



ANATOMY 101: A HUMAN ANATOMY CENTRE AT THE TSHWANE DISTRICT HOSPITAL: PRETORIA

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ABSTRACT

Abstract

Interior design has a social responsibility. To facilitate the way in which buildings change, thereby allowing the user to retain interest and awareness of buildings. The sensitivity of built fabric with historical value combined with the symbolic nature of institutional buildings justify the need to reinterpret architecture in order to retain its value to future generations

It is the aim of this dissertation to investigate the interior designer's role in altering built fabric by reinterpreting the existing design language. A new perspective should evolve from a well informed

understanding of the elements present on site and provide a new strategy by reacting to it.

The selected project is a Human Anatomy Centre at The Tshwane District hospital that should provide both the academic and non-academic user with the opportunity to reinterpret their understanding of the human body.

Ekserp

Binne-ontwerp het 'n sosiale verantwoordelikheid. Dit fasiliteer die manier waarop geboue verander, en behou gevolglik die gebruiker se belanstelling en onmiddelikke bewustheid van argitektuur. Die sensitiewe natuur van geboue met historiese waarde, gekombineer met die institusionele aard van seker geboue, noodsaak die behoefte om argitektuur te herinterpreteer en gevolglik die waarde daarvan vir die nageslag te behou.

Die oogmerk van hierdie verhandeling is om die binne-ontwerper se rol in die verandering van die bouomgewing deur die herinterpretasie van die bestaande ontwerp-taal. 'n Nuwe perspektief kan slegs volg indien die bestaande daadwerklik nagevors is, en daar 'n strategie daargestel is wat bepaal hoe die navorsing implimenteer kan word.

Die gekose projek is 'n Mens Anatomie Sentrum by Die Tshwane Distriks-hospitaal wat dit ten doel stel om beide die akademiese en nie-akademiese gebruiker die geleentheid te gee om hul kennis van die menslikke ligaam te herinterpreteer.



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*...The interplay between the world of our bodies and the world of our dwelling places is always in flux. We make places that are an expression of our haptic experiences even as these experience[s] are generated by the places we have already created. Whether we are conscious or innocent of this process, our bodies and our movement are in constant dialogue with our buildings. Charles Moore and Robert Yudell as quoted from their book *Body, Memory and Architecture* by Ching (2000:227)*

1

INTRODUCTION

The inquisitive nature of a post-modern society is in stark contrast to the prescriptive limitations implied by the modern movement (Venturi, 2002:16). Venturi (*ibid.*) suggests that this newly acquired knowledge is accompanied by a renewed self awareness.

Architect and writer, Charles Jencks (1997:8), aims to unravel the complexity that this renewed self-awareness has brought about. In his book entitled *Architecture of the Jumping Universe*, Jencks (*ibid.*) focuses on the reaction to this complexity. He collectively refers to these attempts as the meta-narrative, and argues that if design can respond to the meta-narrative by dissecting it in order to expose the systems it comprises of, it may possibly serve as design generator. This dissertation will therefore argue that room should be made to ask how design can possibly allow for the interpretation of the bigger picture.

The subject of human anatomy applies dissection as a tool to uncover the



altering the complexity of the architectural fabric.

1.1 Site

1.1.1 Site Identification

This investigation will focus on the South African institutional building, more specifically, The Tshwane District Hospital (1927).

This should include the context of the building in relation to the site it occupies. This will inform an analysis that could address the existing architectural envelope and its associated services. The built form should inform the space it occupies, and this will be analysed by investigating elements influencing spatial quality. The spatial quality of architecture influences the experience of the visitor and, as a result, the interaction of the user with the built form. For this reason, the existing user interface should be investigated. Scott's theory of stripping back, making good, enabling works and new work should be implemented in this project as an approach to the manipulation of built fabric.

1.1.2 Reaction

In reaction to the above analysis, the response implies the introduction of a human anatomy gallery to the building envelope of the Tshwane District Hospital (1927). A new building program with the services it offers will, in turn, introduce a series of new sub-systems to the building envelope. These new sub-systems should be manipulated and applied in a layered intervention, prioritising key areas in the existing built fabric that may result in building failure.

The pragmatic response will be outlined in *Chapter 2*.

1.2 Background

In a recent study conducted by a team of researchers from King William's College in London, it was found that most people lack even the basic knowledge of human anatomy (*Science Daily, 2011*). A similar study was conducted 40 years ago, but the result differs only slightly, if compared to the recent one, despite advances in education and increased access to health information. In a study of 722 individuals, 85.9% could indicate the position of the intestines in the body; 80.7% could indicate the bladder, whilst only 46.5% could indicate the correct position of the heart and only 68.6% correctly locate

complexity of the human body. The human body is seen as a collection of complex systems functioning as a whole (Solomon *et al*, 2002:4). The anatomist alters the existing arrangement of human tissue and through this process of disruption exposes individual sub systems, as indicated in

Illustration 1.1.



