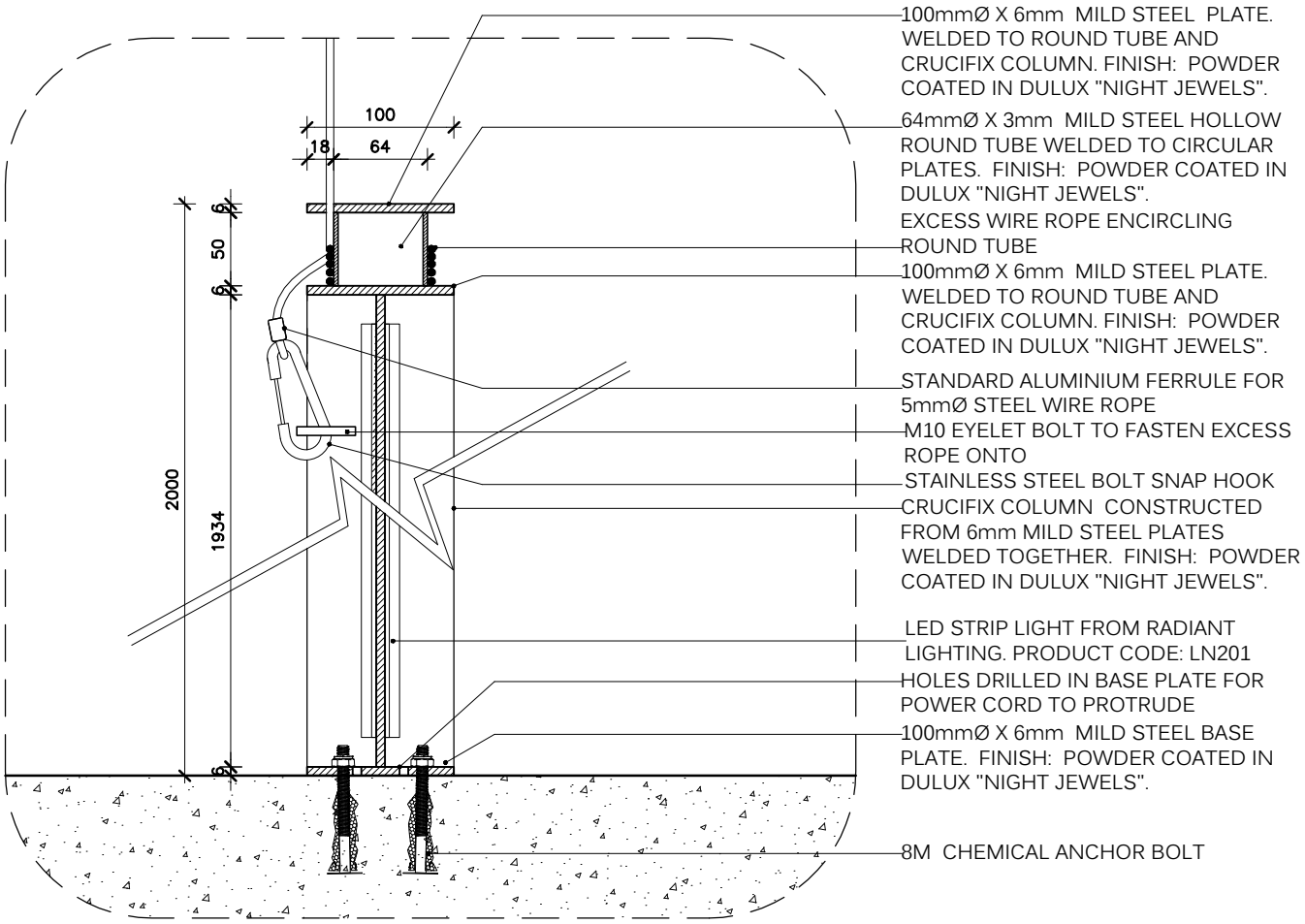
M10 EYELET BOLT.

160mm X 65mm X 6.5, 10.4mm MILD STEEL HOT ROLLED C-CHANNEL FRAMEWORK. ALL MEMBERS IN THE FRAMEWORK ARE WELDED TOGETHER. FINISH: POWDER COATED IN DULUX "NIGHT JEWELS".

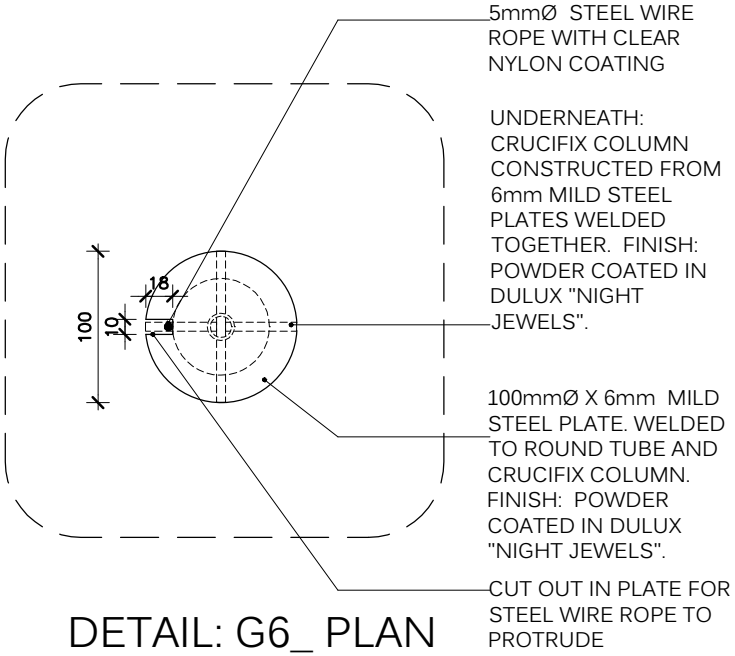
DETAIL: G4_ PLAN
EXHIBITION GRID STABILIZING DETAIL
SCALE 1:5

Figure 7.46: Detail drawings of the textile exhibition grid. Scale 1:5. (Author, 2012)

The Exhibition Grid:



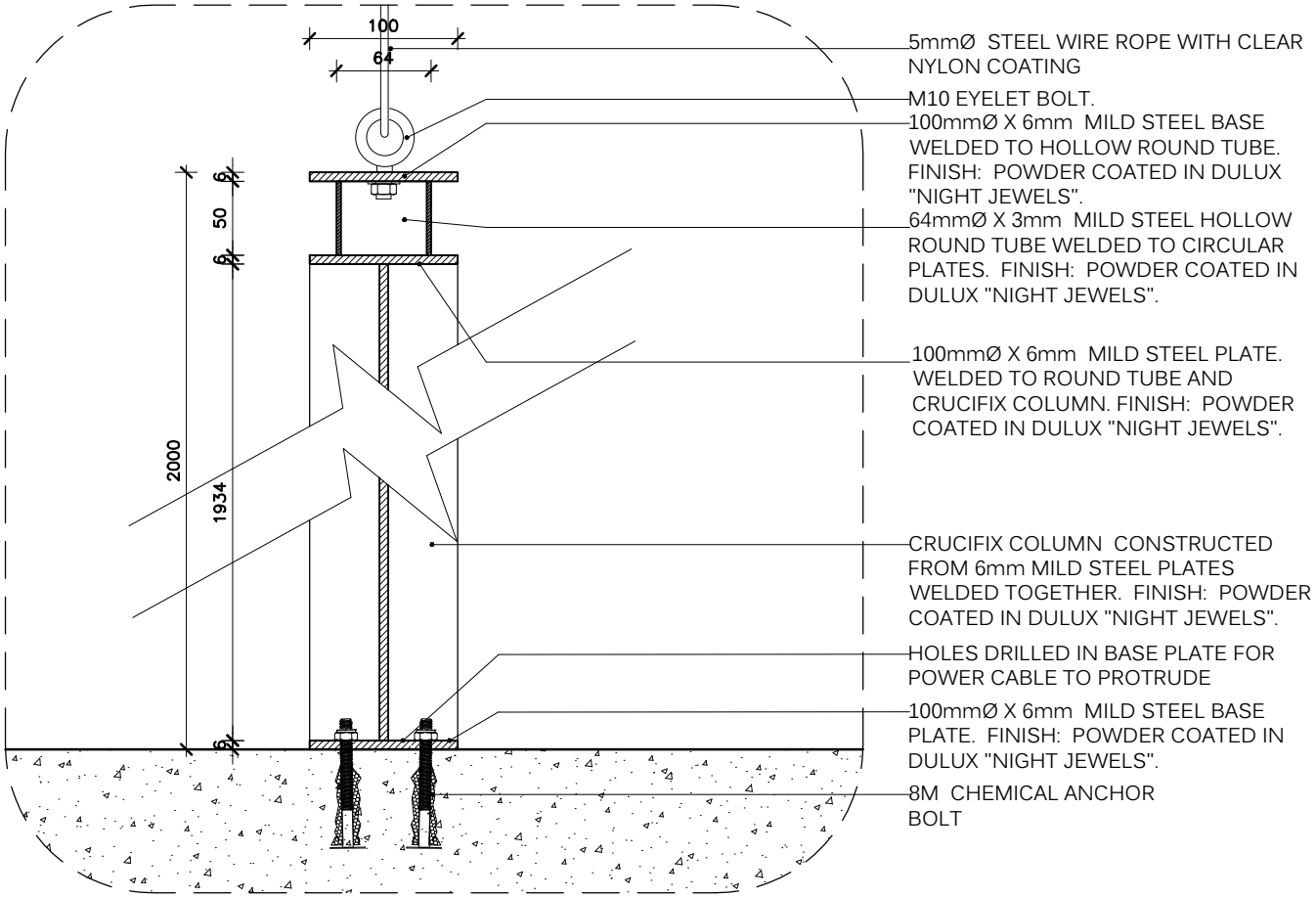
DETAIL: G5_ SECTION
INFORMATION POLE DETAIL
SCALE 1:5



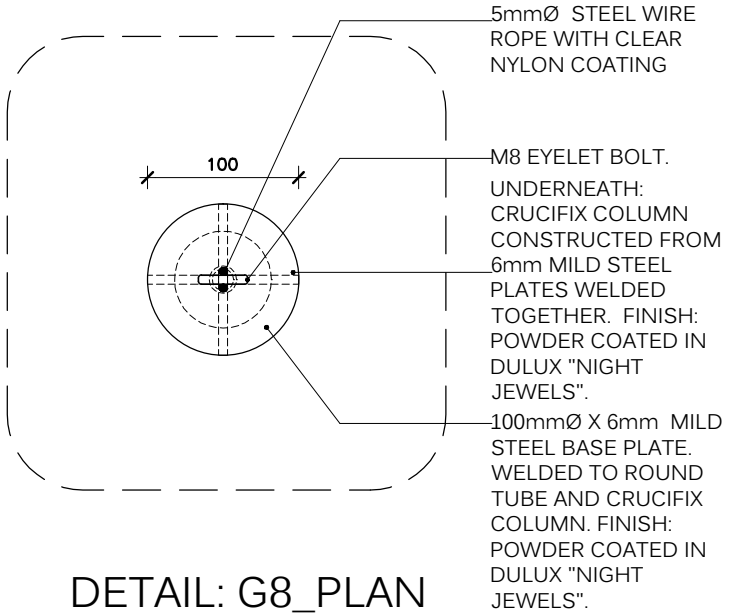
DETAIL: G6_ PLAN
INFORMATION POLE DETAIL
SCALE 1:5

Figure 7.47: Detail drawings of the textile exhibition grid. Scale 1:5. (Author, 2012)

The Exhibition Grid:



DETAIL: G7_ SECTION
FIXING POLE DETAIL
SCALE 1:5



DETAIL: G8_PLAN
FIXING POLE DETAIL
SCALE 1:5

*NOTE: ALL WELDING TO BE DONE BEFORE POWDER COATING IS APPLIED.

Figure 7.48: Detail drawings of the textile exhibition grid. Scale 1:5. (Author, 2012)

TEXTILE INSPIRATION:

Figure 7.50: Inspirational photographs. (Author, 2012)

CONCEPTUAL DEVELOPMENT:

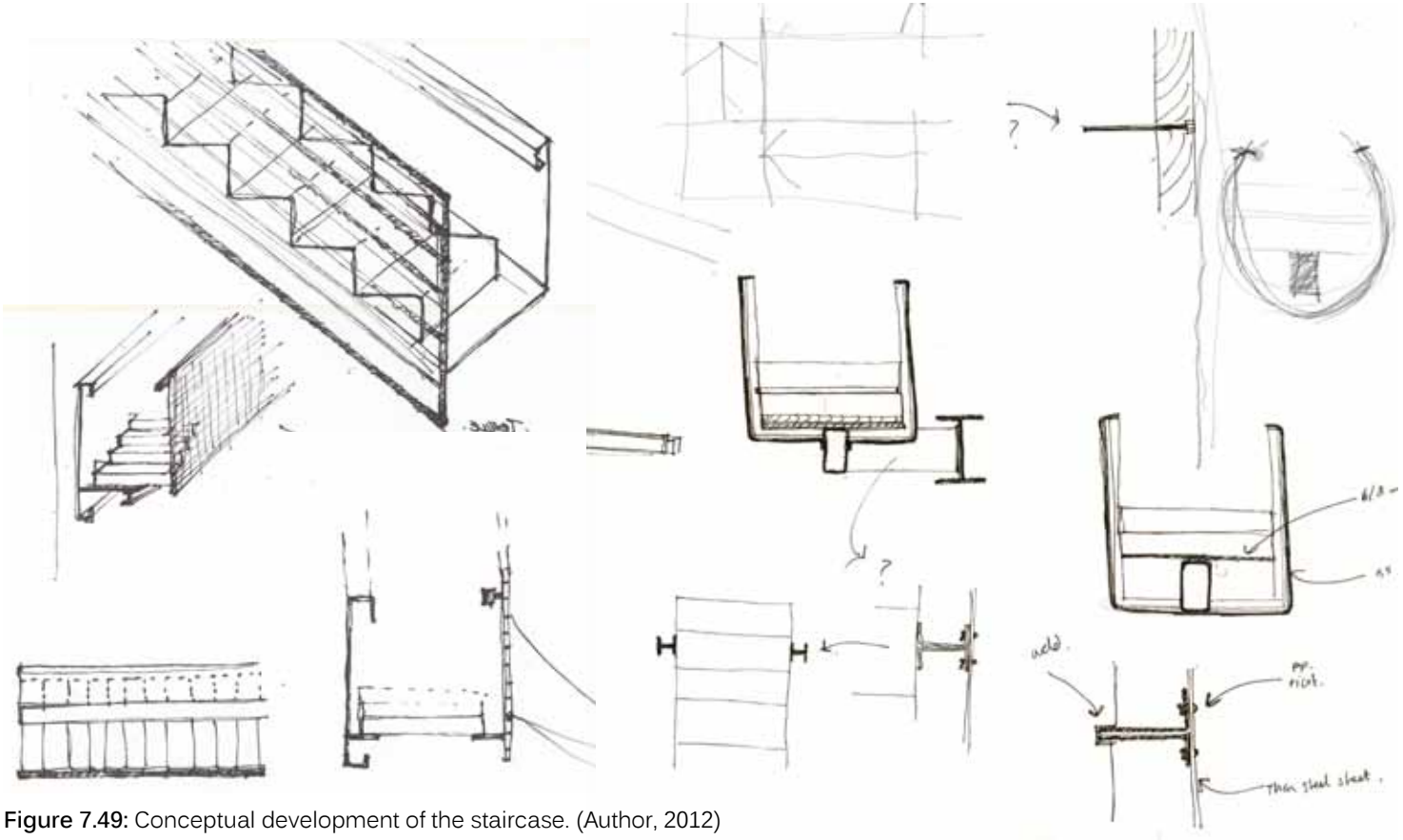


Figure 7.49: Conceptual development of the staircase. (Author, 2012)

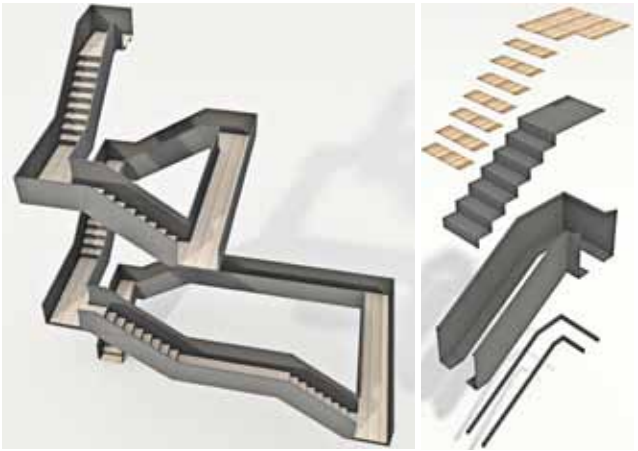
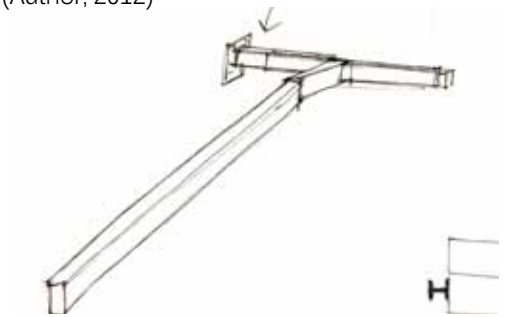


Figure 7.51: Design development of the staircase. (Author, 2012)



The Staircase:

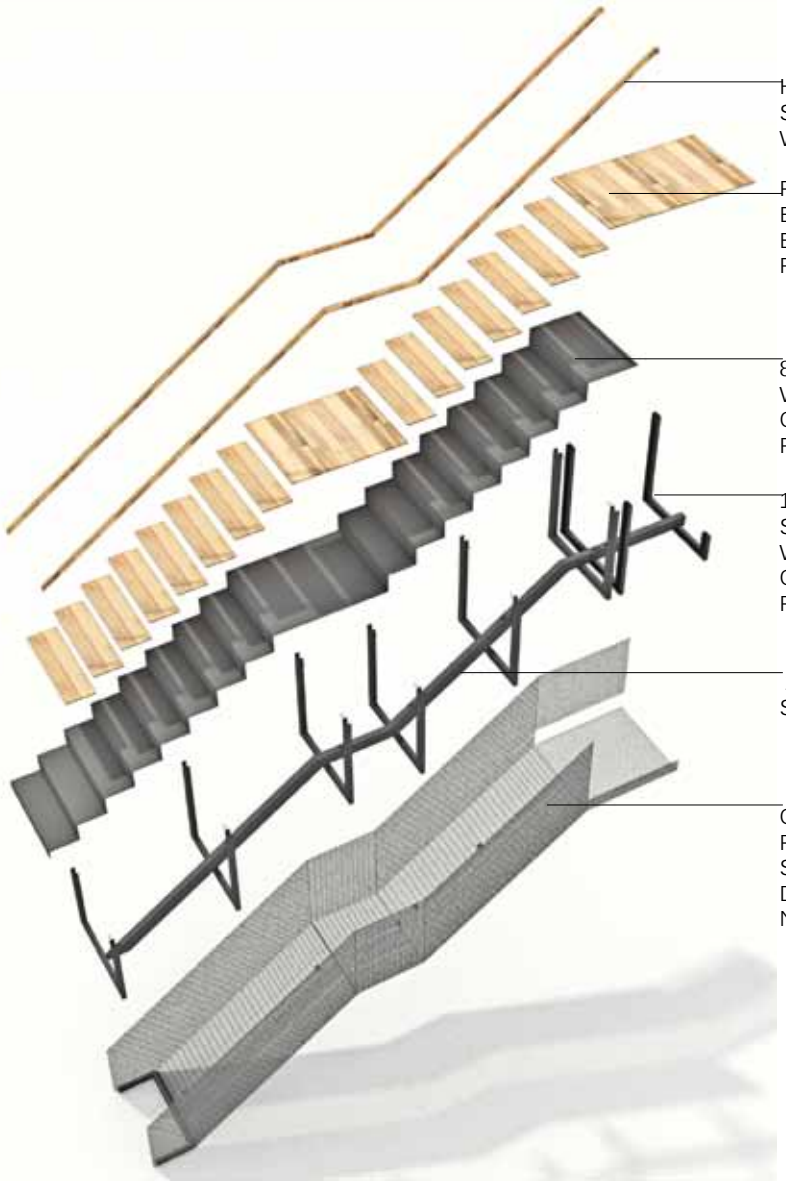
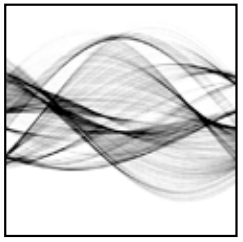


Figure 7.52: Explosion of the staircase. (Author, 2012)

Unique Abilities.



THE DESIGN INTENTION:

The **simplistic** design of the staircase is desirable so that it can act as a **neutral background** to view the exhibited textiles against. The staircase allows viewers to view the textile exhibitions and textile making workshops at **multiple levels**.

THE TEXTILE INSPIRATION:

The **folds in the steel** are inspired by the ability of textiles to **fold and plead**. This notion is an example of the **translation of the unique characteristics** of textiles into interior architecture. Similar to a **piece of textile**, the staircase **flows smoothly and continually** through the space, with no evidence of interruption. This notion is an example of the **metaphoric translation** of textiles into interior architecture.

THE DESIGN EXECUTION:

The staircase is constructed in a simplistic manner with panels of **bend steel** forming the **treads and risers**. The **support structure** of the staircase is **hidden** by a **steel mesh** which creates opportunities for textiles to be **hooked onto**, thus making the staircase **part of the exhibition** structure. The staircase leads to landings which function as balconies that **overlook** the multivolume exhibition space. These balconies create the opportunity for viewers to **pause and absorb** the textile experience.

THE MATERIAL SELECTION:

Engineered strandwoven bamboo floor boards are used to provide a treading surface with a better slip resistance than bare steel. Bamboo is chosen because of its **environmental responsibility** (Bamboolands, 2012). The **layered fibers** in the strandwoven bamboo boards are also an imitation of the **structure of a textile**. The **steel mesh** is chosen, not only for its functionality, but also because it does not have a **scratchable surface**, such as solid cladding material. It also provides an **economical use of material**.

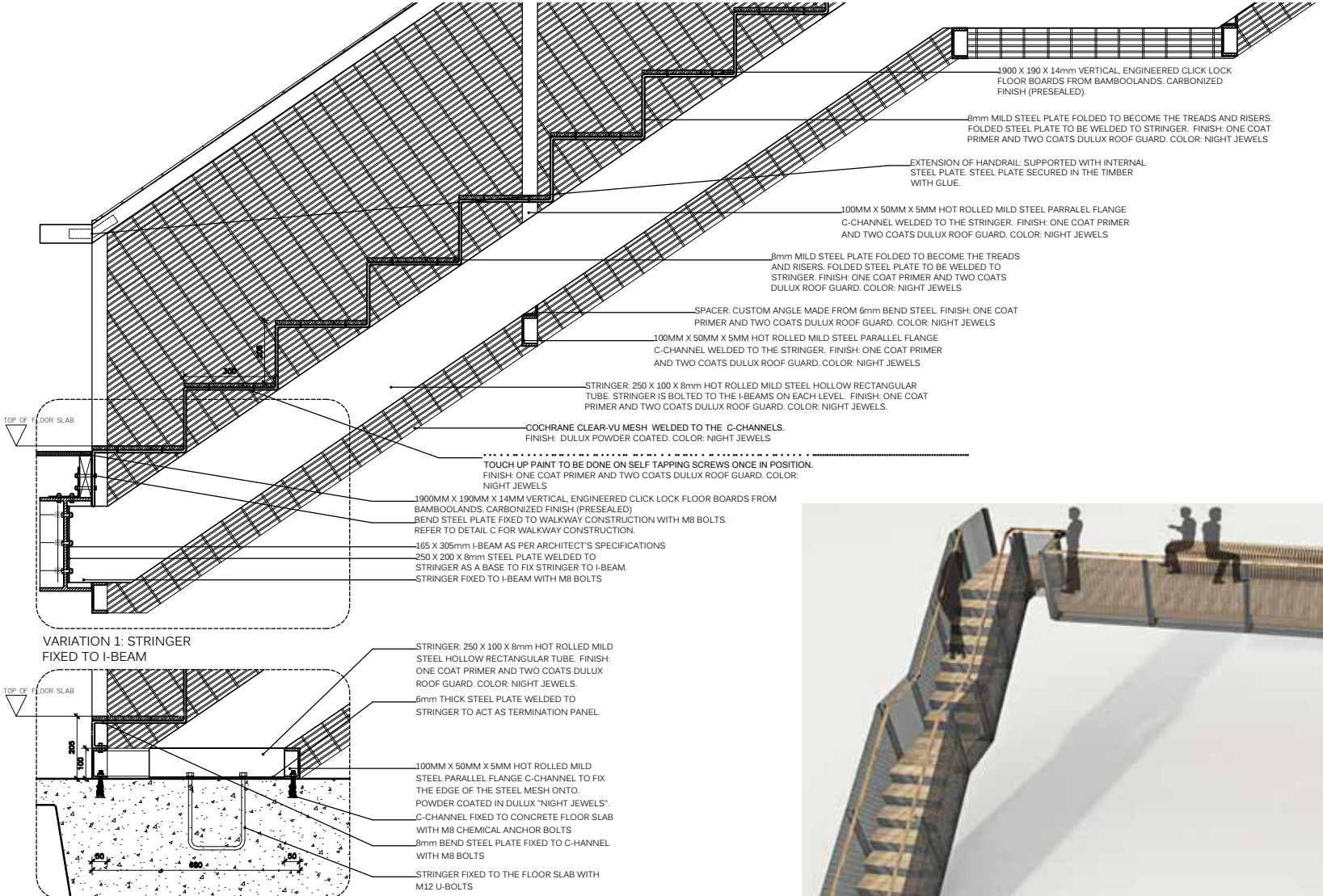


Figure 7.53: Staircase detail. Scale 1: 20. (Author, 2012)

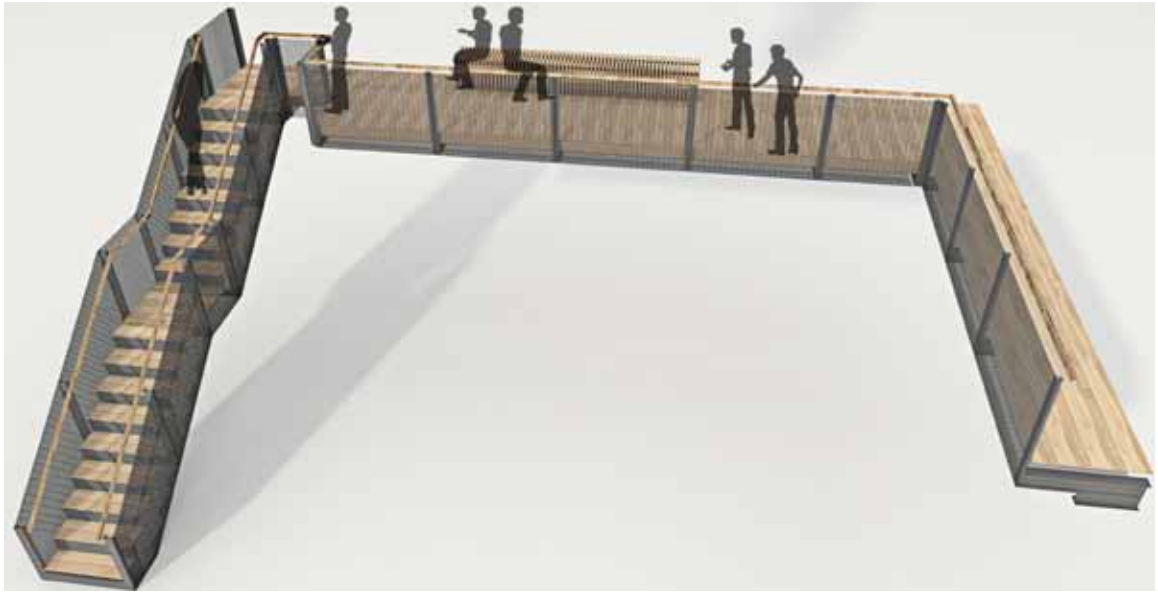


Figure 7.54: Staircase and balcony design. (Author, 2012)

Figure 7.55: 3D view of the staircase.. (Author, 2012)

Figure 7.56: Staircase detail. Scale 1:20. (Author, 2012)

The Staircase:

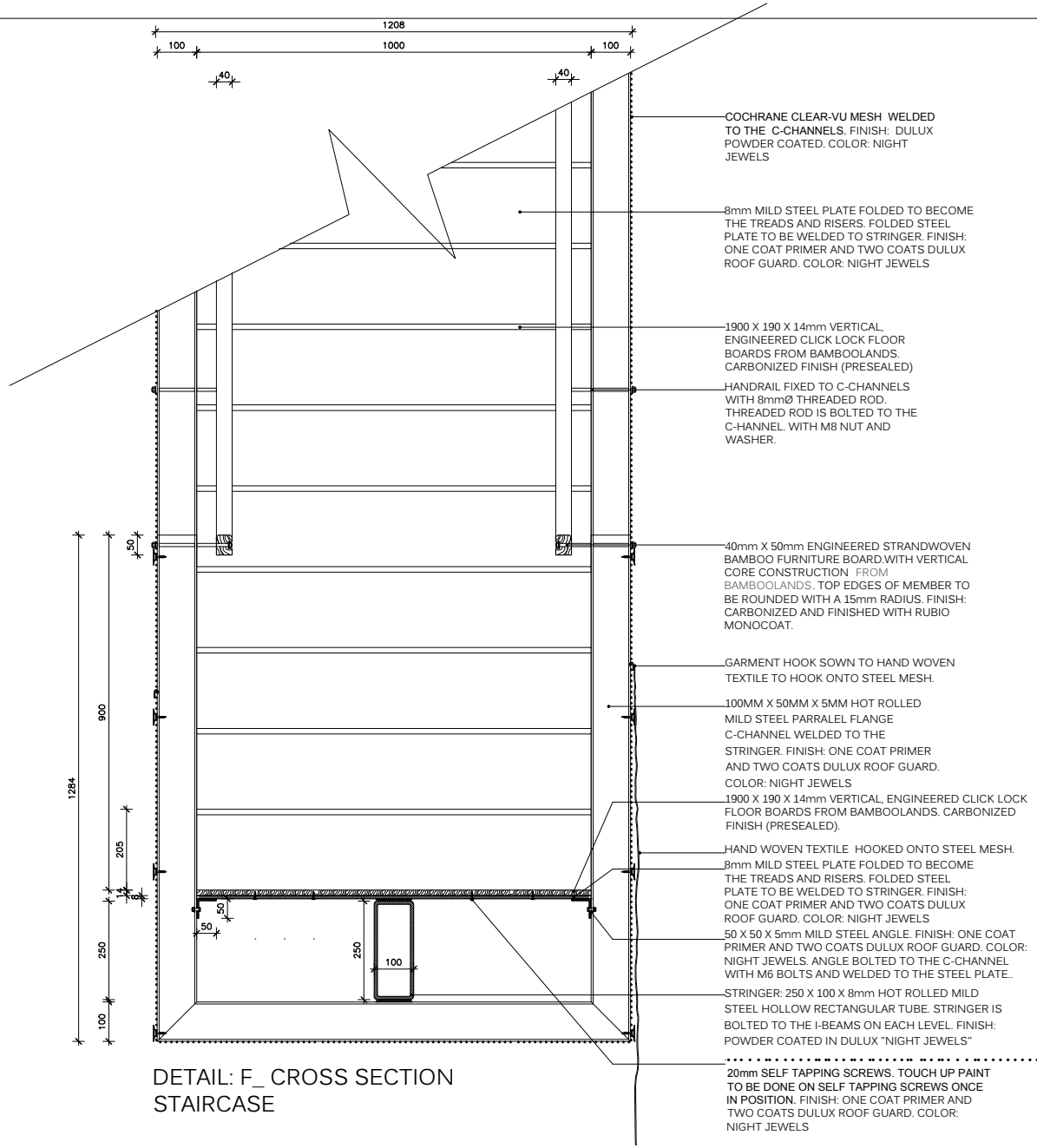
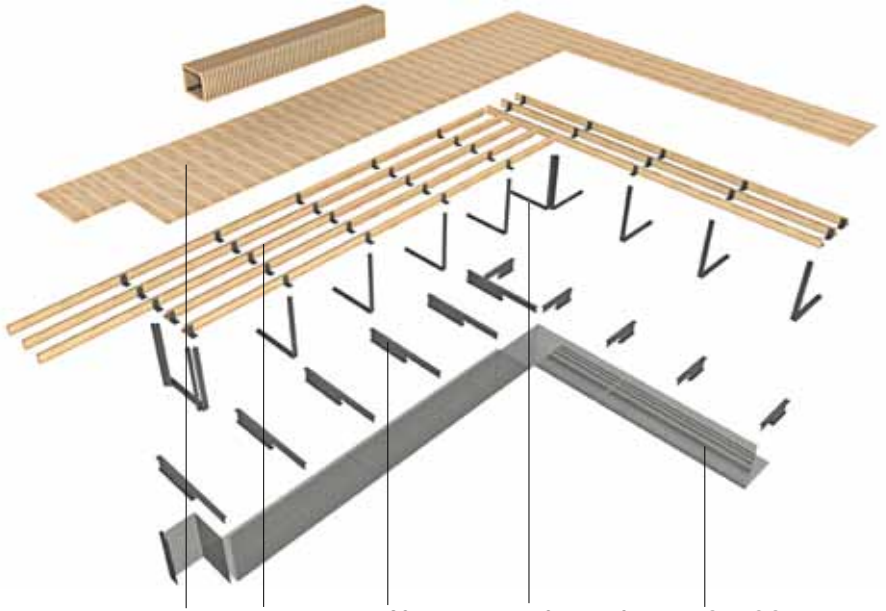


Figure 7.57: Staircase detail. Not to scale. (Author, 2012)



FLOOR BOARDS: 14MM THICK ENGINEERED STRANDWO-VEN BAMBOO BAORDS FINISHED WITH RUBICO MONOCOAT.

S.A.PINE SUPPORT BEAMS

305MM X 165MM X 40MMUNI-VERSAL I-BEAM. BEAM CUT INTO PROVILE.

50MM X 50MM X 5MM HOT ROLLED MILD STEEL EQUAL LEG ANGLE. FINISH: ONE COAT PRIMER AND TWO COATS DULUX ROOF GUARD. COLOR: NIGHT JEWELS.

CHROCANE CLEAR-VU MECH FIXED THE C-CHANNELS WITH SELF TAPPING SCREWS. FINISH: DULUX POW-DER COATED. COLOUR: NIGHT JEWELS.

Figure 7.58: Explosion of the balcony. (Author, 2012)

The Workstation for Embellishing, Printing and Dyeing:

CONCEPTUAL DEVELOPMENT:

Figure 7.59: The conceptual explorations of the workstation. (Author, 2012)

THE DESIGN INTENTION:

Due to the fact that the **embellishing workshops** and **printing and dyeing workshops cannot be equipped** with traditional textile making equipment (such as looms and spinning wheels), a **custom designed workstation** is necessary. The aim of the workstation is to provide the textile maker with **comfort and flexibility.**

THE TEXTILE INSPIRATION:

Actual textiles did not inspire the design of the workstation, but rather the **method** a **textile needs to be worked with**. The main inspirational factor of working with textiles is the fact that a textile needs to be **pinned down** to the working surface.

THE DESIGN EXECUTION:

The **main feature** of the workstation is the **work top** which can be **used on both sides**. The upper side provides a large hard surface with small soft areas onto which the textile can be pinned. The underside consists of the opposite; a large soft area with small hard areas. The large soft area is used to pin small textiles down, or to pin various areas of a large textile. The hard areas can be used to work on when a hard surface is necessary to press against. The hard areas are also provided with a **groove** to **assist cutting** the textiles. An element which assists with keeping the textiles **out of the way** when working is provided over and under the workstation. A **textile roll** can also be fixed onto this element. The **height** of the work top is **adjustable**. The **credenza** provides s**torage and an additional horizontal surface** to place equipment on when the work top is fully occupied with a textile. The credenza in the embellishing workshop is provided with a top that functions as a **pin cushion**, whereas the credenza in the dyeing and printing workshops is provided with a **tray-like top** for equipment which is full of dye or paint.

THE MATERIAL SELECTION:

A **solid core** surface material is needed for the work surface, due to its **durability, non-porosity, its stain resistance, invisibility of the joints and its repairability.** The options for solid surface materials are *Corian*, *Surinno* and *Staron*. Although these materials have similar properties, *Surinno* is the most appropriate due to the fact that it is a **South African product** (Techno Surfaces, 2012). For the soft surfaces, **recycled rubber sheets** are glued onto the worktop. The rubber sheets are easily **replaceable**.

The Workstation for Embellishing, Printing and Dyeing:

Figure 7.60: The design execution of the workstation. (Author, 2012)

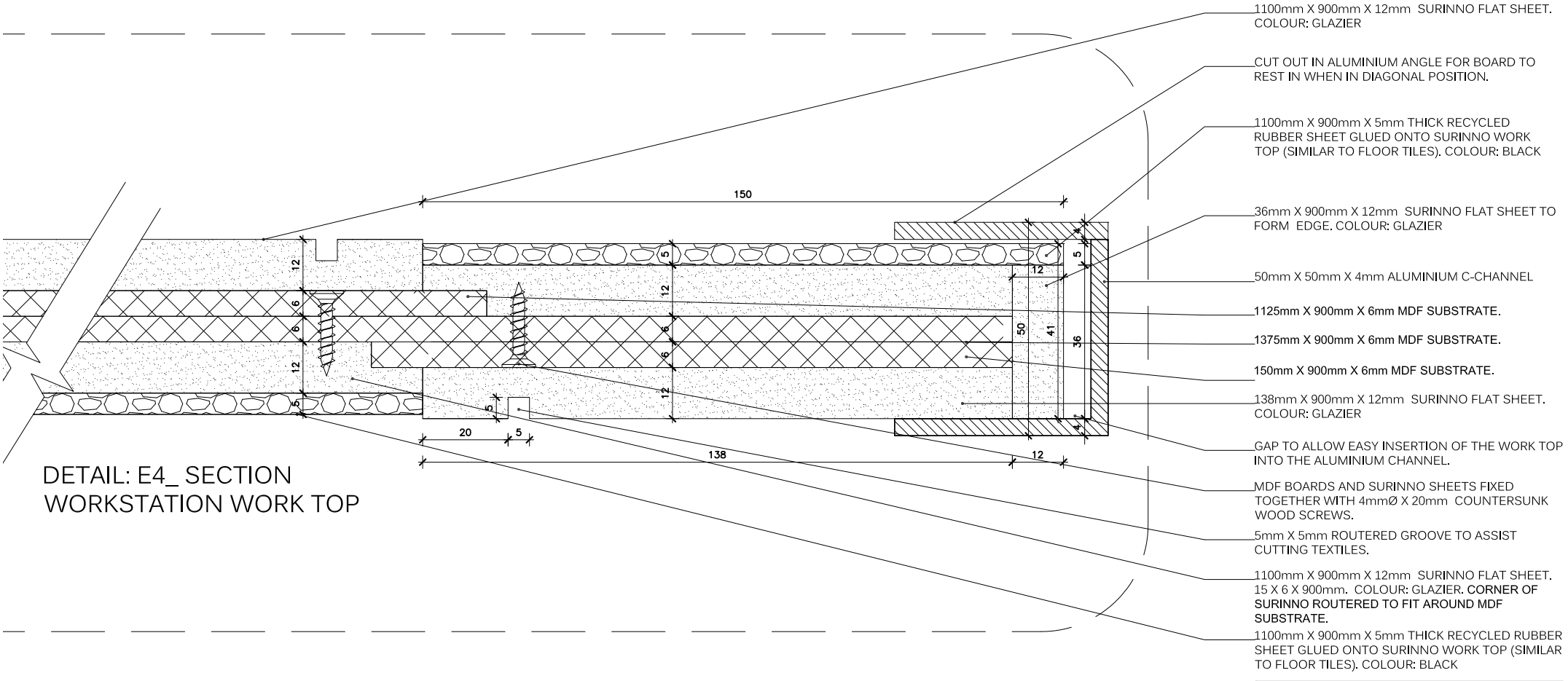
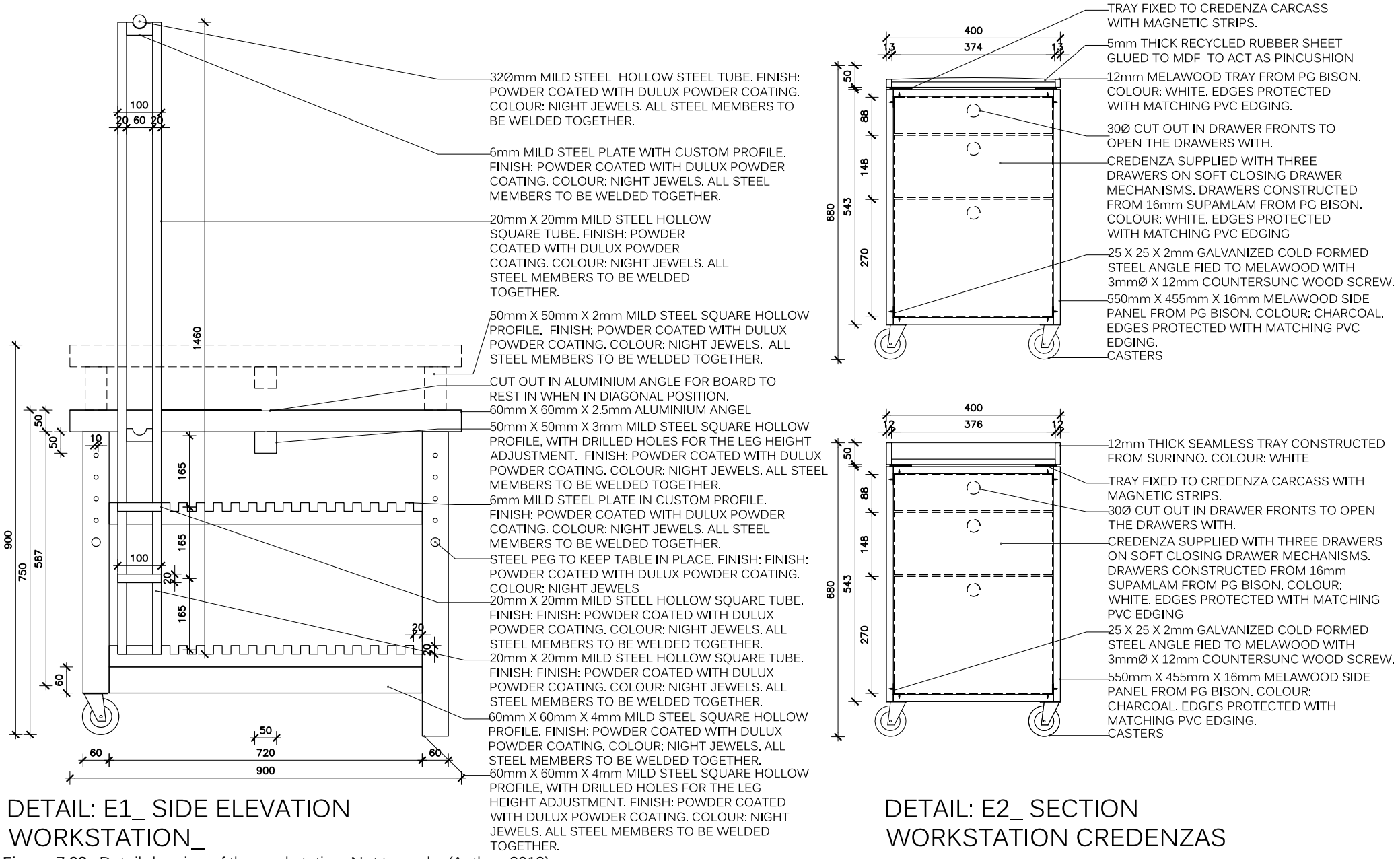


Figure 7.61: Detail drawing of the workstation. Not to scale. (Author, 2012)



DETAIL: E1_ SIDE ELEVATION WORKSTATION_

DETAIL: E2_ SECTION WORKSTATION CREDENZAS

Figure 7.62: Detail drawing of the workstation. Not to scale. (Author, 2012)

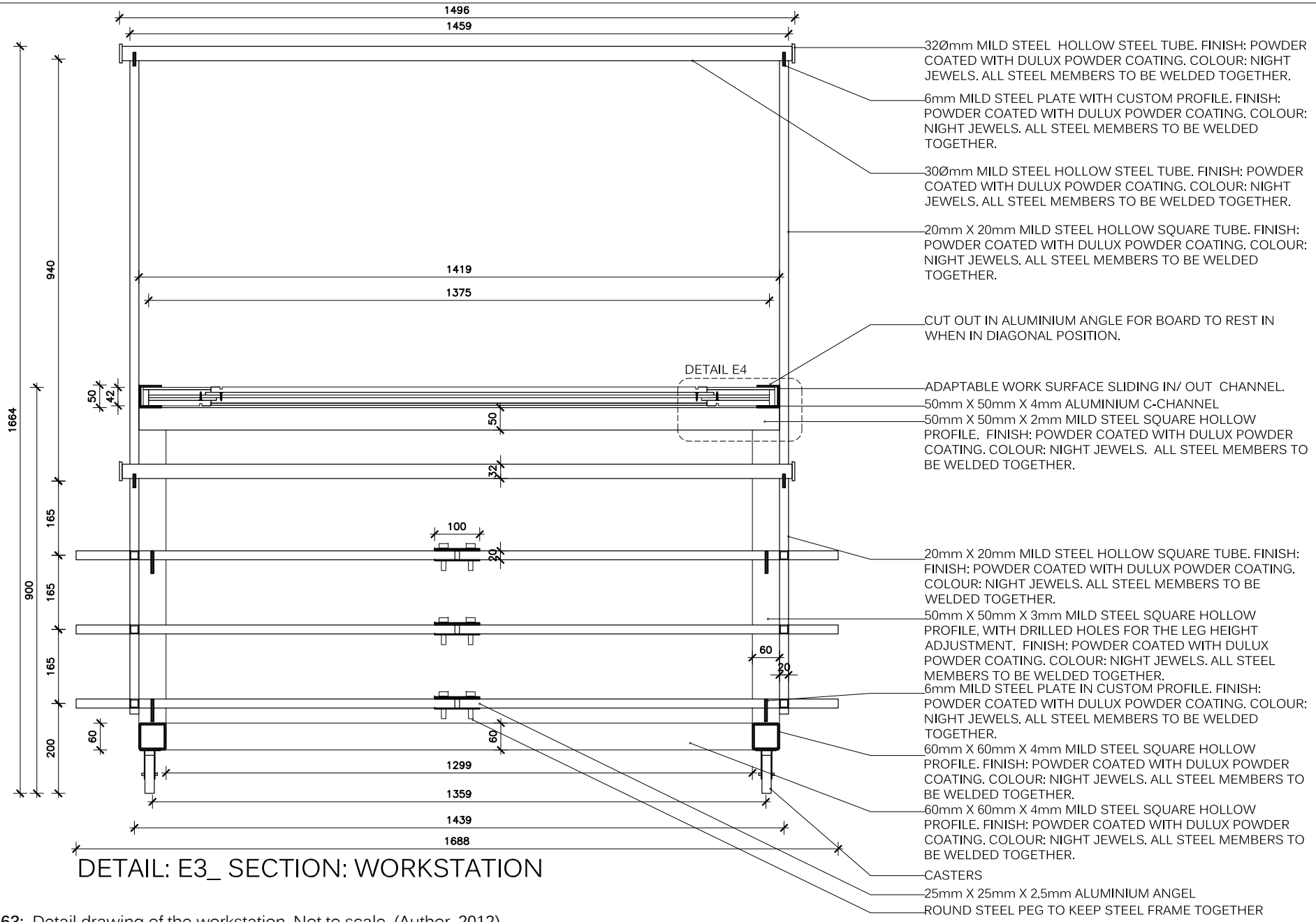


Figure 7.63: Detail drawing of the workstation. Not to scale. (Author, 2012)

Conclusion:

Through the explanation of the **spatial narrative** through the interior intervention, the **detail design exploration** and **technical investigation**, it is evident that the **design problem** is solved. The question of how to design **with** textiles **for** textiles has been explored and the proposed solutions for the problem have been implemented into the interior intervention. It is evident that the **differentiation** between spaces which function as a **background** for textiles; and spaces or elements which **express textiles** has been successfully implemented. The five **methods of translating textiles** into interior architecture proved as an appropriate design method to create the spaces and design elements which express textiles. It is also evident that the architectural proposal has been **improved** through the interior intervention in terms of the spatial experience and functionality of the spaces.