Illustration 1.1. Students dissecting a cadaver as part of their medical study in anatomy

Once a sub system has been uncovered, it is impossible for the anatomist to return the dissected material to its original state in order to re-evaluate its relationship to the complete living body. Instead, the anatomist reinterprets the findings in relation to the existing. It may possibly be suggested that the anatomist views the human body as a meta-narrative comprising of individual sub systems. It is only by exposing these systems that the anatomist is able

to derive a conclusion.

Buildings are therefore not mere structures; they are a matrix compiled of a complex arrangement of systems.

The interior architect is often confronted with the meta-narrative in the built environment, as British engineer and writer Steven Groak (1992:19) remarks:

“It is useful to see buildings as ‘unstable systems’ ones which sometimes cannot respond to their changing circumstances – whether it be internal comfort, environmental degradation, new social or economic conditions or the external climate. Without the addition of active controls they decline further, either gradually or catastrophically. It is in this sense that we may speak of building failure.”

The above statement implies that building systems should constantly be analysed in order to define systems that may contribute to building failure. Secondly, it suggests reaction to this identification. In the same light, the interior architect can implement identification and interaction as method of

the lungs (*ibid.*). Lead researcher, John Weisenman, expresses concern with particular relevance to doctor-patient communication:

“Recent evidence has shown that when doctors’ and patients’ vocabulary are matched, significant gains are found in the patients’ overall satisfaction with the consultation, as well as improved report, communication, comfort and compliance intent.”

The lacking public knowledge has, however, not kept over 31million visitors from attending the “*Body Worlds - The Original Exhibition of Real Human Bodies*” (Desmond, 2011).

Anthropologist Jane Desmond identifies the removal of social markers (the skin, fat content, facial features and hair) as the main reason why visitors can distance themselves from the living traits of human corpses on display (*ibid.*).

It may therefore be argued that Von Hagen, the creator of this exhibition, has established a popular medium for communicating anatomic subject matter to the public. There are, however, those with a different opinion. Meiring (2010) argues that Von Hagen’s approach is disrespectful and that the main aim for the exhibit is to shock the visitor and therefore has little educational value. Regardless of the criticism, *Body Worlds* still attracts more visitors annually and it should not be overlooked that all specimens on display have donated their bodies willingly for this purpose (Desmond, 2011).



Illustration 1.2. Plastinated human body on display as part of Body Worlds – The Original Exhibition of Real Human Bodies

In South Africa The National Health Act regulates the handling of human remains for research purposes (Lewis, 2011). It is outlined in the law on human tissue [Article 81] that human remains may only be obtained for research if it is donated by the individual or if a body is unclaimed by its next of kin – in which case it becomes the property of the government. The law also states that anatomic dissection for research purposes may only be conducted as an extension

of an academic hospital (*ibid.*). The immediate link of the Tshwane District Hospital as a part of the Prinshoff Campus to The University of Pretoria highlights the legislative justification for the specific site selection.

In addition, the subsequent relocation of services previously housed in the Tshwane District Hospital to the premises of the new Steve Biko Academic Hospital, provides the opportunity to also relocate administrative functions out of the administrative building (Soe, 2011). This possibility would enable the existing facility to house a new function.

1.3 Aims and Objectives

The aims and objectives of this study include identifying the current shortcomings that marginalise the possibilities of human anatomy and provide the designed means to reinterpret existing architecture.

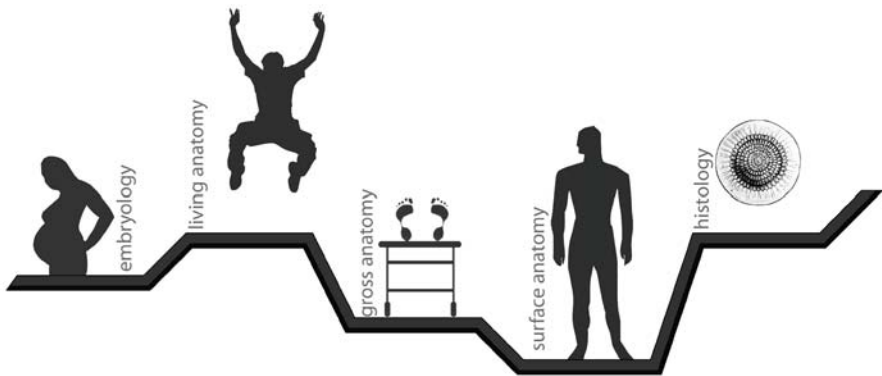


Diagram 1.1 Visual interpretation of sub-categories of Human Anatomy

1.4 Anatomy Museums (centres) in Context

The medical field of human anatomy comprises the following sub-disciplines as defined by [A MANanatomy] (2011) and illustrated in *Diagram 1.1*