TECHNICAL INVESTIGATION: SERVICES AND SYSTEMS:

This chapter investigates the **services and systems** incorporated in the interior intervention as part of the **technical investigation**. The services and systems investigated are:

- Sustainable material selection
- Natural and artificial lighting systems
- Passive solar heating and cooling systems
- Natural ventilation systems
- Water purification system

Other services and systems indicated are:

- Water supply and drainage system
- The gas supply system
- Mechanical ventilation
- Waste removal and deliveries
- Access control point
- Vertical circulation

The chapter concludes with the project's **contribution** to the research field of **Environmental Potential** as well as **Housing and Urban Environments** and **Heritage and Cultural Landscapes**.

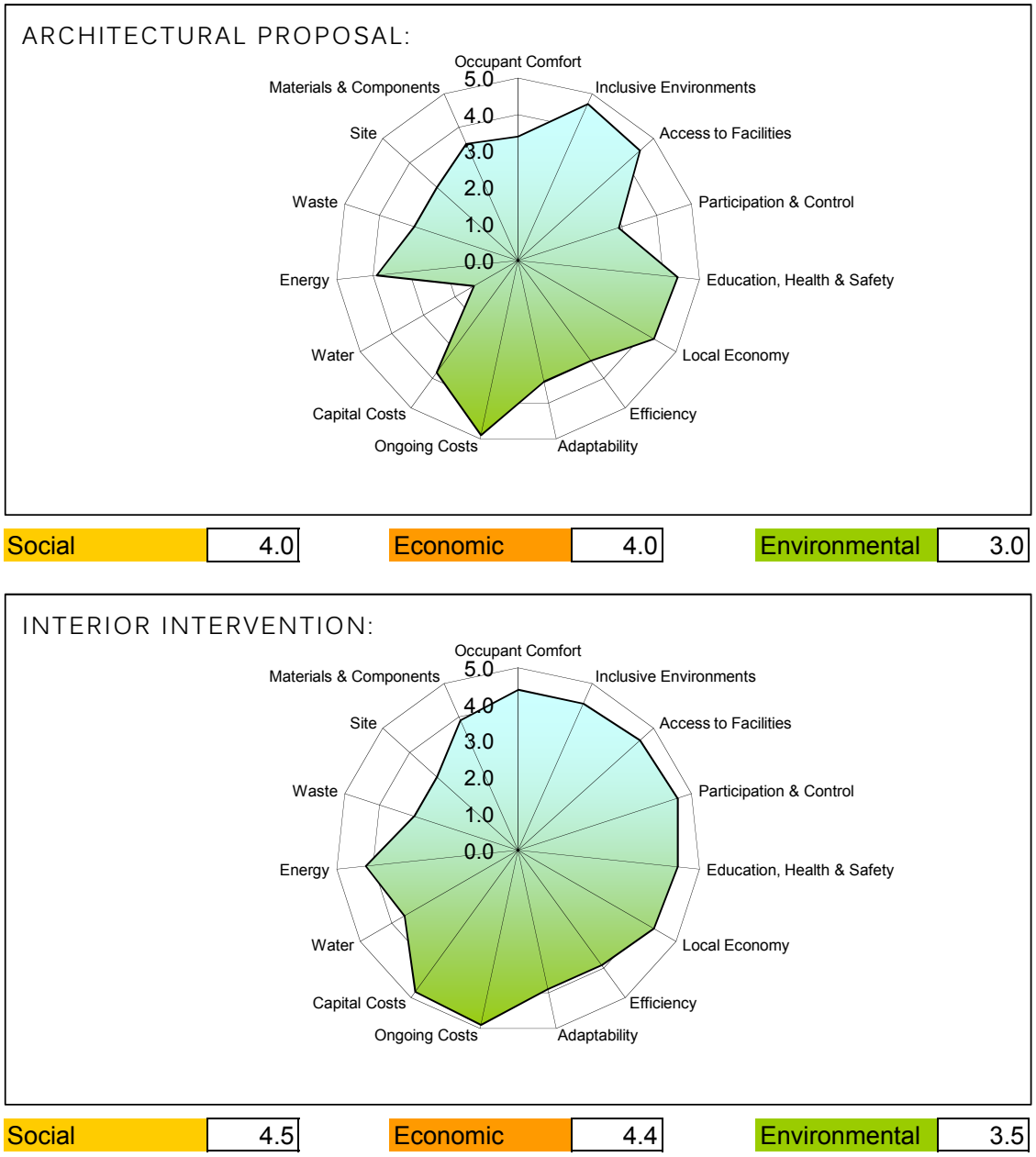


Figure 8.1: Comparison of the S-BAT analysis before and after intervention. (Author, 2012)

S-BAT ANALYSIS:

To **compare** the **sustainability** of the architectural proposal **before and after** intervention, the **S-BAT** analysis tool has been used. The charts in Figure 8.1 show the comparison. Numerous social, economic and environmental issues have been **improved.** This chapter will elaborate on the **environmental improvements**. The areas which have **not been improved**, are the areas which do not fall within the **scope** of the interior architect. The environmental aspects improved are the **water, energy, materials and components** as well as the **occupational comfort**.

The **water** aspect is improved by the incorporation of a **water purification system.** This system is necessary for the **water intensive dyeing process**. **Energy consumption** is reduced by the introduction of **energy efficient lighting**, **passive heating and cooling systems** and through the **manual textile making processes,** which do not require electricity. **Gas** is used at the **dyeing process**, where a high amount of energy is needed to heat the water. The **occupational comfort** is improved through the incorporation of **natural light, passive heating and cooling systems and natural ventilation. Mechanical ventilation** is incorporated in the **dyeing and printing workshop**, to ensure good **air quality**. Presented in Table 8.1 is the carefully **selected materials**, which improved the sustainability of the **materials and components** aspect in the S-BAT analysis.

MATERIALS:

(Genisis Steel, 2011).

STEEL PROFILES:

Infinitely recycled/ recyclable material without down grading.
Less material required (reduced weight and reduced volume) to carry the same loads. (CES Edupack, 2011).

(Author, 2012)

STEEL CIRCULAR HOLLOW SECTIONS (POWDER COATED):

Low maintenance and high weather resistance option for exterior application. Infinitely recycled/ recyclable material without down grading (CES Edupack, 2011).

(Author, 2012)

MERANTI POLES:

Plant material (S-BAT rating).
Carbon sequestration.
Downcyle-able.
Biodegradable (CES Edupack, 2011).

(Bamboolands, 2012)

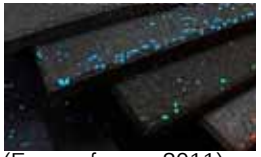
BAMBOO BOARDS:

Cutting bamboo stalks promotes faster growth - stumps are left behind and can be re-harvested. Bamboo matures after 4 to 6 years, unlike hardwoods that may take decades. Mao bamboo (species used for boards) is not the species eaten by pandas (Bamboolands, 2012).

(Techno Surfaces, 2012)

SURINNO:

Locally produced option, comparing to *Corian* and *Staron* (Techno Surfaces, 2012).



(Ecosurfaces, 2011)

RECYCLED RUBBER SHEETS:

Recycled (Ecosurfaces, 2011).

MATERIALS:

(Sound Away, 2012)

RECYCLED DENIM ACOUSTIC INSULATION:

Recycled (Sound Away, 2012).

(Ductal, 2012)

LAFARGE "DUCTAL" CONCRETE:

Less material needed.
An exceptionally long life span with low maintenance.
At the end of use able lifetime, the absence of passive reinforcements in constructions facilitates its recycling and reuse (Ductal, 2012).

(PG Glass, 2012)

SOLAR VUE LAMINATED COATED SAFETY GLASS:

Glare reduction.
Medium solar control.
High natural light transmission.
UV protection (PG Glass, 2012).

(Flowcrete, 2011).

FLOWSHIELD LXP SELFLEVELING POLYURETHANE RESIN COATING

Solvent free and durable (acid resistant) (Flowcrete, 2011).

(Cochrane Products, 2010)

CLEAR VU STEEL MESH:

Infinitely recycled/ recyclable material without down grading. Less material needed in mesh than solid surface (Author, 2012).

FINISHES:

(Rubio Monocoat, 2012)

RUBIO MONOCOAT:

Allows local touch up of damaged areas or scratches. Molecular bond creates durable, long lasting protection. Based on natural vegetable products without volatile organic compounds. Second coat not required (Rubio Monocoat, 2012)

(GRIPSEAL, 2012)

GRIPSEAL WOOD SEALANT:

In accordance with international environmental and VOC legislation. Product is water based. Sustainably harvested ingredients/renewable sources that occur naturally (GRIPSEAL, 2012).

(Author, 2012)

POWDER COATING:

Requires no solvent therefore VOC free. Produce less hazardous waste. (Dulux Powder Coatings, 2012)

Table 8.1: Environmental responsible material and finishes selection. (Author, 2012)

Natural Lighting:

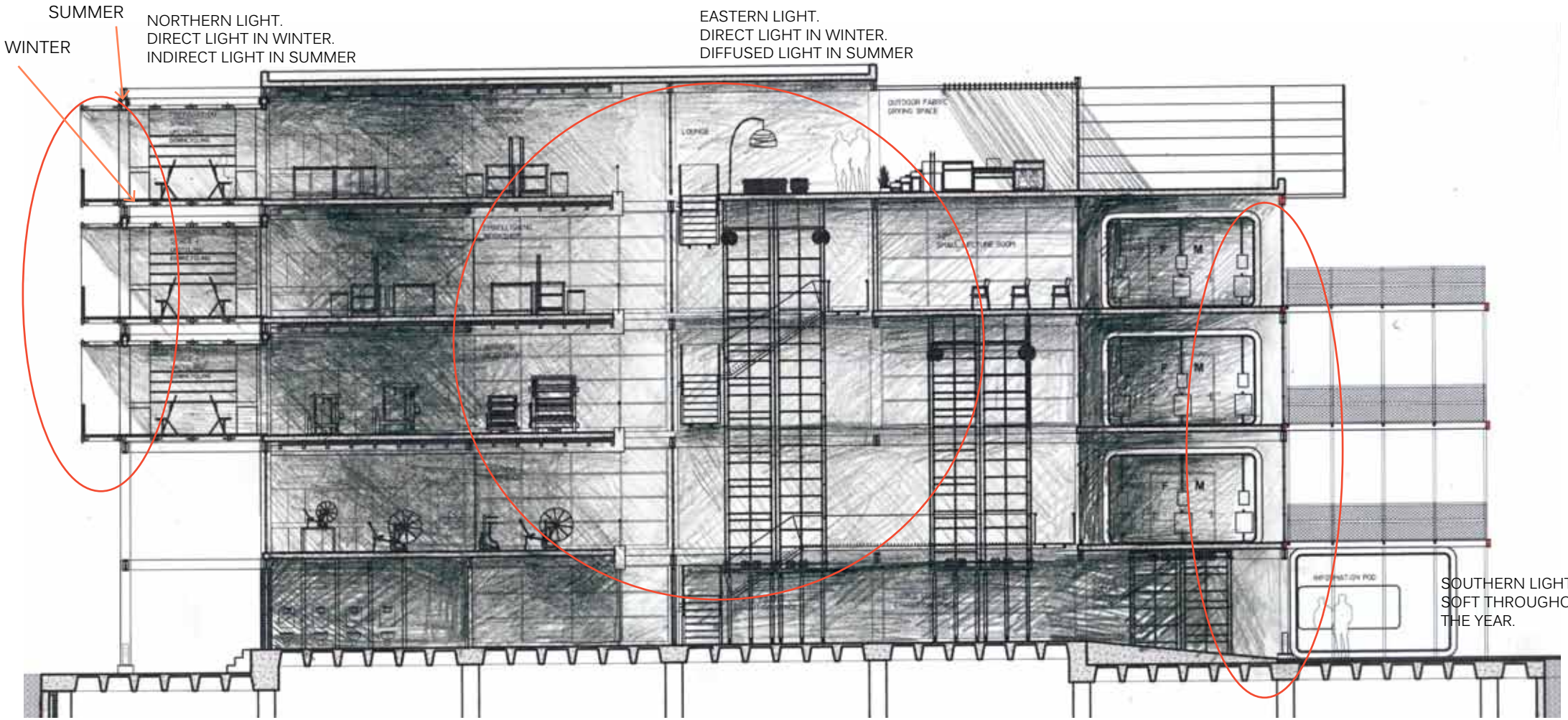


Figure 8.2: Longitudinal section showing the natural day lighting in the interior intervention. Section not to scale. (Author, 2012)

Natural Lighting:

THE NATURAL LIGHTING SYSTEM:

On each level the spaces are **naturally illuminated** by s**oft southern light**.

The workshops are illuminated by **northern and eastern light**. The northern light is **direct** in the winter and **indirect** in the summer. The **eastern light is indirect** as a result of the vertical extension of the ceiling panels.

In the summer, the exhibition space is illuminated by **diffused light** from the **east** and **screened light** from the **west**, due to the solar screens. In the winter the screens eastern screens slide open to let in **direct early morning light**.

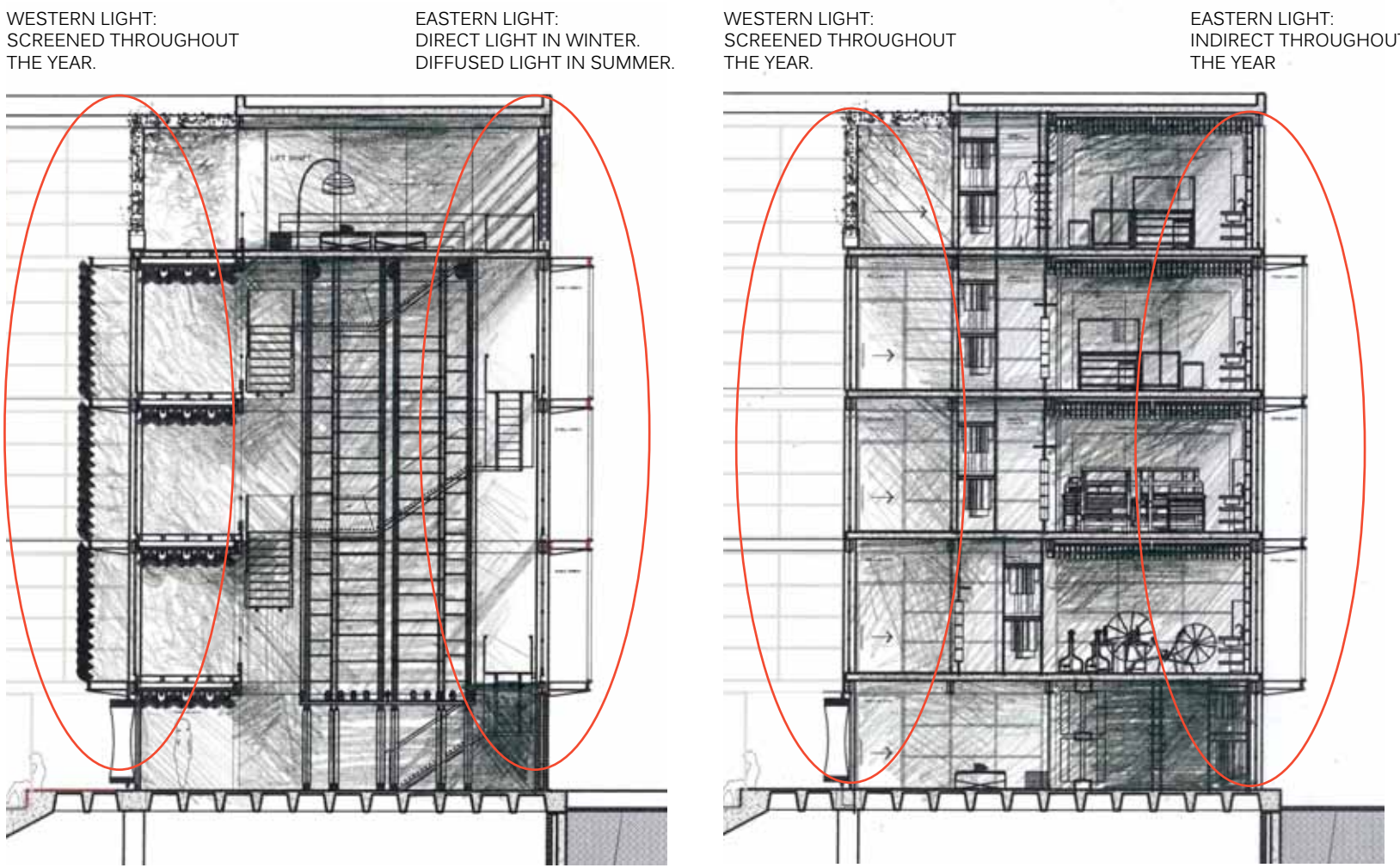


Figure 8.3: Section through the exhibition space and workshop spaces showing the natural day lighting in the interior intervention. Sections not to scale. (Author, 2012)

Artificial Lighting:

Figure 8.4: Ceiling plans indicating the lighting in the interior intervention. Plans are not to scale. (Author, 2012)

THE ARTIFICIAL LIGHTING SYSTEM:

The conceptual approach to the artificial lighting in the interior intervention is a **functional approach**. The luminaires are positioned to only illuminate the **exhibition**, or **actions** preformed in **specific areas**. However, the luminairs are positioned to simultaneously **emphasise the design elements** within the spaces. This approach ensures that no excess lighting is provided.

Decorative lighting is only used in the rooftop lounge. The concept for the standing lamps in the rooftop lounge is to **commission different designers**, from time to time, to design a luminaire which explores the possibilities of **textiles and light.**

To **save energy**, the lamps used in the luminaires are carefully chosen. Where possible, **warm white LED** replacement lamps are used instead of conventional incandescent or CFL lamps. This has the added advantage of **not having to replace** the lamps often. The only lamps that should not be replaced with LED lamps are the **spotlights** in the exhibition space. These lamps are rather **12V halogen dichroics**, to ensure the textiles are exhibited in **excellent colour rendering**.

LEGEND:	LUMINAIRE:	LAMPS/ ACCESSORIES:
1.		**LED "SET" DOWNLIGHTER FROM SPAZIO** LED downlight range with body in die-cast aluminium. 1.2W/2.4W 12V LED (Spazio Catalogue, 2012)
2.		**"SURFDECK" STRIPLIGHT FROM SPAZIO** → **LED T5 SubstiTUBE LAMP FROM OSRAM** Body and Base: Metal. Diffuser: Opal Acrylic Light Sources: Linear Fluorescent. T8 Max: 2 x 36W/230V/G13 LA/4436/13 Warm Complete with Ballast (Spazio Catalogue, 2012) Uniform illumination Wide beam angle: 120° Mercury-free and RoHS compliant Energy savings of up to 60% (compared to T8 fluorescent lamp on CCG) Maximum resistance to switching loads Correct operation even at low temperatures Instant 100 % light, no warm-up time Ambient temperatures from –25...+60 °C (Osram Catalogue, 2012)
3.		**"BELLA 2" SPOTLIGHT FROM SPAZIO** Body and Base: Aluminium C/w Ceiling Base and Transformer Halogen Dichroic Max: 50W/12V/Gu5.3__ LA/8060/13 60° (Spazio Catalogue, 2012)
4.		**"THE STRIP" STRIPLIGHT FROM SPAZIO** → **LED T8 SubstiTUBE LAMP FROM OSRAM** Body: Plastic The Strip can be connected in series using double ended figure 8 plug included. (Spazio Catalogue, 2012) Uniform illumination Wide beam angle: 120° Mercury-free and RoHS compliant Energy savings of up to 60% (compared to T5 fluorescent lamp on CCG) Maximum resistance to switching loads Correct operation even at low temperatures Instant 100 % light, no warm-up time Ambient temperatures from –25...+60 °C (Osram Catalogue, 2012)
5.		**LED TAPE 5050** FROM SPAZIO Closed 1036.IP.5050.60.90 -Warm white LED's per m: 60 W's per M: 14W Cutting point: 5cm Max Length 8m Lumens: 714lm (Spazio Catalogue, 2012)
6.		**(LS582) GROUND LIGHT** recessed with 18W CFL (Radiant Lighting Catalogue, 2012)
7.		8.  →  **"TOLOMEO" CLIP LIGHT FROM ARTEMIDE** (Artemide, 2012) **EUBIQ GSS POWER TRACK FROM CABSTRUT** (Cabstrut, 2012) **LED SUPERSTAR CLASSIC A ADVANCED 40 8.5 W/827 E27** Nominal wattage 8.5 W Nominal voltage 220...240 V Claimed equiv. conventional lamp power 40 W Nominal luminous flux 470 lm Rated luminous flux 470 lm Colour temperature 2700 K (Osram Catalogue, 2012)

Table 8.2: Table indicating the lighting specifications. (Various) compiled by (Author, 2012).

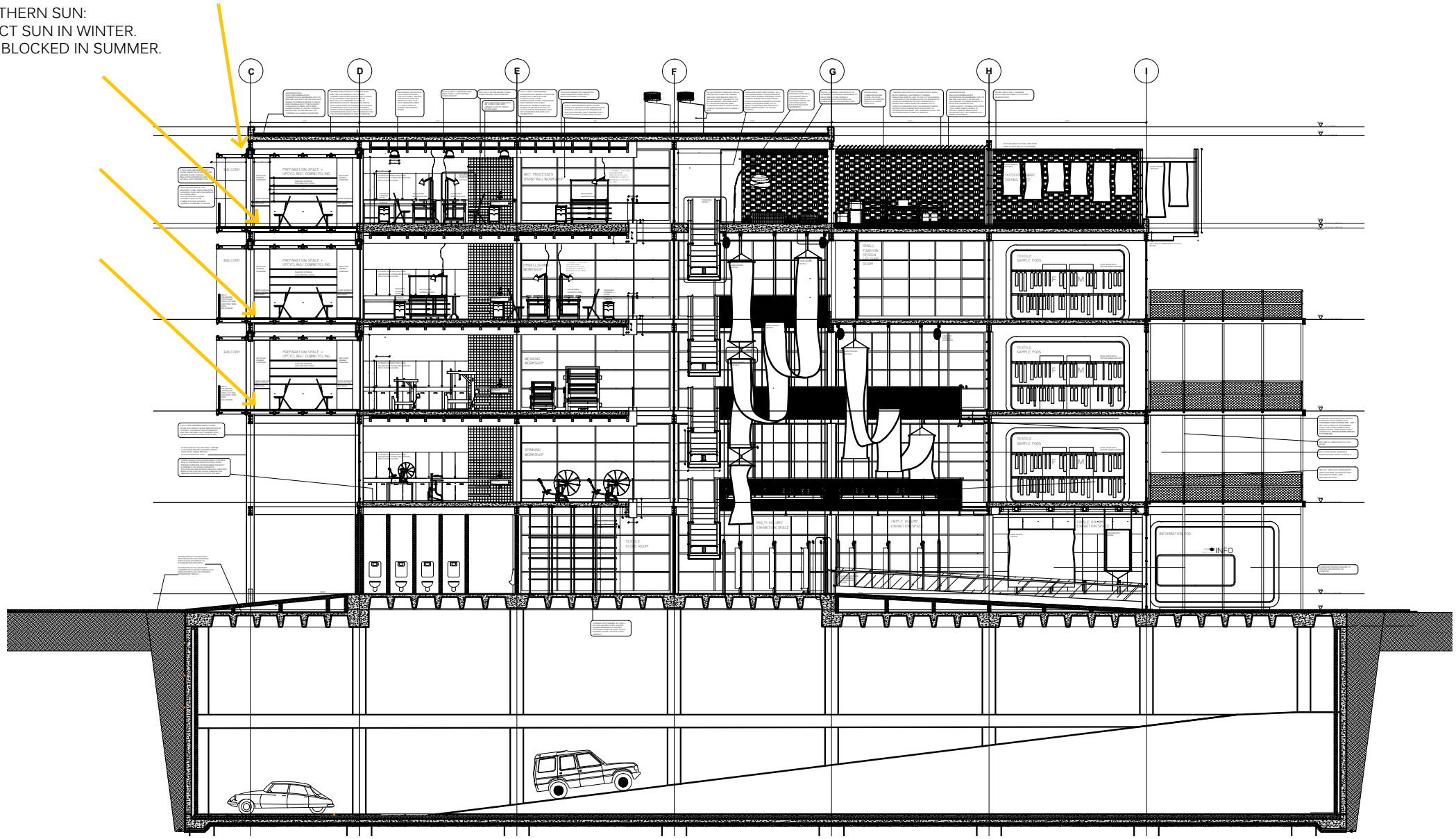


Figure 8.5: Longitudinal section showing the passive solar heating and cooling of the workshop spaces. Section is not to scale. (Author, 2012)

THE PASSIVE SOLAR HEATING AND COOLING SYSTEM:

Solar screens and **overhangs** are provided to control the heating and cooling of the interior spaces.

The glazing on the northern façade of the workshop spaces is provided with an overhang to **block the summer sun** and allow the winter sun to **passively heat the spaces**.

The western façade is protected by a solar screen which **blocks the undesired western sun** throughout the year. The eastern façade is provided with a screen which **blocks the warm summer morning sun**, but can be pulled away in the winter, to **allow the morning sun to heat the space**.

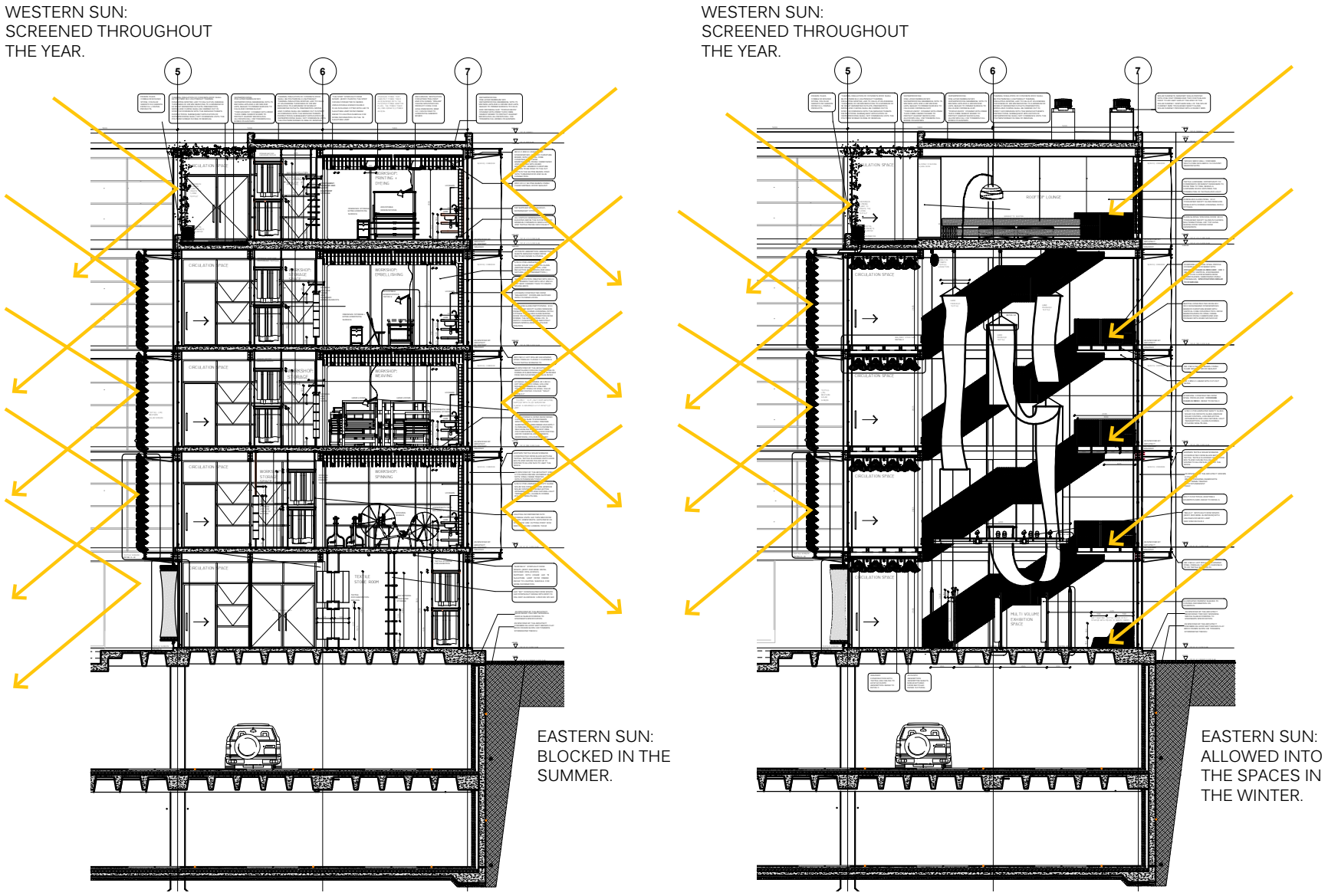


Figure 8.6: Cross sections showing the passive solar heating and cooling of the exhibition spaces. Section is not to scale. (Author, 2012)

CROSS VENTILATION AND STACK VENTILATION:

The exhibition space and workshop spaces are **passively ventilated** through **cross ventilation** and **stack ventilation**. This effect is enhanced by **solar chimneys**.

Positioning the **openable windows** on the **eastern side lower** than those on the **western side** enhances the natural flow of rising hot air. The cross ventilation is **increased** by providing **larger** openable windows on the **western** façade (from where the **prevailing winds** in Pretoria will come) than on the **eastern** façade.

On wind still days, **solar chimneys** provide ventilation for the spaces. Each solar chimneys is designed with a **black surface behind a glass panel** and a **whirlybird** at its apex to instigate initial upward movement of air within the stack.

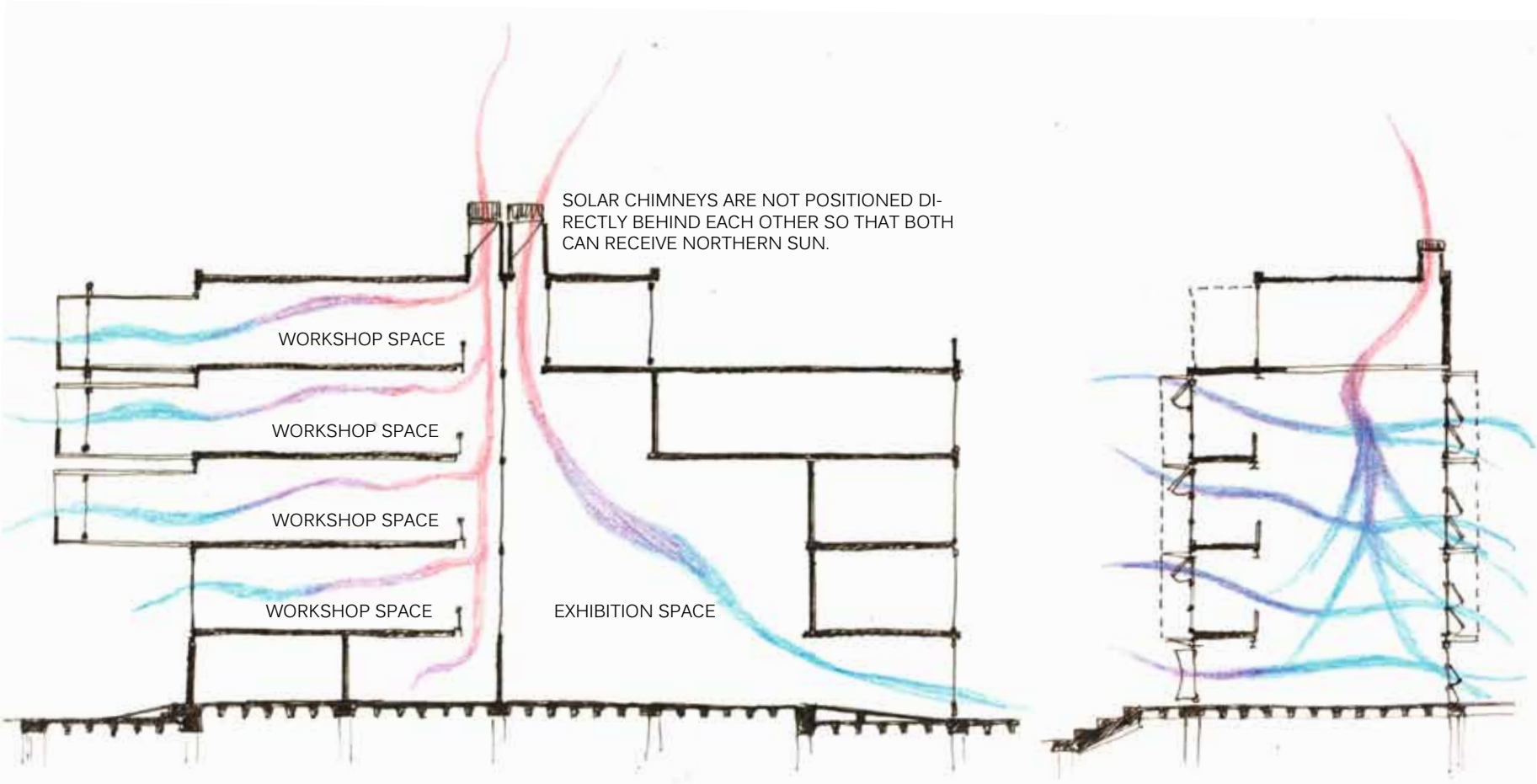


Figure 8.7: Longitudinal and cross sections showing the cross ventilation and stack ventilation assisted by solar chimneys. Sections are not to scale. (Author, 2012)

Water Purification System:

PURIFYING THE DYE WATER TO BE REUSED IN THE DYEING PROCESS:

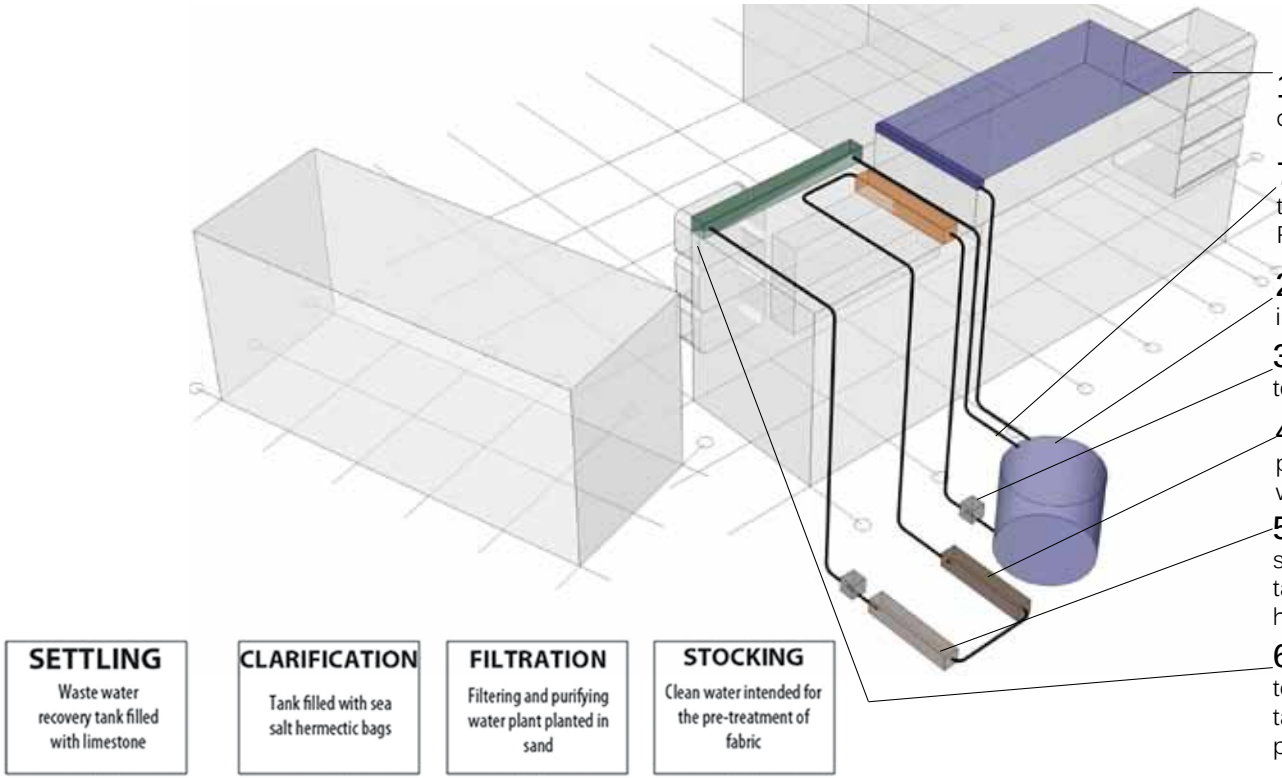


Figure 8.9: Diagram of the dye water purification system incorporated into *WARP + WEFT*. (Author, 2012)

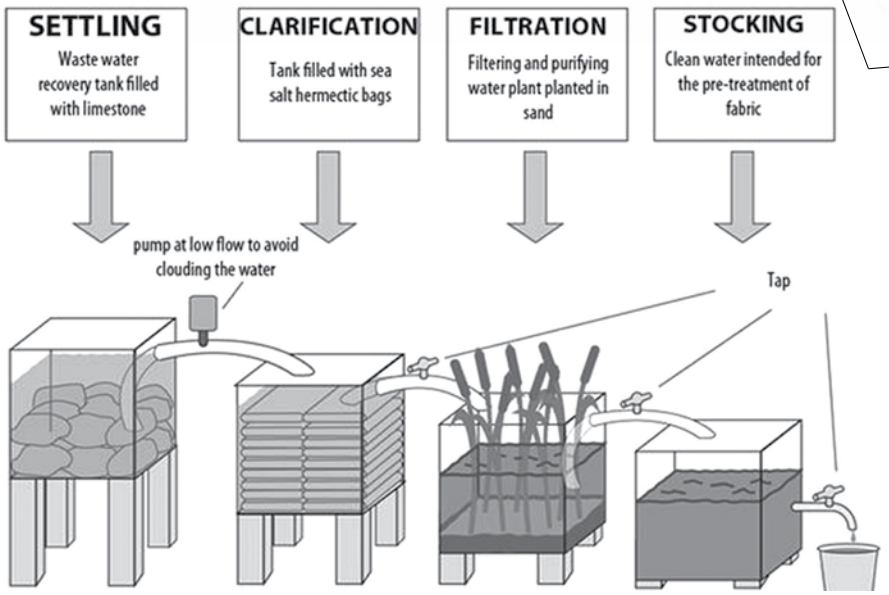


Figure 8.8: The rainwater purification system initiated by Quiksilver. (A-Freak-A, 2012)

The **water purification system** works on a simple principle initiated by Quiksilver (A-Freak-A, 2012). Despite the use of **organic acid dyes** which do not contain **heavy metals and toxic compounds**, usually associated with the mordants used in natural dyes, acid dye still impacts the environment (A-Freak-A, 2012).

The dye water purification system is a **closed loop system** which reduces water consumption. Rainwater is harvested on the flat roof and stored in an underground storage tank. This **rain water is of optimum quality** for the dye, because it is free of limestone and minerals (A-Freak-A, 2012). Limestone and minerals usually disrupt the hold of the colour in the fibres (A-Freak-A, 2012).

After the dye water has flowed through the **trough** which facilitates the **merging of colour**, the dye water runs down the building into a tank with **limestone**. The alkalinity of the limestone **breaks the bonds** of the acid dyes (A-Freak-A, 2012). The next step is for the dye water to flow into a secondary tank filled with **sea salt hermetic bags**. Thereafter, the dye water is pumped to the rooftop where filtering and purification occurs in a tank with **water plants planted in sand** (A-Freak-A, 2012). The purified water then flows down the building again into the r**ainwater storage tank**. From there the clean water can be pumped up the building to be used for the dyeing process. The cycle is then repeated.

THE OTHER SERVICES AND SYSTEMS INCLUDED IN THE INTERIOR INTERVENTION:

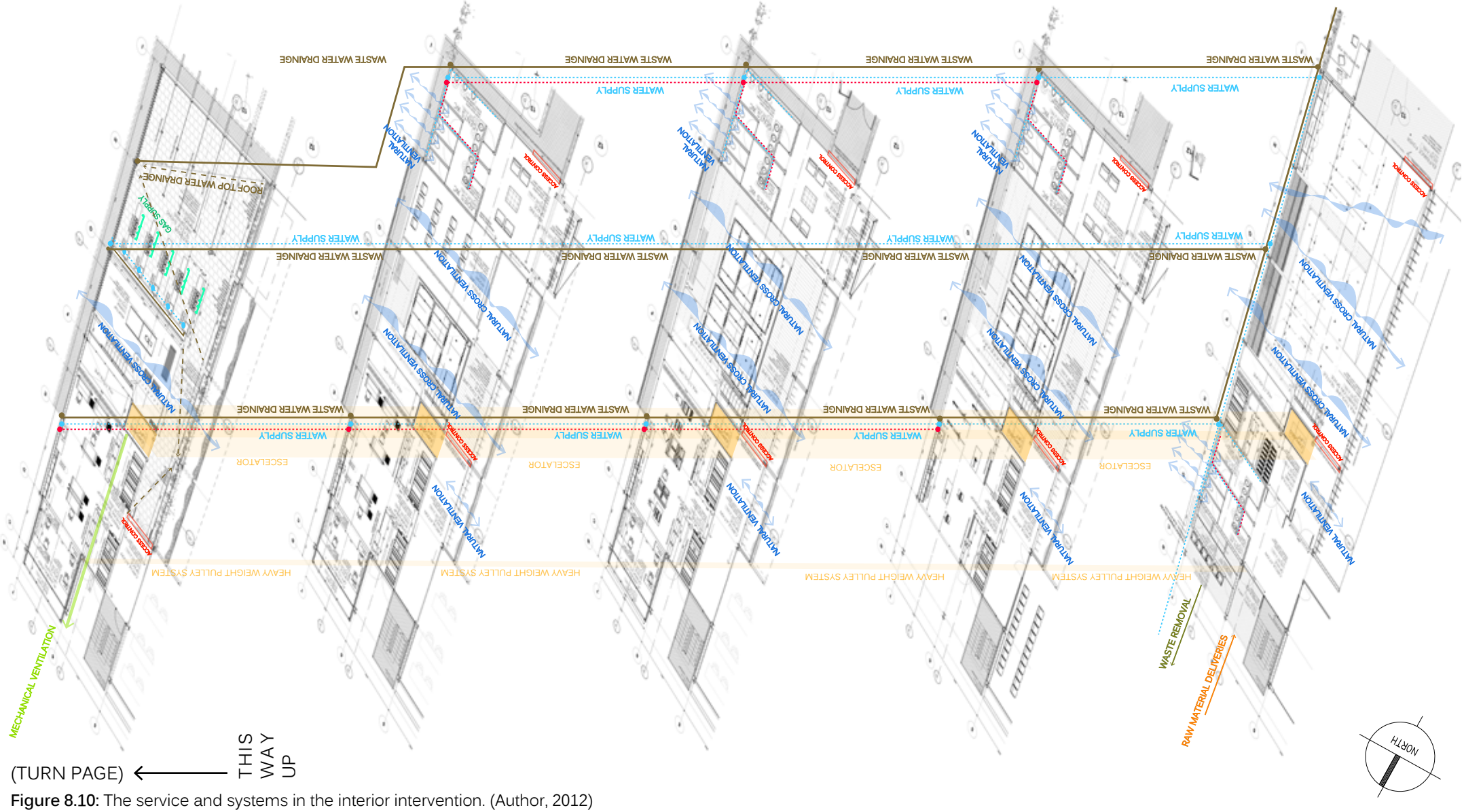


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Figure 8.10: The service and systems in the interior intervention. (Author, 2012)

Conclusion:

Through the investigation presented in this dissertation, it is evident that the **five methods of translating textiles** into interior architecture is not only **a valid answer** to the **design question** stated in Chapter 4, but also as a **design methodology.** The translation of textiles into interior architecture provides a method through which **textiles can be utilized** in **interior architecture** on a more **interesting and sophisticated level**. The study shows that **textiles** can be used for its **aesthetic** value, but also as an **inspiration** for the **appearance**, **structure**, **construction method** or **characteristics** of a design. Therefore textiles offer an excellent **source of visual inspiration** for the design of interior architecture on **multiple levels**.