Different medical faculties at universities in South Africa have diverse interests in the aforementioned sub-categories of anatomy. This diversity is



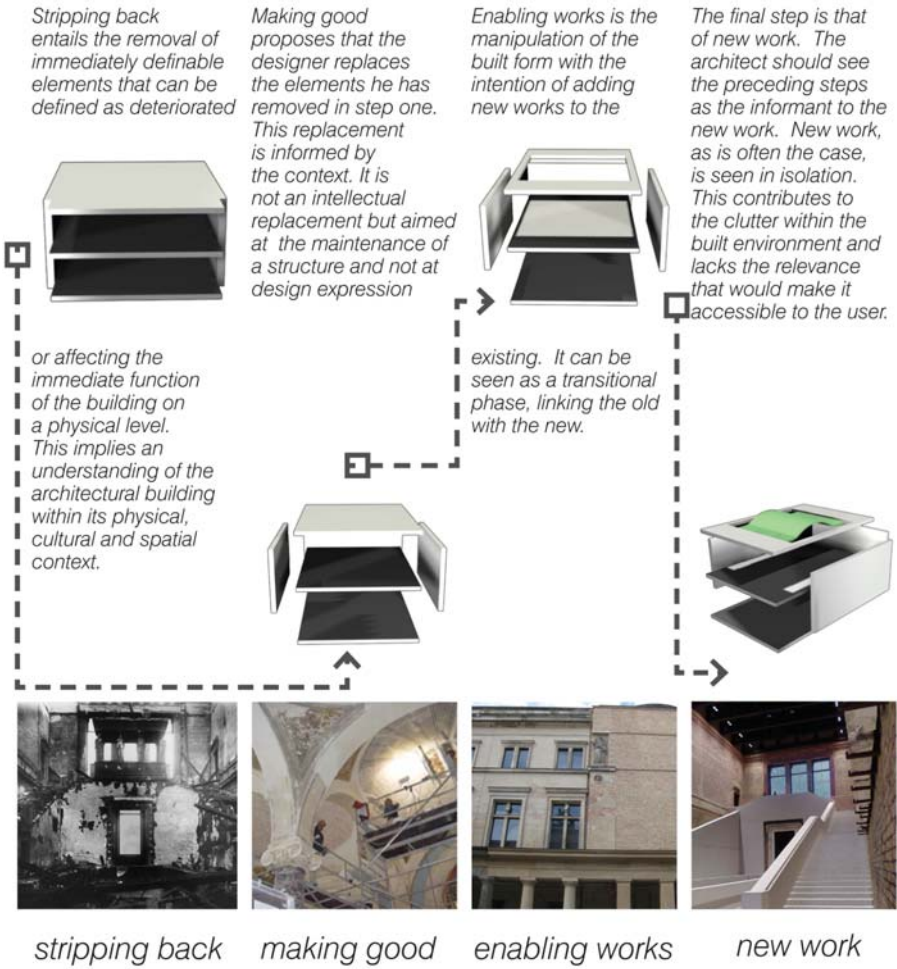
visible in the content of the anatomy museums at the various universities. According to Mr. Lewis (2011), the technical assistant at the Department of Human Anatomy at The University of Pretoria, the main focus of the existing W.G. de Haas Student Resource (1984) is human pathology. This implies a study of abnormalities. The sensitive nature of such a collection has brought about that the facility is closed to the public, with its content perceived by contributors as solely academic.

In contrast, the anatomy museum at the University of Stellenbosch has amalgamated with the Department of Zoology to produce subject matter pertaining to different species, as well as human specimens, in the same venue (Meiring, 2010). Yet again, approached differently, the anatomy museum of the University of the Witwatersrand is focused primarily on human anatomy within the field of anthropology and archaeology. This is largely due to the fact that its museum contains over 20 000 complete human skeletons (*ibid.*).

Few of these facilities are accessible to the public, and those who are accessible lack the facilitation of a designed user interface to effectively communicate the significance of its content to the visitor, as it is approached as storage rather than a display facility.