By demonstrating the value of a **collaborative approach** between the **architect and interior architect,** prior to construction, the dissertation **adds value** to the profession. Likewise, demonstrating that two **programmes** can **function simultaneously** within one building and proving that **intervention is possible** within a **contemporary unbuilt building**, the **possibilities** of interior architecture is explored.

Since the weaving guild fulfils such an important function within the Arcadia Arts and Cultural Precinct, this project contributes to the research field of **Housing and Urban Environments**. The bridging between the **first and third world paradigms,** within the South African context, is an **important social issue,** which also positively **contributes** to the **social component** of the research field.

Collaboration of different **cultural groups** within the guild is a contribution to the field of **Heritage and Cultural Landscapes**. The **preservation and continuation** of the traditional African textile making processes contributes to the **heritage aspect** of the research field.

When one considers the statements mentioned above, it is clear that *WARP + WEFT* is a **positive addition** to the **interior architecture discipline** and the **greater South African context**.

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Appendix A

INSPIRATION SOURCE: EXPLORATION OF CONTEMPORARY TEXTILES.

The material presented in Appendix A is an exploration of contemporary textiles. The exploration is executed by placing textiles in different scenarios or configurations and exposing textiles to different physical and chemical treatments. The textiles were then photographed and arranged to present interesting comparisons between the different explorations. These explorations are crucial as a method to understand the characteristics and possibilities of textiles. The descriptions and comparisons of the textiles play an important influential role in the execution of the design solution.

Textiles + Light:

Layers.
Density

Condensing
Obscuring
Intensifying

Figure A1: A textile illuminated from behind in three configurations. (Author, 2012)

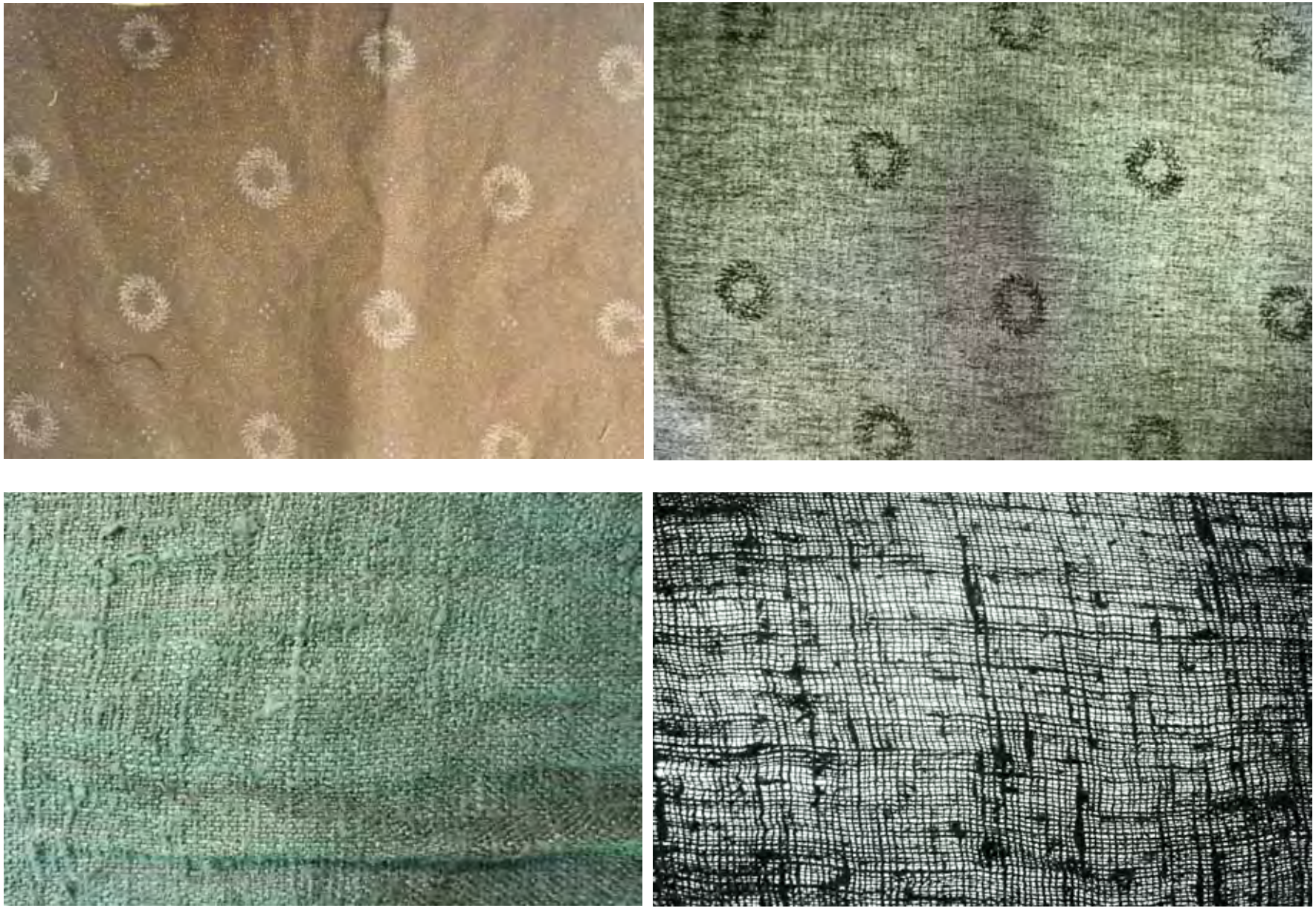
Textiles + Light:

Colour disappears when light shines through fabric.

Colour intensifies when light shines onto the fabric.

Figure A2: A textile illuminated from behind and from the front. (Author, 2012)

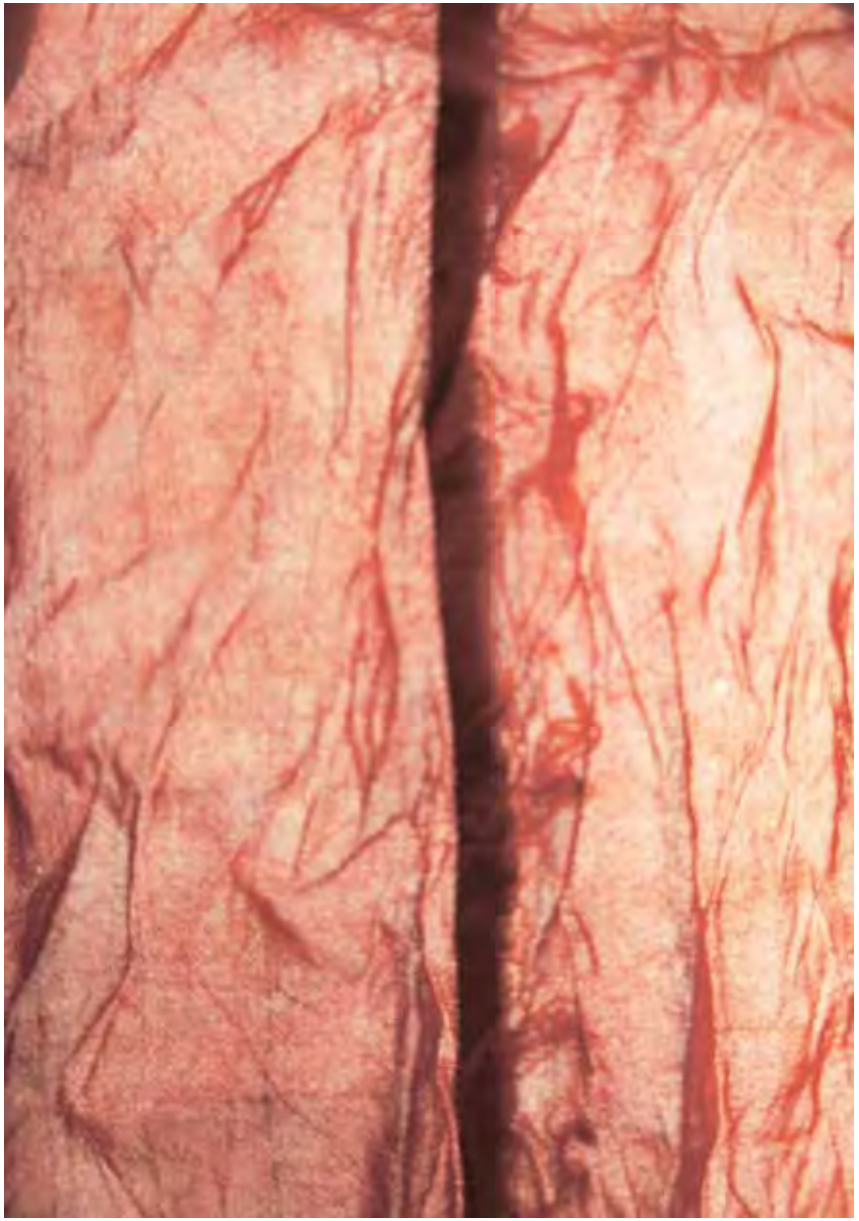
Textiles + Light:



Print blocking light.
Light changes the colour.
Light reveals structure.
Reveals hidden pattern.

Figure A3: Two textiles illuminated from behind and from the front. (Author, 2012)

Textiles + Connections:



Overlapping
Folded
Stitched

Figure A4: Textiles demonstrating different connections in textiles. (Author, 2012)

Textiles + Edges:

Stitched

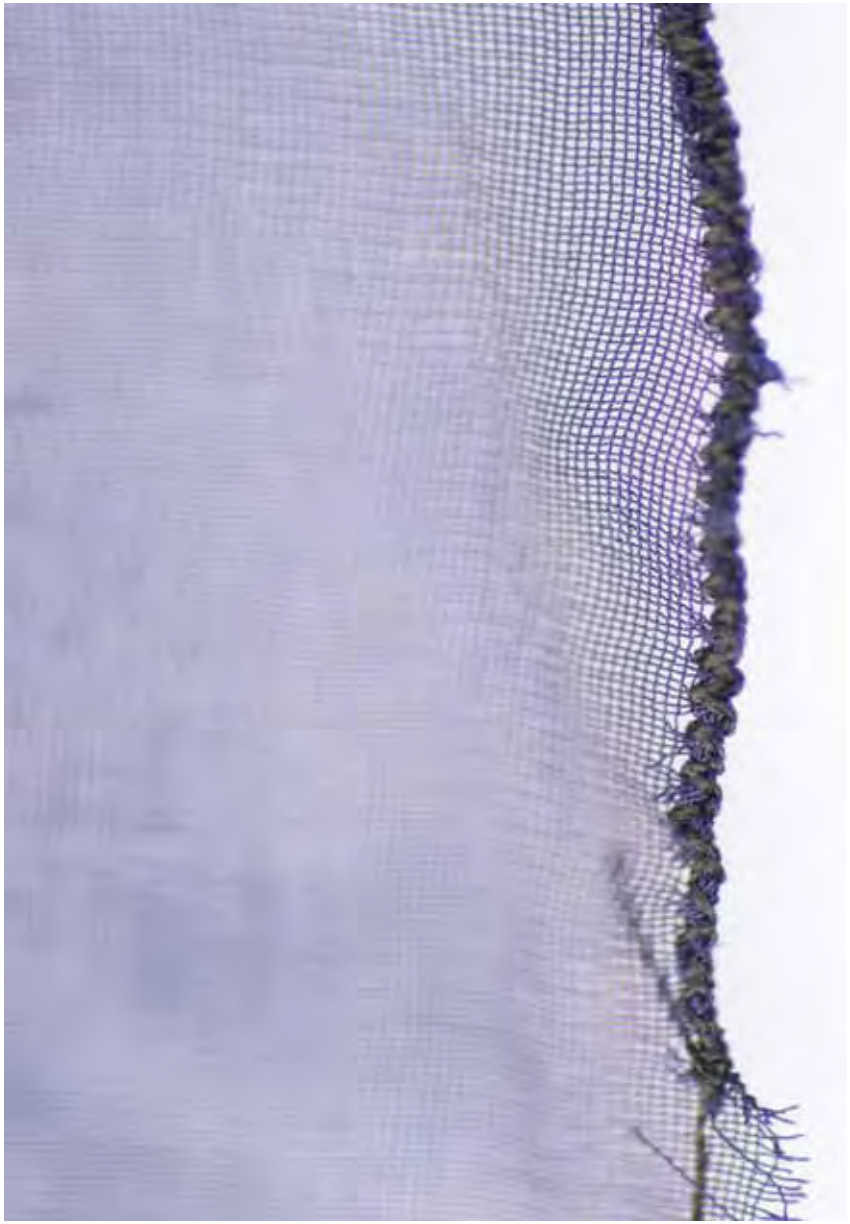
Addition

Selvage

Knots

Figure A5: Four textiles demonstrating different edge finishing. (Author, 2012)

Textiles + Edges:



Machine finished edge resembles a burned edge.

Figure A6: A machine stitched edge compared to a burned edge on the same textile. (Author, 2012)

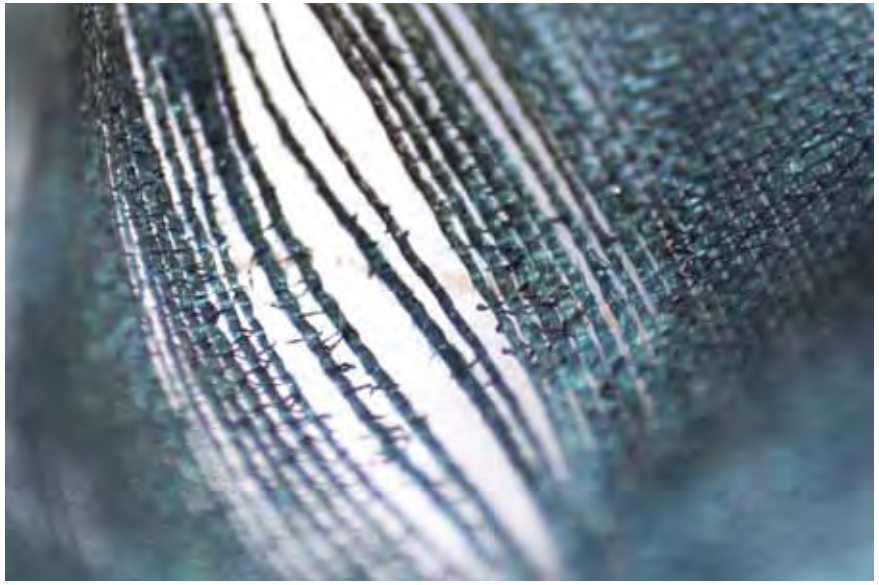
Textiles + Burning:

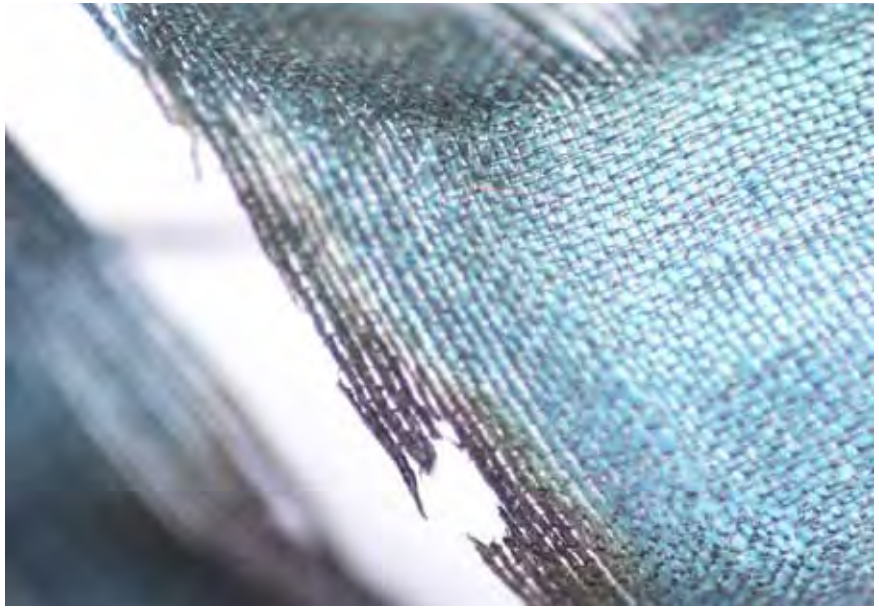
BURNING SYNTHETIC TEXTILES RESULTS IN:

Bubbles
Curls
Spikes
Blobs

Figure A7: Four burned synthetic textiles showing different end results. (Author, 2012)

Textiles + Burning:



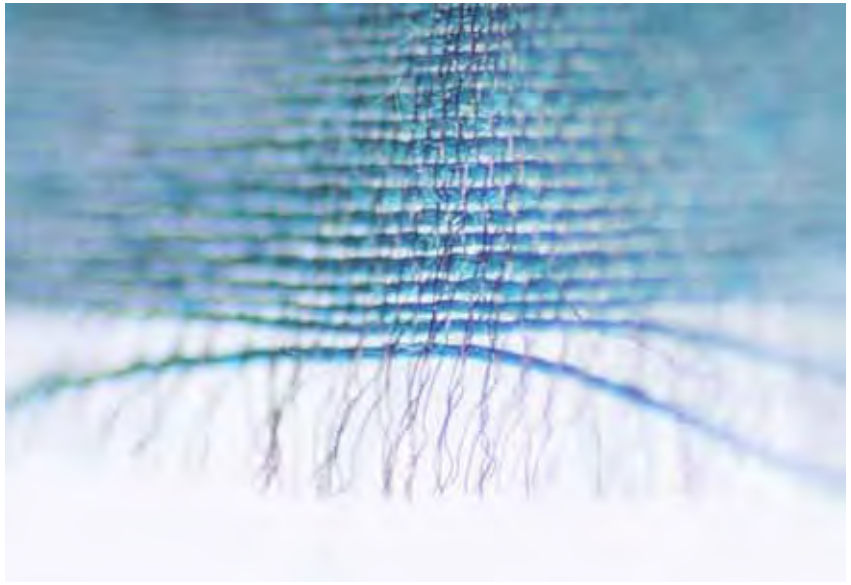


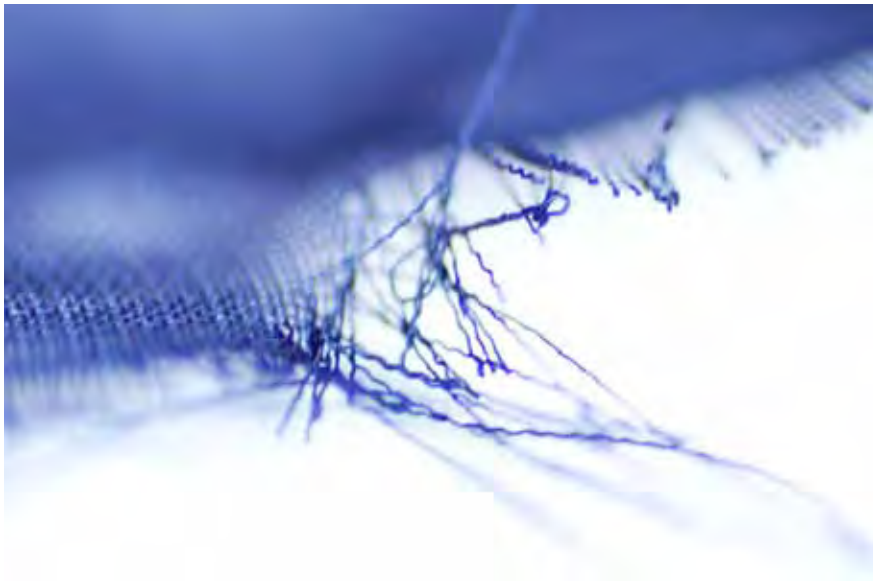
BURNING NATURAL TEXTILES RESULTS IN:

Ash
Powder
Colour Gradient
Disintegration of thin yarns before thick yarns.

Figure A8: The results of burning natural textiles. (Author, 2012)

Textiles + Unraveling:





Different colours revealed.
Yarn thickness revealed.

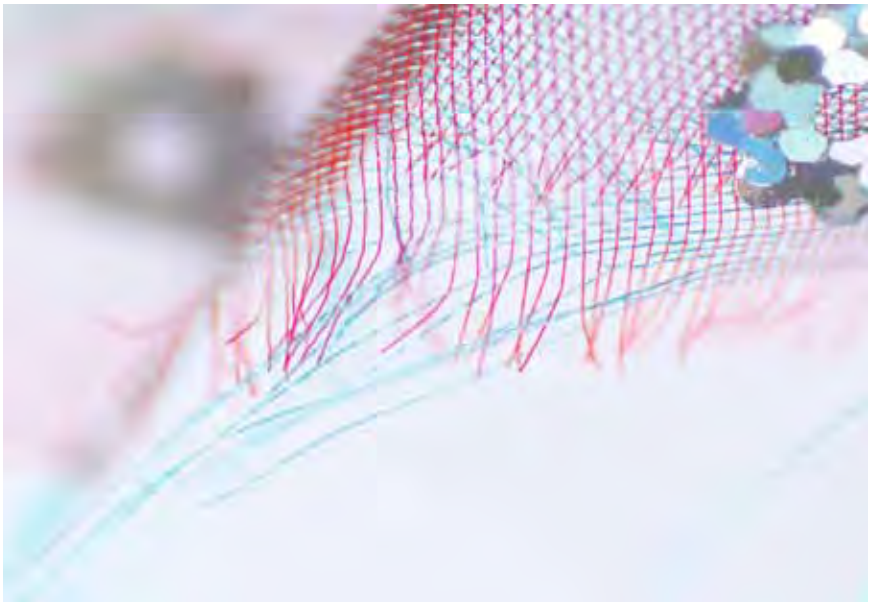
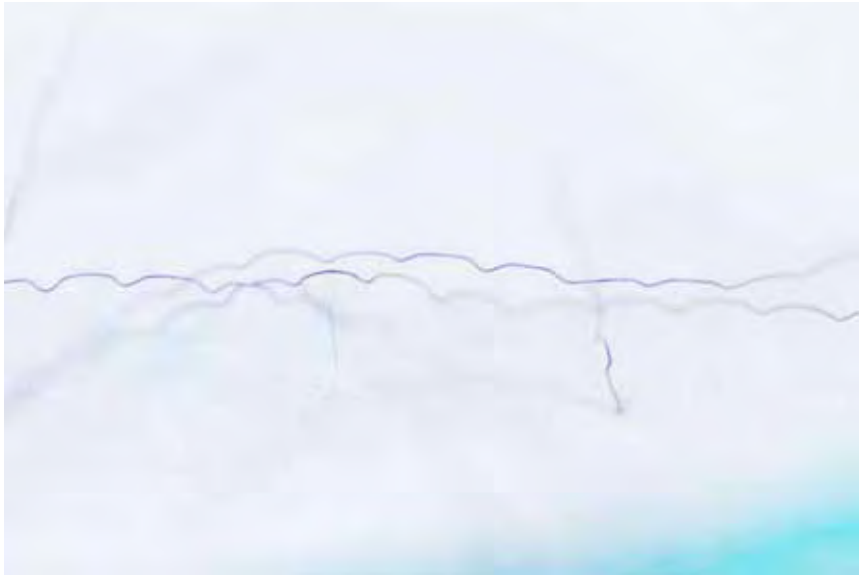
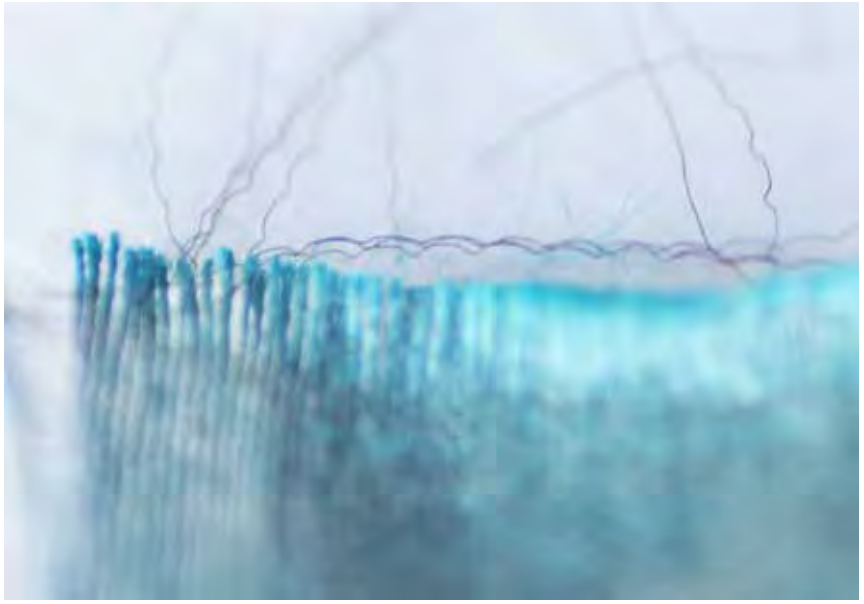


Figure A9: Examples of textiles which have been unraveled. (Author, 2012)

Textiles + Memory:





MEMORY IN YARNS:

Remembering
the structure.