It is, however, evident that the medical knowledge is available to develop anatomic specimens for display purposes. It can also be noted that the diversity of the subject matter can provide a rich collection of information. What is lacking, however, is the designed facilitation that could enable the non-academic visitor to benefit from it.

1.5 Research Methodology



Steps in altering a building as proposed by Fred Scott

Diagram1.2 The study's proposed design methodology

2

DESIGN TASK

2.1 Problem Statement

Before an attempt can be made to develop a design, note must first be taken of the possible factors that, if left unresolved, may affect the integrity of the intervention. In this instance, two main groups of problems have been identified and will be discussed accordingly. These are the *programme* and the *building*. The study should identify possible problems relating to the specific intervention introduced to the building. Building section will focus on problems possibly influencing the built fabric if left unattended.

2.1.1 The Programme

It is possible for the anatomic display to become only an oddity. Specimens intended to convey scientific information can then be wrongly interpreted as social commentary on death. Anthropologist, Trafford (2003:4), criticises such displays

by stating that the act of dying is sometimes manipulated beyond the realm of medicine or even that of art.

In contrast, most institutions view the anatomy museum as a private entity, with human remains used only to provide scientific education. The result is that anatomy museums become storage space instead of an interactive display. Mr. Lewis (2011) and Prof. Meiring (2010) presume that the expansion of an anatomy museum implies simply the addition of shelving to an existing student resource.

Harbison (1977:140) analyses the notion of adding objects to a museum in the book entitled *Eccentric Spaces*:

“[The museum] takes an object out of use and immobilises it in a secluded attic like environment among nothing but more objects. If a museum is a place of things, its two extremities are the graveyard for things entombed and the department store for things for sale (1977:140).”

In order to rid itself of the stigma associated with the museum, The Department of Anatomy at The University of Pretoria (UP) has chosen to rename the W.G. de Haas Museum to the W.G de Haas Student Resource Centre, to suggest a dynamic and interactive resource. However, it appears to be only the name that changed and not the approach as is evident in the in the presentation of the material. The lack in providing an interactive medium to acquire physical anatomical information is an educational opportunity lost for the non-academic visitor.

Although primarily used by medical students (Meiring, 2010), the resource is often used by medical professionals who cite dissections before performing surgical procedures. Access to this student resource seems to be a challenge, thereby limiting the possible value such resource could have added, had it been more accessible.

It seems that human anatomy is either displayed to provoke or to provide specialised medical education. The difficulty seems to be in finding a compromise between academia and mere entertainment. This document will seek means to facilitate this compromise by altering the existing programme and function of the building in order to facilitate new work.

The existing programme of the Administrative Building will be questioned by introducing a new programme. Rather than ‘erasing’ architecture that is not optimally utilised from the urban context, this study should indicate

that a possibility exists to reinterpret the existing by minimal alteration and intervention.

2.1.2 The Building

According to the South African Heritage and Resources Act, buildings older than 60 years are automatically protected by law. As a result, the Administrative Building of the Tshwane District Hospital can be regarded as a national monument.

Prof. Karel Bakker argues that South Africa has mainly two categories of monuments namely: the apartheid epoch and struggle events (Bakker 2007:14). This statement implies that there is a significant contrast in public attitudes toward monuments celebrating principles of apartheid.

It might be argued that the architectural envelope in which a programme is housed, also houses the metaphysical ideals of the institution it represents. As a result, the deterioration of the institutional building is perceived as the failure of the institution to communicate these ideals. This is despite the fact that all buildings deteriorate.

Often such buildings are renamed or claimed by a different institution, but it is not possible to return it to its original state. The Tshwane District Hospital is both an institutional building and a monument. Still being utilised as a governmental healthcare institution (although not as extensively as in the past), the development into its current state bears cultural significance to its immediate setting, and the community it serves. In this context, the sensitivity of this project is evident (see *Illustration 2.2*)

2.2 Hypothesis

A human anatomy centre is an appropriate new function for the Administrative Building of the Tshwane District Hospital.

2.3 Proposal

This study proposes a human anatomy centre to the premises of the Tshwane District Hospital (1927). The investigation will seek to clarify the need for an upgrade of the existing facility and indicate how the educational capacity of the field of Human Anatomy can fulfil such a need.



Illustration 2.1 Entrance to the administrative building of The Tshwane District Hospital indicate the historical nature of the architectural envelope

The project should provide opportunity for engaging with human anatomy on different educational levels, and in doing so, satisfy the educational demand of both the academic and non-academic user.