Remembering
the pattern.

Figure A11: Textiles showing the memory of the unraveled yarns. (Author, 2012)

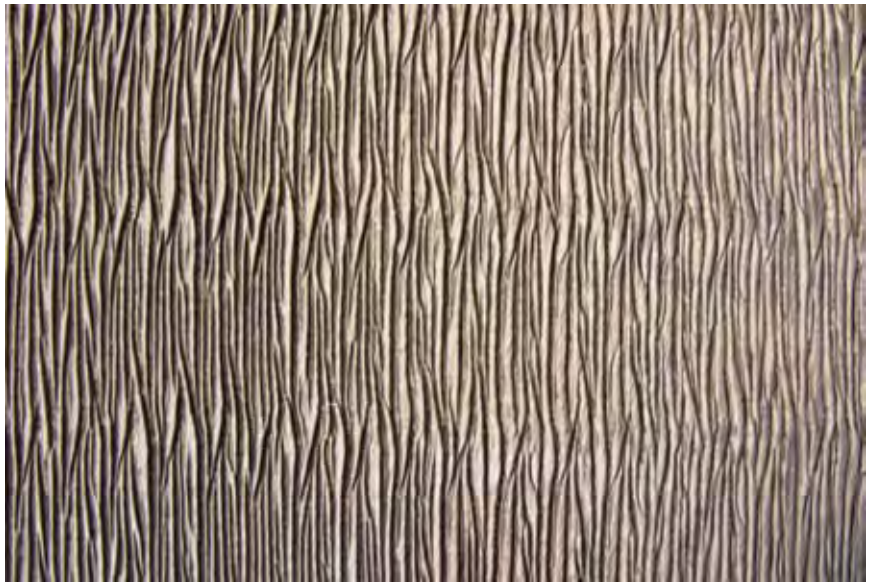
Textiles + Unraveling:

CONTROLLED UNRAVELING:

Stitch to limit and control natural unraveling.

Figure A10: Examples of textiles where the unraveling processes are controlled. (Author, 2012)

Textiles + Memory:



MEMORY IN FABRICS:

Artificial memory made by equipment.

Natural memory from remaining in one position for a long period of time.

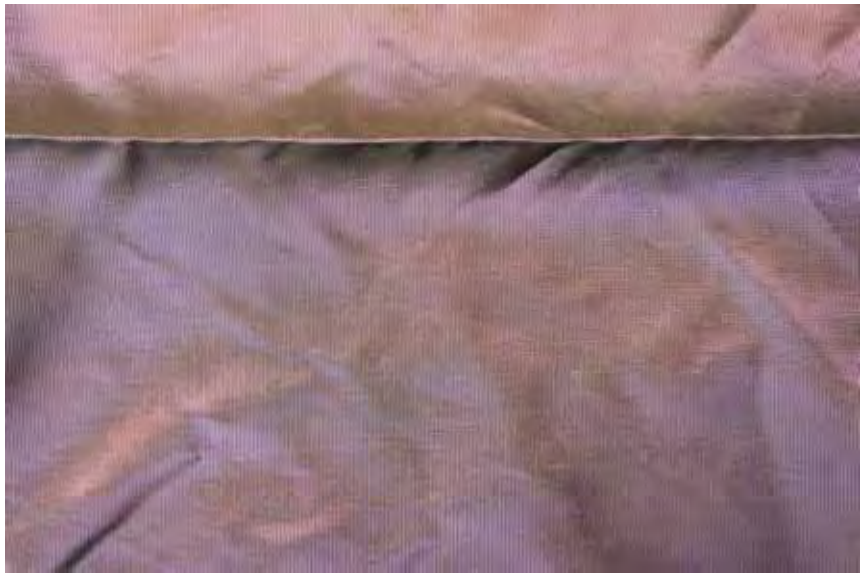


Figure A12: Examples of textiles with memory. (Author, 2012)

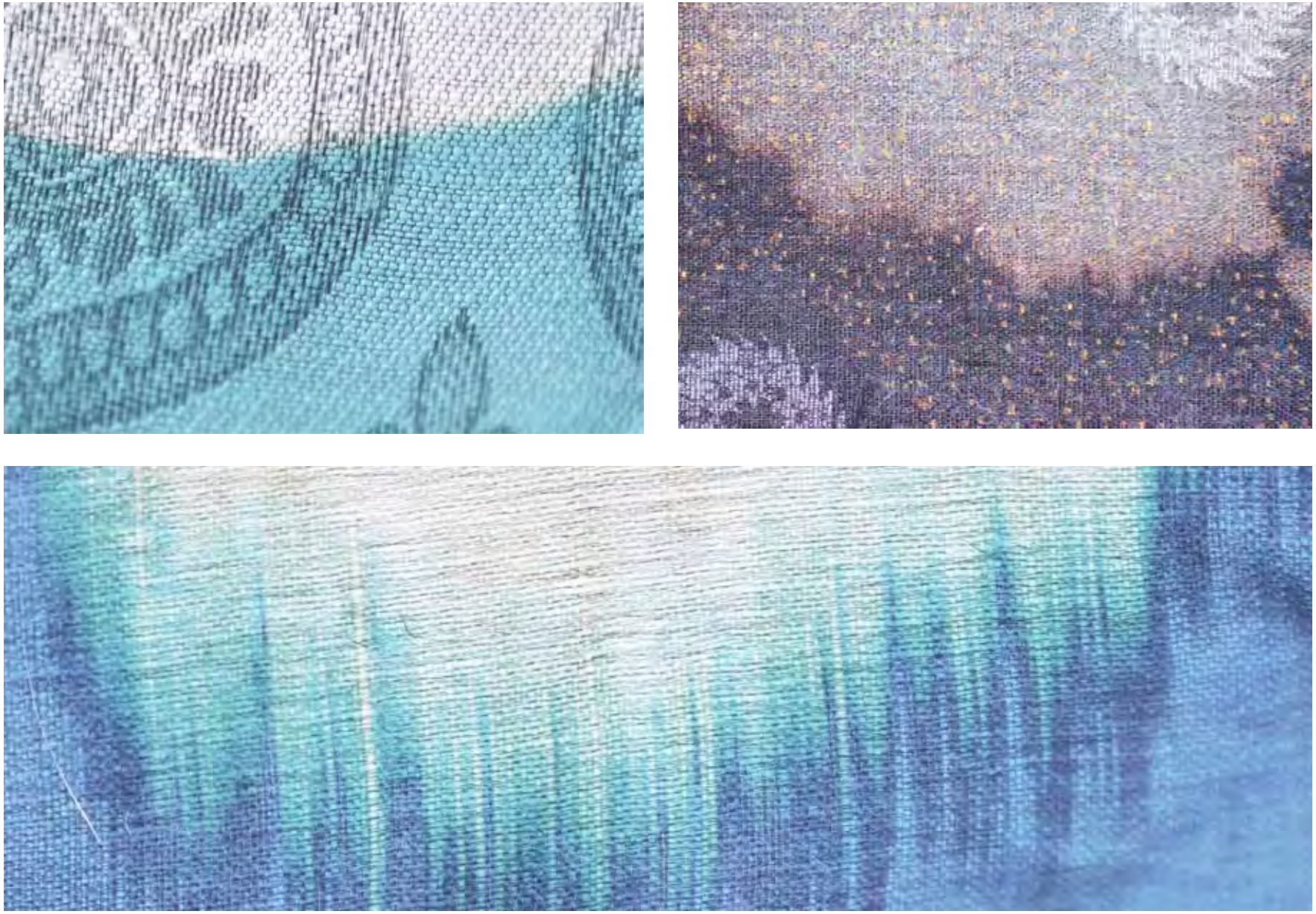
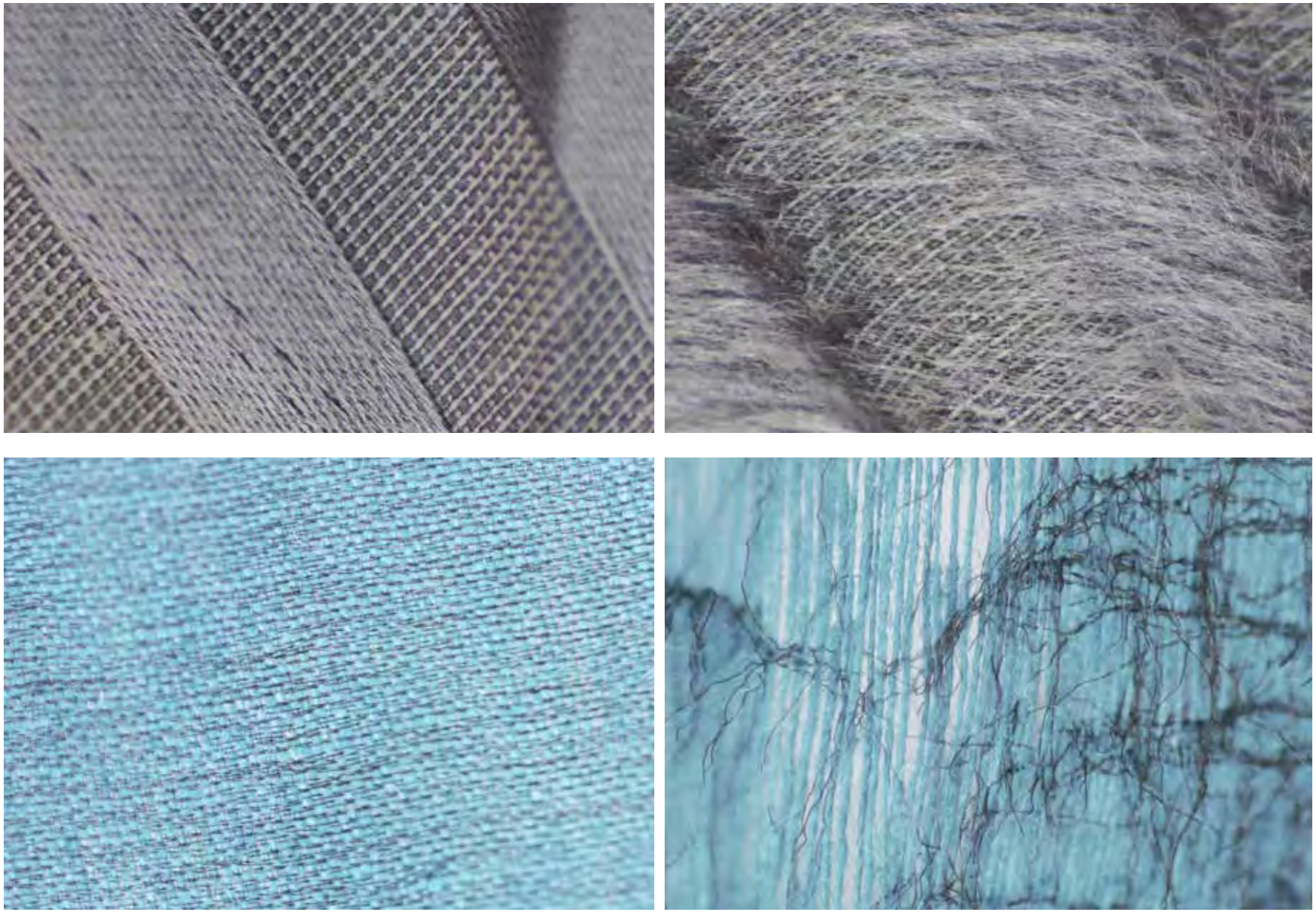


Figure A14: Three examples bleached with *Jig*. (Author, 2012)

Textiles + Abrasion:



Texture change softening.

Thin yarns disintegrating first, creating a different texture.

Figure A15: Two examples of textiles before and after abraded with sandpaper. (Author, 2012)

Textiles + Movement:

Quirky movement

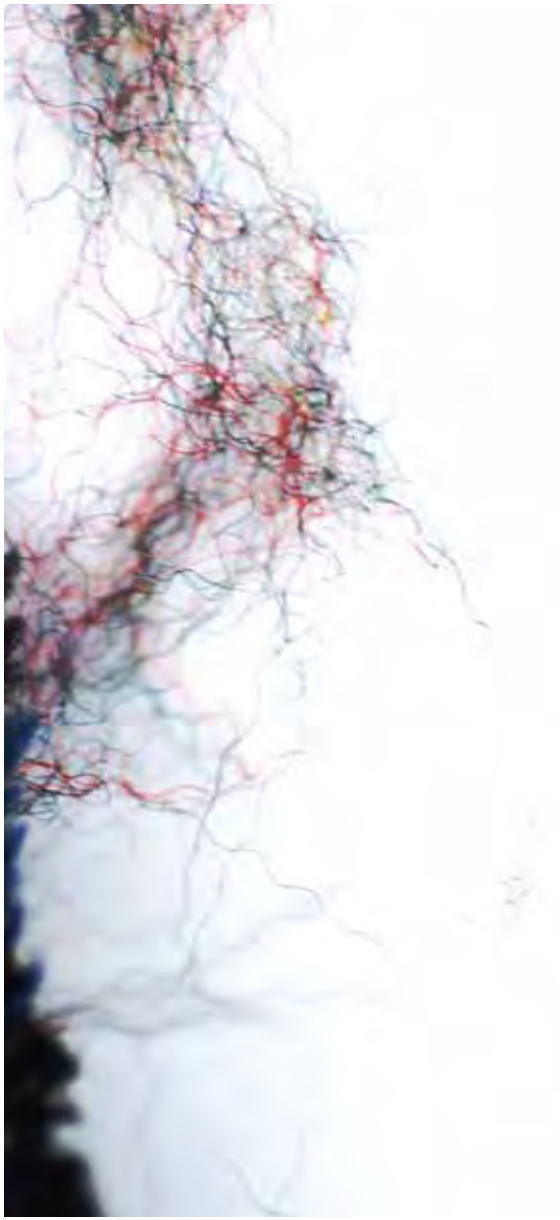
Flowing movement

Delicate movement.

Aggressive movement

Figure A13: Three examples of textiles in movement. (Author, 2012)

Textiles + Abrasion:



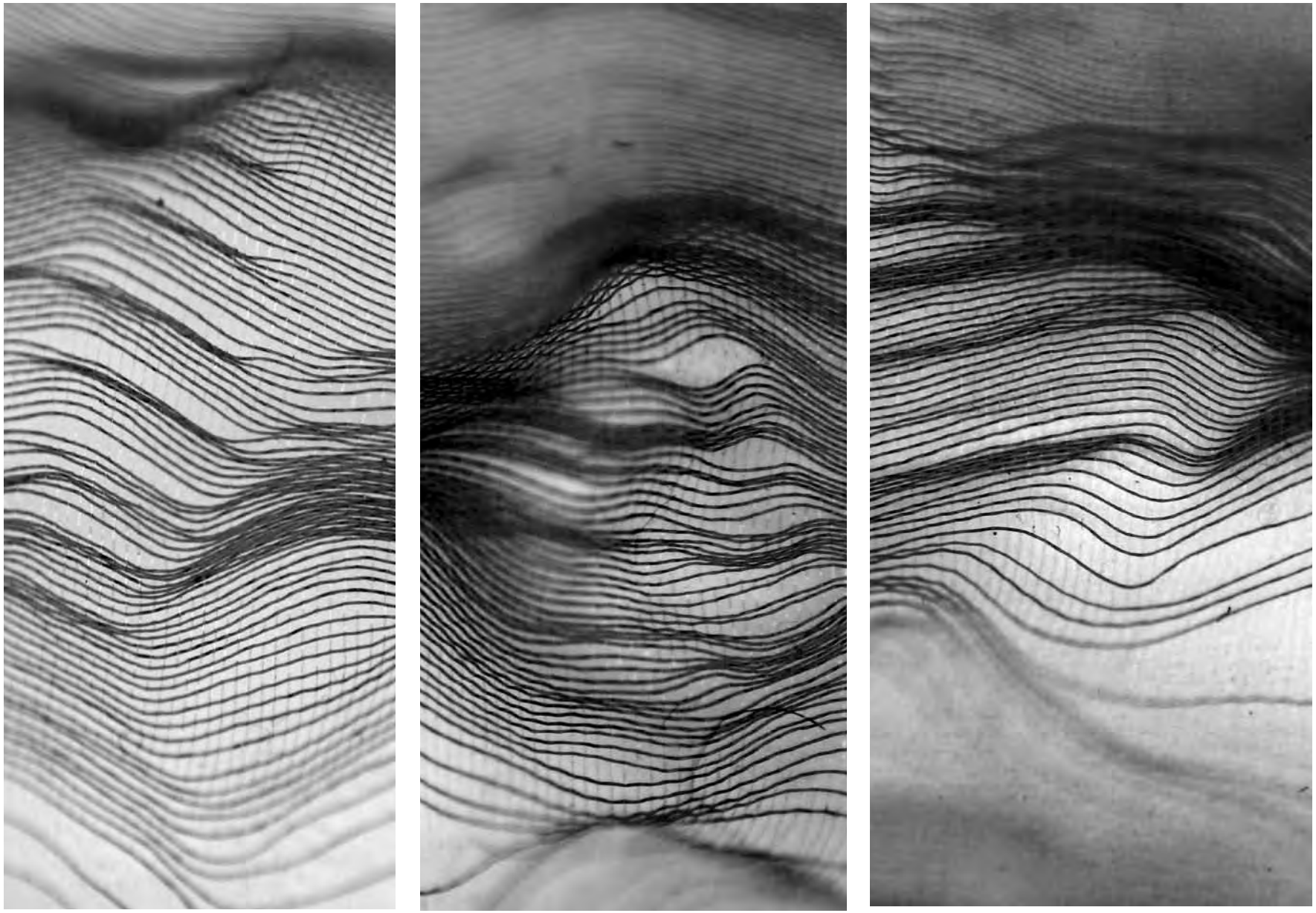
Texture change.

Loosening of fibers.

Disintegration.

Figure A16: The disintegration of a textile after abrasion. (Author, 2012)

Textiles + Abrasion:



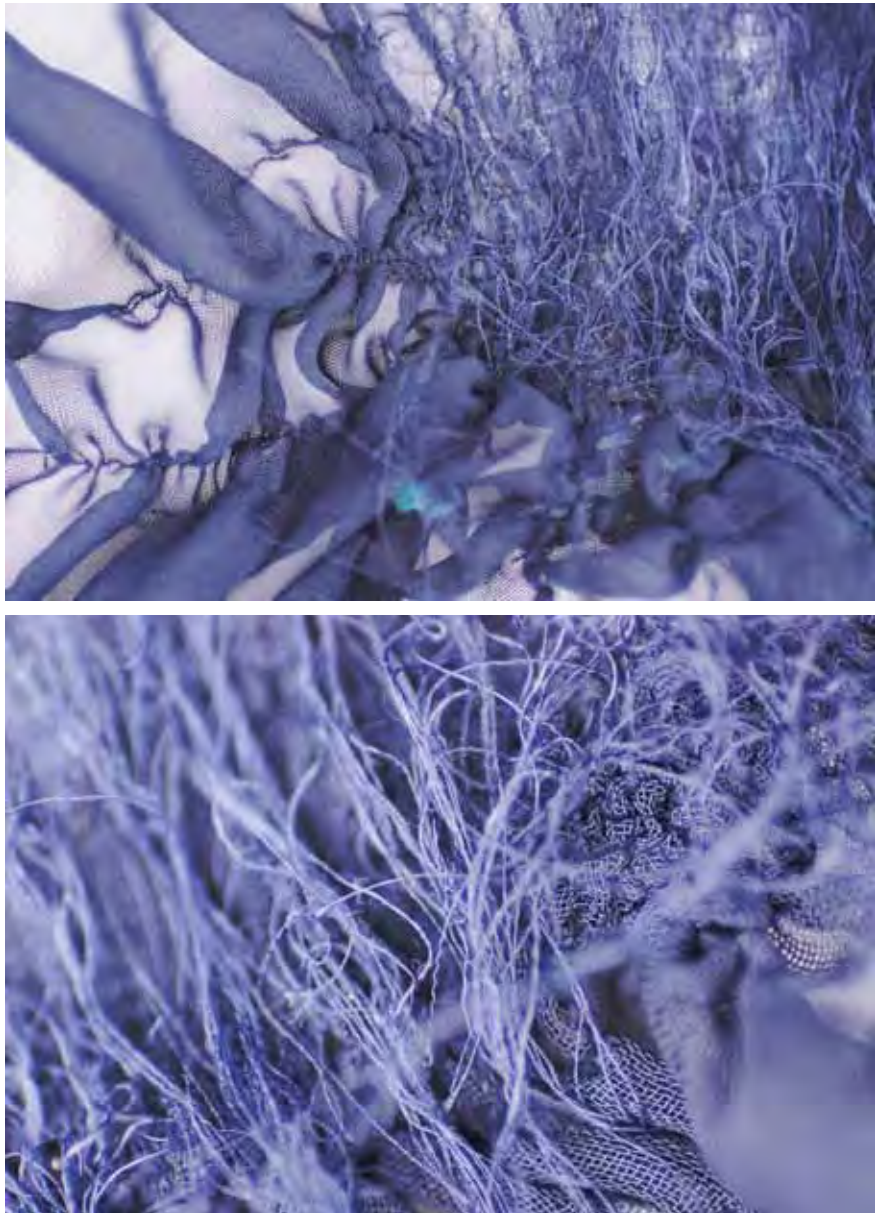
Pulling the yarns open.

Creating strong flowing lines in one direction.

Creating a 3D effect.

Figure A17: A textile of which the yarns have been pulled open.. (Author, 2012)

Textiles + Abrasion:



Contract
Gather
Pull

Creating a 3D effect, thickness and loft.

Figure A18: The effect of abrasion with sandpaper on two sheer textiles. (Author, 2012)

Textiles + Layering:

Merging of colours.

Levels of translucency.

Figure A19: Two examples of the layering effect on sheer textiles. (Author, 2012)

Appendix B

TEXTILE TERMS AND WEAVING TYPES:

The first table in this appendix presents the various types of textiles commonly available for interior applications. The table also gives a short description of each term. The quantity of terms listed in this table shows the rich variety of textile available and it confirms textiles as an important material for interior architecture. The second table lists the various basic weaving methods on which all textiles are based. This table shows the underlying construction principles, mathematics and rhythms which were influential to the execution of the design solution.

TEXTILES FOR INTERIOR APPLICATIONS:

Table B1: Table of the textiles used in interior architecture. (Nielson & Tylor, 2011: 348-356)

Antique Satin: A Lightweight drapery fabric in a sateen or horizontal satin weave with slubs that imitate spun shantung silk. Most antique satins are one colour, though the warp and weft yarns may be dyed different colours to produce irides-cence; may also be printed. Suitable for bedspread fabric if quilted.

Armure: Medium weight fabric in one colour with small woven repetitive dobby figures. Plain-weave ribbed background cloth.

Batik: Light weight to medium weight hand printed textile. Certain areas are waxed; then the fabrics are dyed. For two or more colours, each preceding wax layer is removed, and wax is reapplied in a different pattern. A crinkled pattern is achieved by crumbling the fabric and cracking the wax.

Batiste: A thin semi sheer curtain or drapery fabric.

Bengaline: A medium weight horizontal or weft-ribbed fabric produced with fine warped and piled or grouped yarns. Strong and refined cloth.

Bird's-eye: A lightweight to medium weight fabric with small dobby woven all-over diamond patterns in one colour. Originally a towelling or linen fabric, cotton is used most often.

Bouclé: Medium weight to heavyweight woven or knitted cloth. Looped bouclé novelty yarns gives a tightly curled, bumpy surface texture to the fabric.

Bouclé Marquisette: Fine leno-weave sheer marquisette with bouclé weft or filler yarns. Originally glass curtains of nylon; today of polyester and used as lightweight casement fabric.

Broadcloth: Lightweight cotton plain taffeta with fine horizontal ribs. Yarn twist or tightness is slightly irregular. Also a finely napped twill weave in various weights.

Brocade: Medium weight formal Jacquard weave with supplementary warp or weft woven into the fabric to give an embroiled, often colourful design. Background weave is often satin. Treads not tied down are carried as "floats" on the back of the fabric. Cut floats make broché brocade.

Brocatelle: Medium weight Jacquard fabric with slightly heavier and puffier surface than damask. Fine cloth with two sets of warp and weft.

Buchram / Buckram: Lightweight fabric, in width 3, 4, or 5 inches, stiffened and used as drapery heading interfacing. Plain weave or nonwoven web of jude, linen cotton or synthetic fiber.

Burlap: Medium weight jude fabric in plain, loose weave; also called gunnysack, coarse texture, solid colours. Natural and synthetic fibers imitate jude burlap.

Burn-out: A method of printing designs into semi sheer or lightweight casement cloths. Usually a cotton-polyester base cotton fabric with an acid design that eats or dissolves the cotton. Edges around the burn-out area are often printed with pigment ink to seal edges. Also used to produce eyelet holes. Also called etch printing.

Calico: Lightweight cotton or cotton-polyester fabric similar to broadcloth. Usually printed in country-style multi- coloured floral patterns.

Cambric: Semi sheer to lightweight plain weave cotton or linen fabric, often printed. May be finished in dull or soft or stiff with a sheen. Also called handkerchief linen.

Canvas: Versatile medium weight to heavyweight cotton fabric in plain or twill weave. May be dyed any colour and have many uses, such as upholstery, shades and awnings.

Casement: Lightweight to medium weight casual drapery fabric. Plain or combina-tion weave or needle-constructed fabric. Interesting texture, colour and pattern through dyed novelty yarns and weave variations. May be semi sheer, translucent or opaque.

Chambray: Lightweight cotton or blend fabric in plain, balanced weave. Yarns are slightly slubbed in both directions. Usually white warp and coloured weft yarns.

Chenille: Medium weight to heavy weight fabric with chenille yarns that are fuzzy and resemble soft pipecleanes.

Chevron: Regular and repeated zigzag pattern, also called herringbone, formed by reversing the twill weave. Natural and/or synthetic fibers, Medium weight to heavy-weight fabric.

Chiffon: Sheer very lightweight ninon or voile drapery fabric. Also a soft finish given to a fabric, such as chiffon velvet.

Chintz: Lightweight fine cotton or cotton polyester plain-weave fabric. Solid colours or floral or exotic floral prints. Most are sized or glazed- hence, glazed chintz. It is a multipurpose fabric.

Corduroy: Medium weight to heavyweight pile-weave cotton or cotton blend-fabric. Lengthwise cords or wales are narrowed according to width. Pinwale corduroy: Narrow cords. Wide-wale corduroy: Wide cords.

Crepe: A fine yarn that is twisted so tightly that it gives a crinkled surface in woven fabrics. Crepe may be plain or satin weave.

Cretonne: Medium weight unglazed printed cotton fabric slightly heavier that chintz. Versatile decorative fabric, similar to toile.

Crewel Embroidery: Medium compound fabric base cloth is base weave with cotton, linen or wool, with hand or machine embroidery of worsted wool. Patterns are meanders of vine and floral motives based on English interpretations of the Eastern Indian tree-of-life motifs.

Crinoline: Same as Buchram.

Damask: Medium weight Jacquard fabric with reversible pattern, historically a large floral or Renaissance design. Contemporary damasks are medium weight in a variety of designs; multipurpose fabrics.

Denim: Medium weight sturdy twill cotton or cotton-polyester cloth. Navy coloured denim is jeans fabric; cream or white is drill.

Dimity: Thin very lightweight sheer fabric in plain weave with a crisp finish. Vertical warp spaced ribs are dimed with heavier or piled threads. Checks may also be wove in. One colour or contrasting threads may form the chords, ribs or checks.

Dotted Swiss: Plain- or leno- weave Swiss is sheer curtain fabric with tiny em-broided or flocked dots or squares in spaced sequence.

Duck: Durable medium weight cotton fabric in oxford weave, similar to canvas. Different-sized weft threads and the addition of coloured stripes may vary the appearance.

Eyelet: Lightweight cotton, cotton-polyester or other blend plain weave fabric with schiffli embroided designs and small burn-out or etched dots that are part of the design. The fabric is usually a solid white, cream or pastel colour with matching or accenting embroidery.

Faille: A lightweight finely woven fabric generally of cotton, silk, acetate rayon or blends with horizontal or weft ribs that are slightly heavier and flatter that taffeta. When these ribs are pressed or calendered in a watermark design, faille becomes moiré.

Flamestitch: A pattern originally from the early English Renaissance that represents the flames in a fire and is loosely a chevron design. Flamestitch patterns are multi-coloured and may be embroided, woven or printed or various weight clothes.

Flannel: Any woven fabric which is brushed to create a soft nap.

Foam back: Loose adjective for a latex or other synthetic coating laminated, flowed or sprayed onto the back of drapery or upholstery fabrics to increase energy effi-ciency and/or dimensional stability.

Frieze / Frisé: Heavyweight, sturdy nylon upholstery fabric with a looped pile. May be a Jacquard weave to achieve a sculptural or ribbed effect.

Gabardine: Steep pitched twill fabric woven of natural or synthetic yarns; light-weight to medium weight. Surface has obvious diagonal ribs that are tightly woven of fine lustrous yarns.

Gauze: Very thin (sheer or semi sheer) loosely woven fabric used for curtains and draperies.

Grenadine: Thin, sheer leno-weave curtain fabric. May be locked or swivel lappet embroided with small dots or design.

Grosgrain: Narrow trimming ribbon or textile with round, even, heavy ribs in the weft or crosswise direction.

Herringbone: Originally a medium weight wool fabric. Pattern is a novelty or complex twill that is in a regular zigzag pattern. Named after the spinal structure of the herring fish. May also be woven or printed on lightweight, medium weight and heavyweight fabrics and in a variety of natural and synthetic fibers.

Homespun: Coarse, lightweight linen, wool or cotton fabric from Early American hand-spun and handwoven plain weave textiles. Today in nearly any fiber, a textile that imitates this look. May be natural colours with flecks of vegetable matter. May also be simple stripes or checks.

Hopsacking: Similar to homespun, yet less sturdy. Usually woven in a loose, semi open basket weave and given a soft finish. Lightweight casement fabric.

Houndstooth: Medium weight to heavyweight fabric with woven twill pattern in contrasting colour that resembles squares with projecting toothlike corners called four pointed twill stars. Originally a course provincial wool fabric now in a variety of fibers and may be woven in finer yarns.

Interfacing: A lightweight, stiffened woven or nonwoven fabric that is usually placed between decorative and lining fabric to give body and firmness. White or solid colours.

Interlining: A thick, lofty woven or nonwoven textile of natural or synthetic fibers, used to insulate against noise and heat and/or cold. May be a polyester batt or lambs' wool batt, for example.

Jacquard: Any textile woven on the Jacquard loom, which permits large designed to be machine woven. Used for both cloth and carpeting, Jacquard fabrics are brocade, brocatelle, matelassé, lampas, tapestry and moquette velvet.

Khaki: Multipurpose plain or twill weave fabric of a greenish, dusty, earthy beige. Lightweight to medium weight cotton or blend fibers.

Lampas: Medium weight Jacquard with a plain or satin background and figures of contrasting colours in both the warp and weft in ribbed, plain or twill weave.

Lappet: Swivel or discontinuous (no floats carried on back) embroidery accomplished with an attachment to the plain or dobby loom.

Lawn: Fine, thin fabric that is the base for batiste, organdy and printed sheer fabrics. Usually cotton, rayon, linen or blends.

Leno: A variation of the plain weave in which pairs of warp threads are twisted in hourglass fashion as they interlock weft threads to give strength and texture. Used in thin, very lightweight marquisette sheers as well as lightweight casement fabrics.

Lining: A lightweight support fabric (cotton, synthetic fibers or blends) in plain or sateen weave sewn onto or used as a separate backing for the decorative fabrics.

Malimo: Casement, contemporary fabric where groups of weft yarns are chain stitched together in clear monofilament thread with multiple needles. Groups of warp threads may also be laid and stitched into the top of the weft group.

Marquisette: A thin sheer or drapery cloth of natural or synthetic fibers in a leno weave. Slightly heavier that ninon or grenadine.

Matelassé: A heavy weight fabric in Jacquard weave of two sets of warps and wefts. Background surface appears puffy or cushioned since the sets of threads are woven together only where the pattern is. Also called double cloth or pocket weave.

Moiré: Lightweight to medium weight faille fabric embossed with a watermark moiré pattern. A versatile fabric.

Muslin: Thin cotton cloth of a plain balanced weave similar to lawn, but stiffer. Muslin forms the base for several cotton fabrics. May be natural (bleached or unbleached), dyed or printed.

Mylar: Trade name of the DuPont Corporation for a clear or metallized extruded material. Use in flat sheets such as reflective wallpaper backgrounds or cut into ribbons, texturised and woven to achieve a novelty-textured fabric.

Needlepoint: Heavy upholstery-weight textile of hand-stitched wool yarn on art canvas net.

Ninon: Very fine sheer drapery and curtain fabric in pair warp thread plain-weave variation. Usually in polyester in varying widths up to 118 inches seamless. It has excellent drapability, crisp body and a lusterous appearance. Sometimes called French voile, tergal voile or triple voile.

Organdy: Plain-weave sheer curtain and drapery cloth of natural or synthetic fibers (originally cotton), which is given a stiff, very crisp finish. A semi sheer organdy is called semi organdy.

Ottoman: Natural or man-made fibers woven into a medium weight to heavyweight fabric with broad, round weft threads that produce a horizontal rib. Fine warp threads completely cover the large-. even- or alternate-sized filling yarns.

Oxford Cloth: A lightweight cotton or cotton/ polyester in an oxford variation of the plain weave: Pairs of warp threads are grouped together and carried over and under a heavier filling yarn. Often used as a base cloth for decorative prints and may be woven with slightly heavier yarns to produce a medium weight fabric. Oxford cloth is traditionally a finely wove shirting cloth.

Paisley: A printed or woven pattern in light weight or medium weight fabrics. The curved pear, leaf or water drop shape originated in India, but is named after a city in Scotland where woollen paisley shawls have been produced for centuries.

Pellon: Stiffened interfacing fabric which is a trademark of the Pellon Corporation.

Percale: Lightweight plain-weave cotton or cotton/ polyester fabric in a fine yarn and high thread count. Finely woven bed sheets are usually percale. Percale is finished to a variety of lustres from soft to stiff or a given textured plissé finish.

Pile Fabric: Medium weight to heavyweight fabric with an extra set of warp or weft threads that are woven or knitted into the fabric to produce a deep surface texture. Examples include velvets, terry cloths, friezes and corduroys.

Piqué: Lightweight to medium weight versatile cloth in a plain weave variation, which inserts cords, stripes or geometric patterns. The ribs or cords usually run lengthwise in the face of the goods. Types include: Bird's-eye, goose-eye, dimity, rib cord or pinwhale, embossed piqué and waffle piqué.

Plaid: Lightweight, medium weight or heavyweight yarn dyed, woven or printed with a design consisting of stripes in both warp and weft directions that cross at intervals to form different colours in square or rectangular patterns. Plaids may be pain or twill weave. Variations include: Tartans (Scottish clan plaids) and plaidback (reversible plaids).

Plissé: A sheer, thin, or lightweight fabric given a blistered or puckered surface through chemical treatments.

Poplin: Lightweight to medium weight fabric with pronounced horizontal ribs. Weft threads are heavier than warp often a base cloth for decorative print fabrics.

Quilted Fabric: Any fabric that is lined and usually interlined with a lofty batt and then hand or machine stitched through so that stitches show both front and back.

Rep/ Repp: A horizontally or vertically ribbed fabric in plain weave with heavier threads in one direction. Durable medium to heavy fabric with many applications. High quality reps are often of wool.

Sailcloth: Same as duck, sometimes heavier.

Sateen: A horizontal lightweight to medium weight fabric. Used for linings and printed decorator fabrics in natural or man-made fibers.

Satin: A basic type of weave where warp threads float over four to eight weft threads and then are interlaced or tied down with one warp thread. Fine thread yields a smooth lusterous surface. Lightweight to medium weight. Types include: Antique satin, lining satin, ribbed satin, satin damask and upholstery satin.

Schiffli: Any fabric with machine embroided designs other than dotted swiss, eyeled and swivel or lappet embroidery.

Scrim: Very thin plain-weave cloth with loose construction. Types include: Theatre scrim and upholstery scrim.

Seersucker: Lightweight to medium weight cotton or cotton blend plain-weave fabric. Crinkled or puckered surface usually in spaced stripes or plaids, permanently woven. Or permanent puckers are formed in polyester by heat setting.

Serge: Lightweight to medium weight natural or synthetic fibers (originally silk) in durable, crispy finished twill weave.

Shadecloth: Plain-weave or plain-weave variation, such as canvas, poplin or oxford. Medium weight to lightweight, it is stiffened to become rolled shade fabric. Also called Holland cloth.

Shantung: Originally a spun silk fabric with slubs that formed interesting and exotic textures. Shantung today is a lightweight fabric of natural or synthetic fibers. Fabrics that imitate shantung are antique satin and antique taffeta.

Slubs: Yarns with slight irregularities in diameter and profile. Originated with wild silk yarns, where filaments are knotted or joined.

Strié: Also called jaspé, meaning shadow stripes, a sateen or satin weave with coloured warp threads that produce a finely blended vertical stripe. Lightweight to medium weight multipurpose fabric in natural or synthetic fibers or blends.

Suedecloth: A light weight to medium weight synthetic knit or woven textile with brushed nap that imitates genuine sued.

Swiss: A very thin semi sheer curtain fabric of plain weave. It is a crispy finished fabric and may be finished with woven or flocked dots or figures. Originally from cotton, today it often from polyester. Also called swiss muslin.

Taffeta: A plain balanced weave in lightweight fabric of natural or man-made fibers. Weft threads are slightly larger, creating a fine horizontal rib. Types include: Moiré taffeta, Faille taffeta, antique taffeta and paper taffeta.

Tapestry: A plain weave technique used to produce heavy, complex, handwoven European pictorial tapestries. These are now most often Jacquard-weaves with multiple warps and wefts and are very heavy fabric.

Terry: Medium weight pile weave used for absorbent cotton terry cloth towelling. Loops may be cut for a plush or velour surface texture, or left uncut as loops.

Ticking: Originally a twill navy blue and cream vertically woven striped fabric used to make ticks (mattress and pillow casings). Today a woven or printed stripe in one colour on cream or white. Multipurpose fabric. Mattress ticking may also be a satin damask fabric, called damask ticking or ticking damask.

Toile: A lightweight or medium weight cotton or linen fabric similar to muslin or percale in plain or sometimes twill weave. It is similar to a heavier unglazed chintz. Toils are typically roller or screen-printed in one colour. Types include: Toile de Jouy, federal toile, country toile.

Tufted Fabric: A pile fabric that is formed by tufting a yarn into a woven back-ground. All tufted carpets utilize this method. The textile may be tufted with a small handheld tufting gun or on a large machine that utilizes multiple needles, tufting entire sections in rapid sequence.

Tweed: Heavy upholstery weight textile in plain balanced or variation weave or (originally) twill-weave variation. Plain and twill weaves may also be combined. Made first of wool in Scotland. Today's tweeds may be of wool, nylon or a combina-tion of natural and man-made fibers in solid colours, a heathered effect, or plaid.

Union Cloth: A coarse medium weight cloth that is approximately 50% cotton, 50% linen. Yarns are calendered or flattened somewhat. May be dyed one colour or printed and often resembles a very coarse chintz. A versatility fabric with many uses.

Velour: A heavy pile fabric with a soft, velvet-like texture that includes some velvets and all plush-pile surface clothes, such as velour terry.

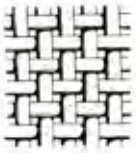
Velvet: Woven pile fabric with a soft yet sturdy face. May be of one or more fibers, including cotton, linen, wool, silk, rayon, acrylic and nylon. Types include: Antique velvet, brocaded velvet, chiffon velvet, crushed velvet, electrostatic velvet, em-bossed velvet, moquette velvet, panne velvet, plush velvet, upholstery velvet velvet-een and printed velveteen.

TEXTILE WEAVING TYPES:

Woven

The Plain Weave

A host of fabrics are plain weaves, including chintz, broadcloth, ninon, batiste, and tweed, for example.

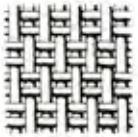


Plain weave

Plain weave. The plain weave is formed by interlacing yarns one over, one under (1/1) in regular sequence. Variety is introduced through different-sized yarns or by varying the plain weave.

Plain basket weave

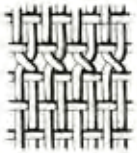
Plain basket weave. Basket weaves are equal, two over two or three over three.



Plain Oxford weave. The Oxford weave variation floats two fine warp threads over and under one heavier weft thread.

Plain Oxford weave

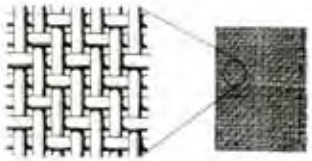
Plain leno weave. Another variation is the leno weave in which the warp threads form an hourglass twist.



The dobby attachment weaves in small geometric one-color figures.

Plain leno weave

Twill weave. The warp-face twill weave is made of an interlacing pattern that floats one warp thread over two or three weft threads and then under one, called a weft tiedown. This order produces a diagonal **wale.** Steep wales result when two low-pitch wales float over three. **Novelty twills** are formed by reversing or altering the order of interlacing, such as the herringbone (a zigzag chevron pattern) and the houndstooth (a four-pointed star, or a square with a tooth projecting from each side). Twills can be incorporated into complex Jacquard-woven patterns, as well. Duck and serge, as well as houndstooth and chevron, are twill fabrics.



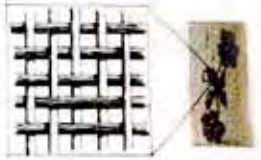
The twill weave, identified by the diagonal wale, is often used for sturdy fabric

Satin weave. The satin weave floats one warp yarn over four or more weft yarns and then is tied down with one thread (4/1, 5/1, 6/1, 7/1, or 8/1). The order of interlacing is staggered, so the result is a smooth face with no wales. Many satin-weave fabrics are woven in very fine threads that increase the luster of the cloth. Satin weaves are also used intensively in cotton decorator fabrics. Satin weaves that float weft or filler yarns on the face of the goods are termed horizontal satins, satines, or warp sateens. In addition, satin weaves often form the background for damask and brocade.

The satin weave produces a lustrous smooth face

Warp sateen is used for many printed cotton fabrics

Jacquard weave. Frenchman Joseph Marie Jacquard invented a loom attachment in the eighteenth century that became known as the Jacquard loom. Hole-punched cards are strung in sequence high above the loom. As the wires carry each card into position above the loom, the holes allow some of the threads to raise and keep others in position, producing large, complex patterns. This loom today takes a long time to thread and set up, but then large runs of fabric can be produced at relatively little expense. Jacquard fabrics include matelassé, damask, brocade, brocatelle, and figured velvets.



Jacquard weave

Pile weave. The pile weave inserts supplementary warp or weft threads into the fabric as it is woven. The extra threads may be looped or cut pile. Examples are velvets, corduroys, and **terry cloths.**

Cut and uncut pile weave

Table B2: Table of the different weaving constructions. (Nielson & Tylor, 2011: 342)

Appendix C

DOCUMENTATION OF THE FINAL PRESENTATION:

Figure C1: Prototypes showing the screen iteration. (Author, 2012)

Figure C3: Sectional model in the presentation. (Author, 2012)

Figure C5: Prototypes in the presentation. (Author, 2012)

Figure C2: Sectional model. (Author, 2012)

Figure C4: Sample board. (Author, 2012)

Figure C6: The focus area of the presentation. (Author, 2012)

Figure C7: Close-up of the sectional model. (Author, 2012)

Figure C8: Photographs taken during the verbal presentation. (Petzsch, 2012)

Appendix D

PLANS AND SECTIONS OF THE ARCHITECTURAL PROPOSAL.

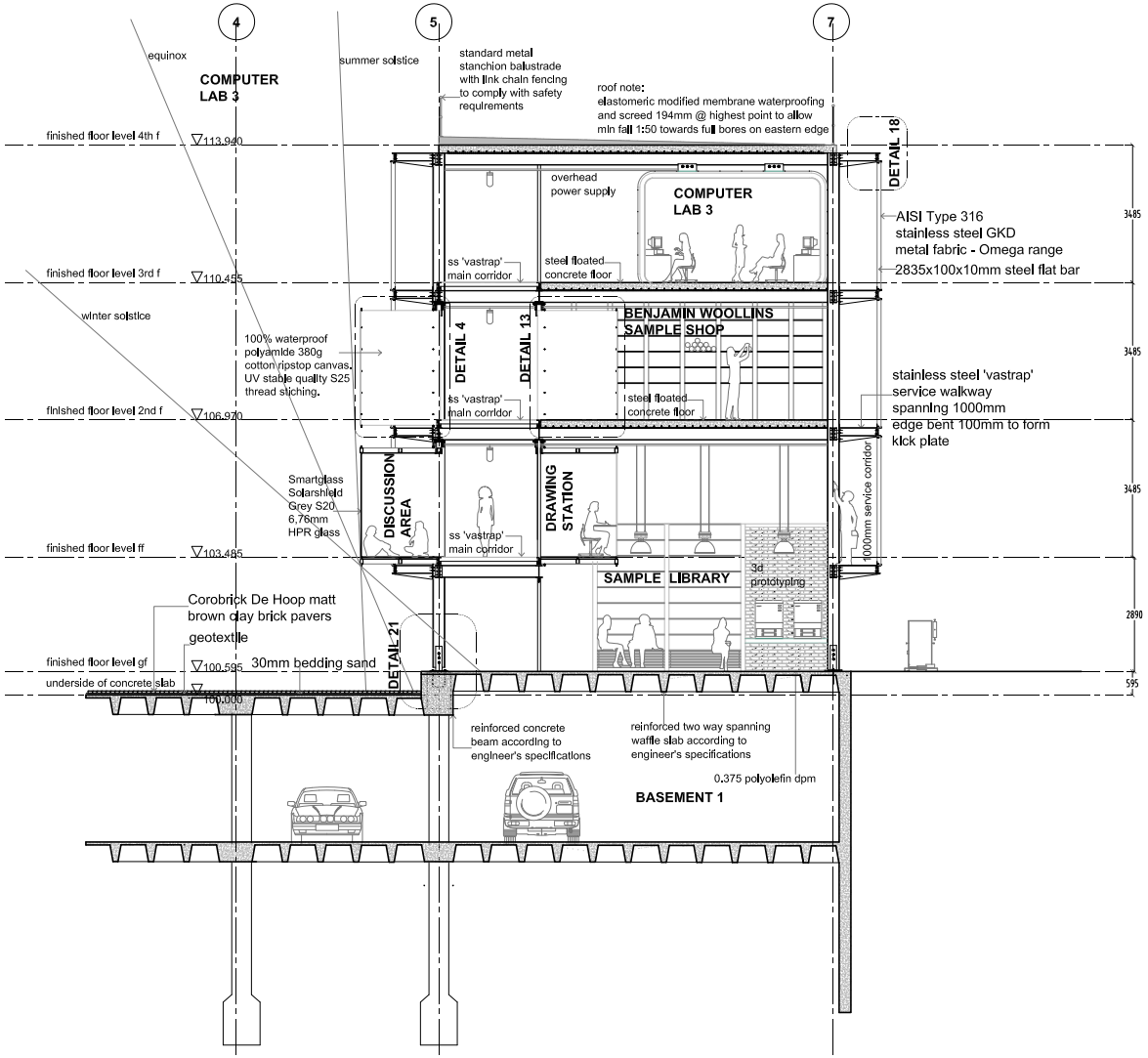


Figure D1: Section B-B. Not to scale. (Stegmann, 2008)

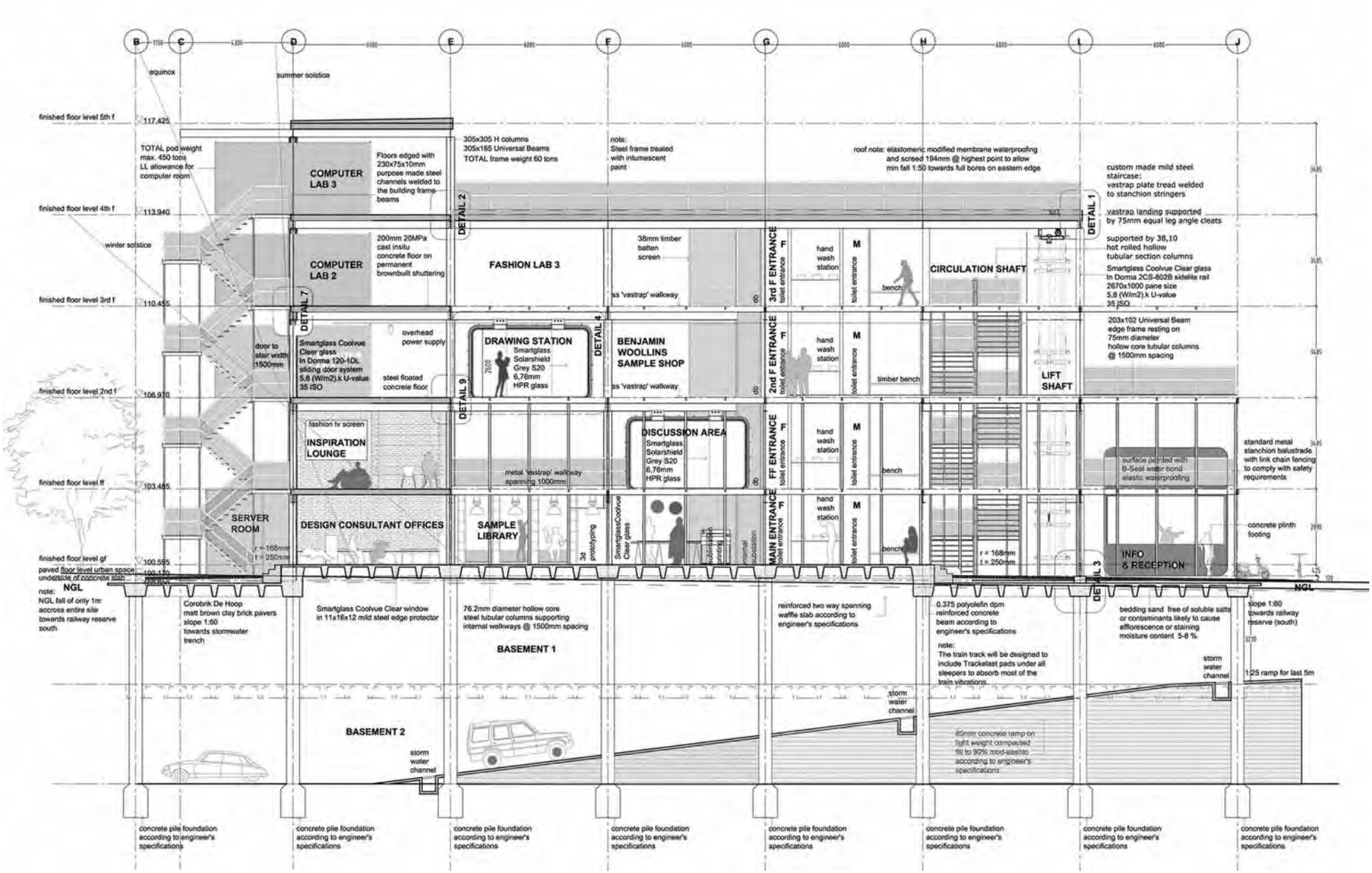


Figure D2: Section A-A. Not to scale. (Stegmann, 2008)

Figure D3: Ground floor plan. Not to scale. (Stegmann, 2008)

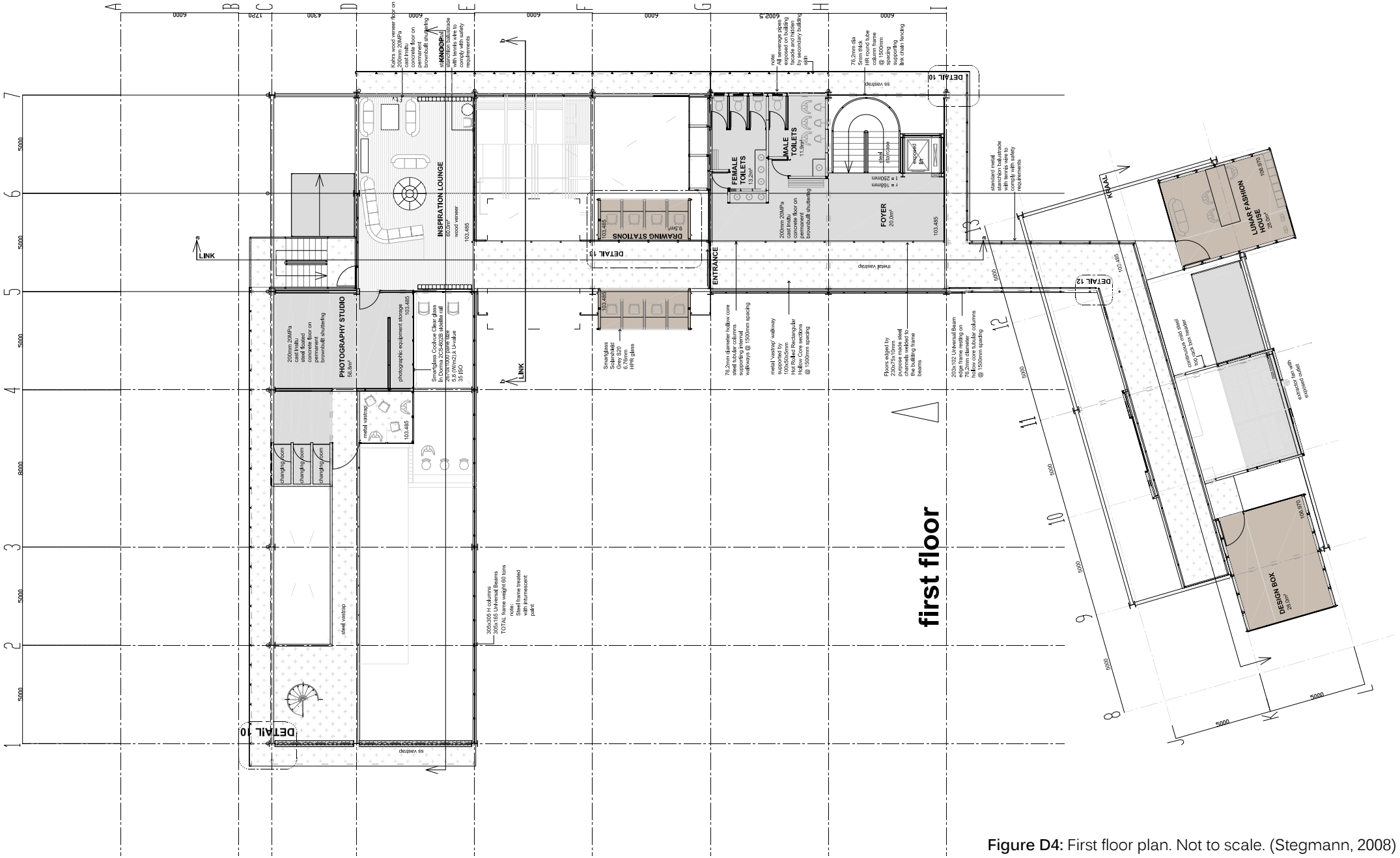


Figure D4: First floor plan. Not to scale. (Stegmann, 2008)

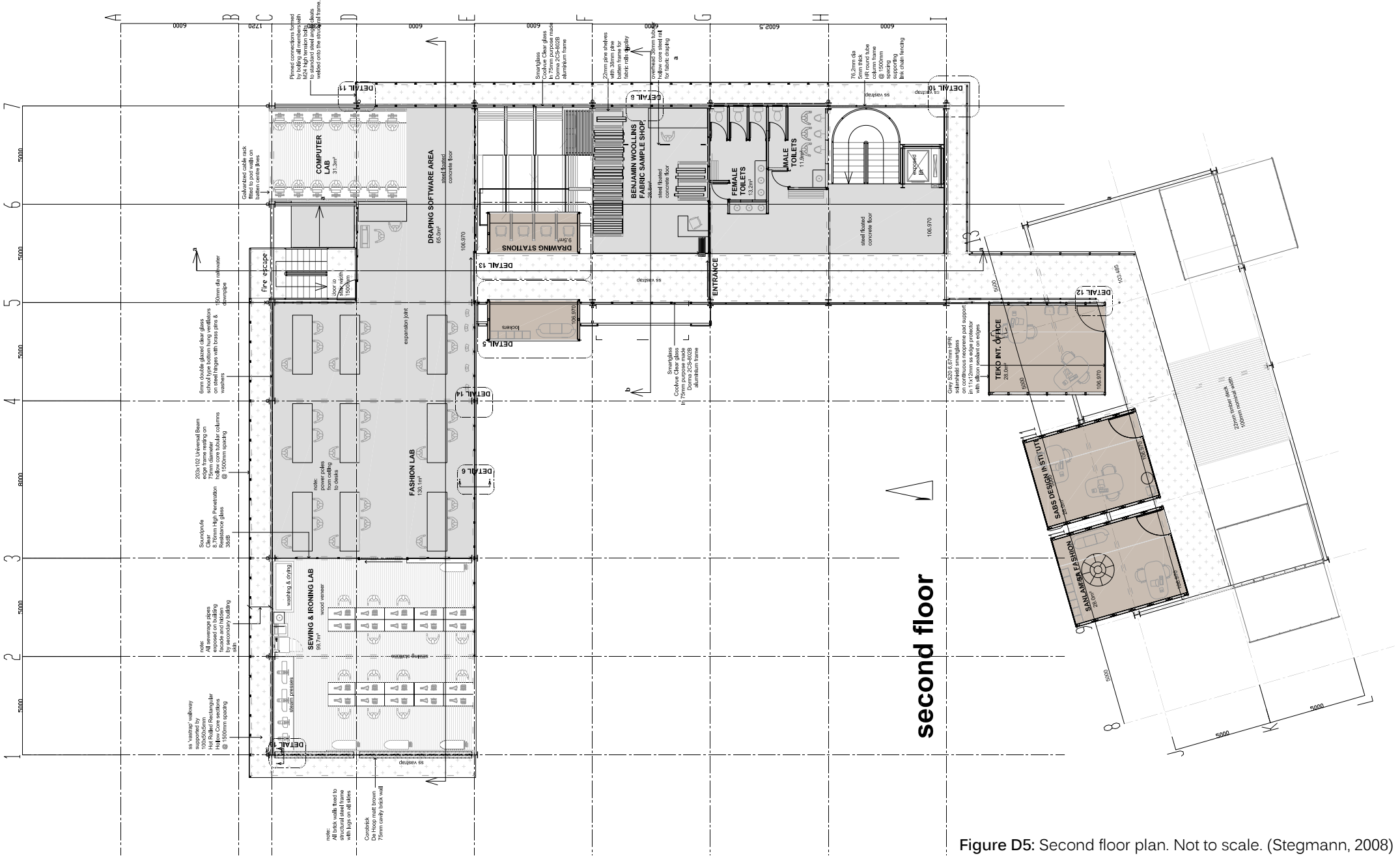


Figure D5: Second floor plan. Not to scale. (Stegmann, 2008)

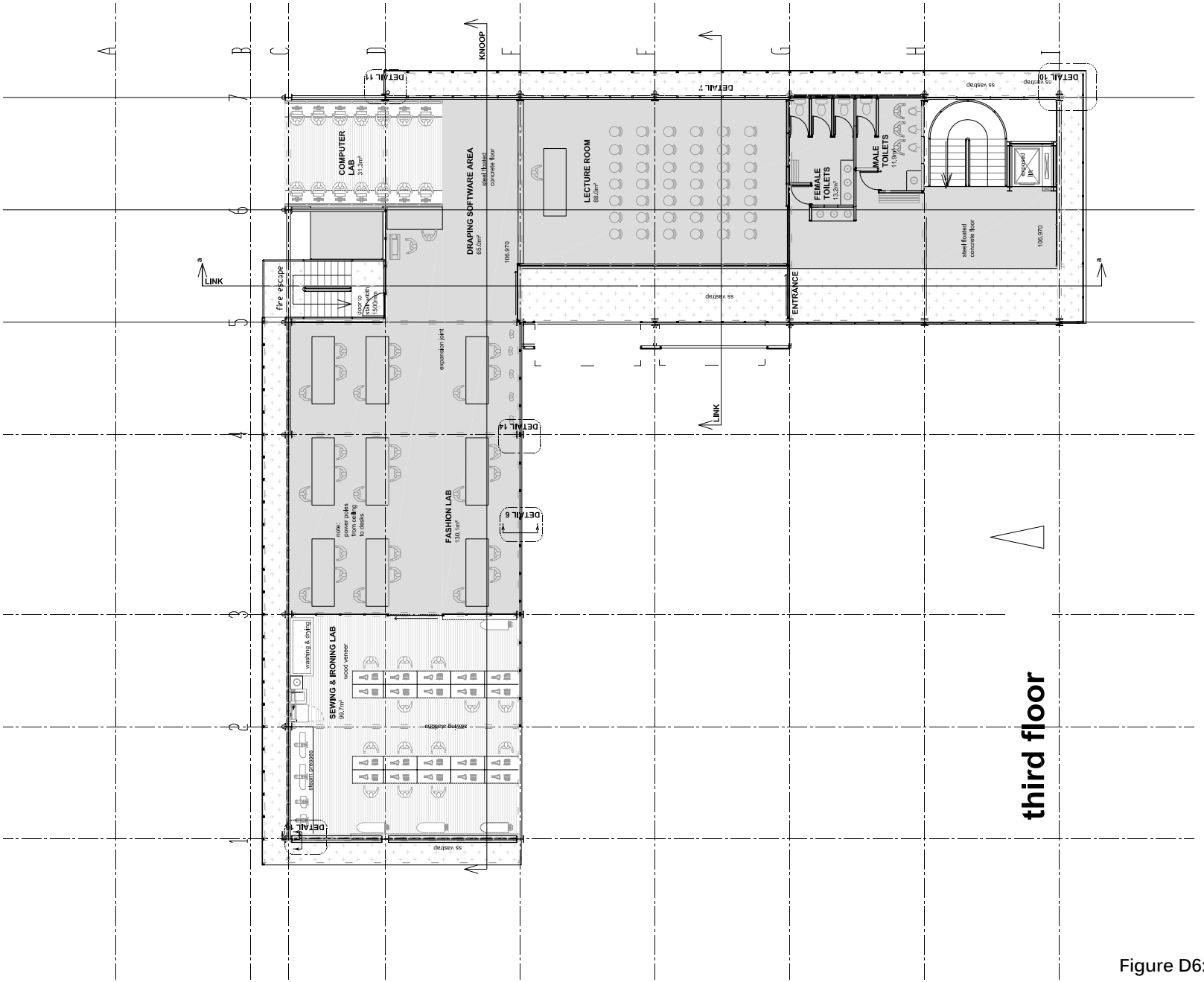


Figure D6: Third floor plan. Not to scale. (Stegmann, 2008)

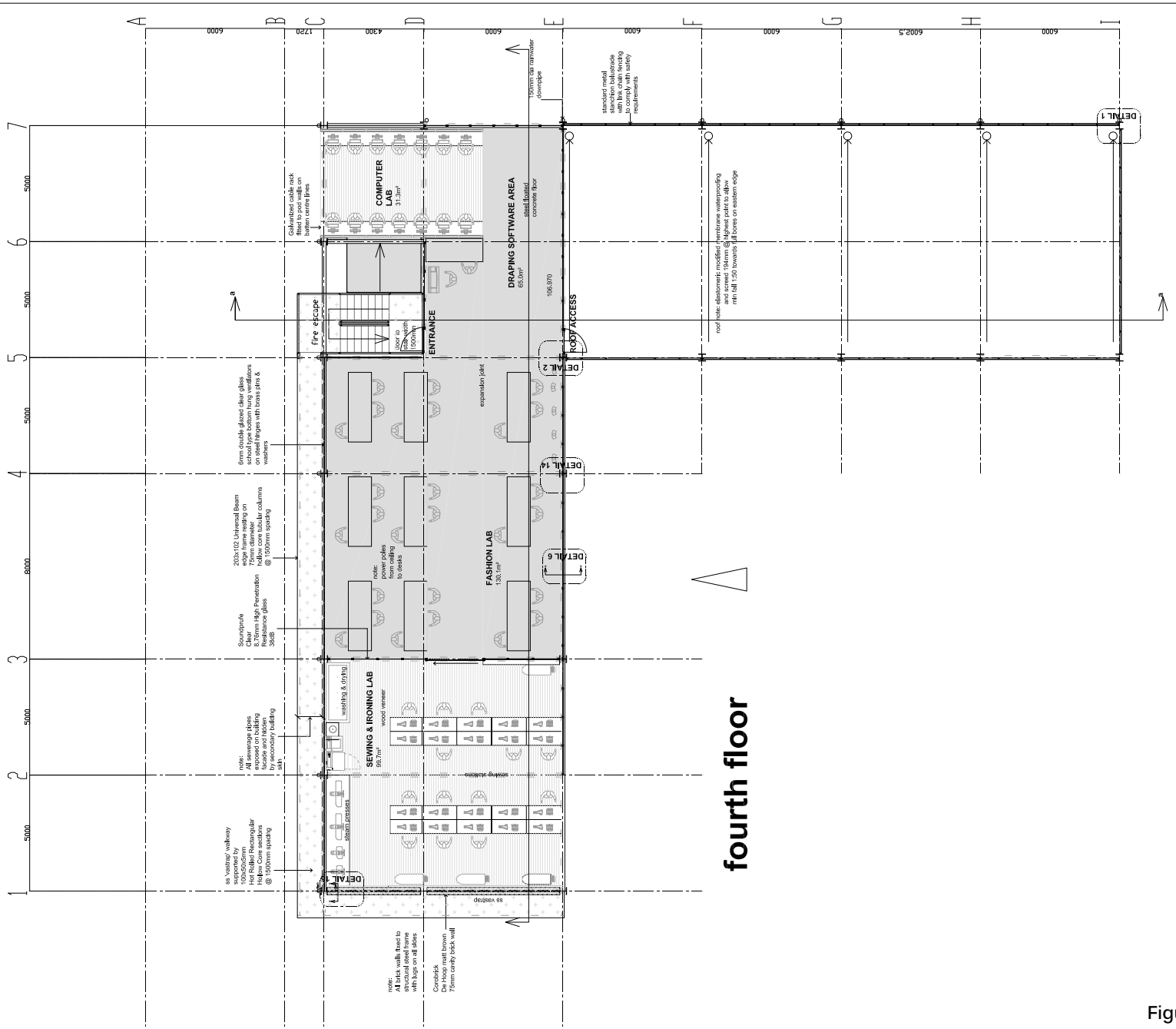


Figure D7: Fourth floor plan. Not to scale. (Stegmann, 2008)

I would like to thank:

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