The scale of the intervention is focussed on the interior of the administrative building, but the impact thereof may extend beyond its physical boundaries. In such instances the clarity will be provided in this regard. In order to introduce a new programme to the building, this study will propose to alter the existing built fabric to accommodate a new programme, and also design the user interface to allow for the effective communication of the anatomic

information.

2.4 Theoretical Approach

The argument will indicate that the reinterpretation of the built structure will reactivate it and a legitimate argument for the reuse thereof.

Reinterpretation is proposed to be achieved by:

- reintroduction of a new narrative,
- providing the opportunity for activity driven space,
- investigating the interior's role as user interface,
- the interior designer as taste maker.

For the purposes of this study it will be presumed that the scale will constantly be altered to accommodate the impact of various elements in the interior realm, pertaining to various scale levels.

The theoretical design component will inform the design and aim to propose an alternative to the current preconception regarding the institutionalised building and the provocative nature of the proposed programme.

2.5 Pragmatic responses

The anatomist has to analyse the anatomic structure of an element critically before he can isolate individual elements and systems for further investigation. This assures that the correct segment is dissected in order to study a particular muscle group, for instance.

The complexity of buildings that have been continuously altered could benefit from the anatomist's approach.

Scott (1998:120) implies that the alteration of the existing requires that the architect should understand the relation of the existing to the "ideal form". He argues that the ideal form is impossible to reach, since the actual building is removed from the ideal utopian intent by the deterioration through everyday use, the misinterpretation of the intention of the architect and the addition of elements to the building over time. As solution, Scott proposes that the interventionist designer aims to understand the intention of the architect as initial impulse and use that as point of departure to inform the alteration. It is suggested that this process of understanding borders both on the intellectual and the intuitive at the same time.

Fred Scott (*ibid.*:138) calls this strategic process stripping back. The process of stripping back entails the removal of immediately definable elements that can be defined as deteriorated or affecting the immediate function of the building on a physical level. In order to do this, however, Scott (*ibid.*) suggests an investigation on an intangible level. This implies an understanding of the architectural building within its physical, cultural and spatial context.

The anatomist now continues dissecting the anatomic sample and de-contextualises it by removing it from the host (the human body) and adding it as a possible new addition to an anatomy centre.

In the same light as the anatomist performs a dissection, Scott proposes the principle of enabling works as the manipulation of the built form with the intention of adding new works to the existing (*ibid.*). It can be seen as a transitional phase, linking the old with the new.

The final step is that of new work. The architect should see the preceding steps as the informant to the new work. New work, as is often the case, is considered in isolation. This contributes to the clutter within the built environment and lacks the relevance that would make it accessible to the user.

The intended site of intervention has both historic as well as cultural significance. The ICOMOS Burra Charter suggests the cautious approach where “existing *fabric, use, associations* and *meanings* are changed as much as necessary, but as little as possible” (The Burra Charter 1999:3).

2.6 Client

It is proposed in this dissertation that the client be collaboration between education, art and medicine. Role players that fulfil this immediate role have been identified as:

- The University of Pretoria (Medical Campus),
- Tshwane District Hospital,
- Department of Arts and Culture.

2.7 The Visitor

Two typical types of users are mentioned in this section. The academic and non-academic user. The implication would be to accommodate both in the programme of the Human Anatomy Centre.

2.7.1 The Academic User

The academic association between the Medical Campus of the University of Pretoria and the Prinshoff Campus provides an integrated educational opportunity. As part of the curriculum, medical students have to study human anatomy through dissection. An Anatomy Centre will provide the academic-user with the facilities required to practically engage with the subject matter of human anatomy.

For the anatomist it will provide the opportunity to display his dissecting skill. Lewis (2011) remarked that the W.G. de Haas student resource, although focussing mainly on the field of human pathology, provides the academic user the opportunity to access anatomic subject matter as knowledge database before performing medical procedures that would otherwise not be available.

Typical academic users would include:

- doctors/surgeons,
- medical students,
- scholars,
- pathologists,
- dentists.

2.7.2 The Non-Academic User

The value of The Anatomy Centre should extend beyond the academic realm. It should be possible for the visitor to interactively obtain information pertaining to, amongst others, general principles of human health.

The non-academic user will be able to engage with the subject material on different levels. A clear indication will be provided of the content of each allocated area in the display and what is to follow, thereby providing the user with the choice to interact on a level with which he feels comfortable.

Typical non-academic users would include:

- a family on an educational outing,
- a prospective patient, about to undergo an operation and requires information about the procedure.

2.8 Location

Illustration 2.2 indicates the placement of the site within the Urban setting

2.9 Delimitations

For the purposes of this study, the specialised treatment of human tissue must be accommodated in the programme. Currently this role is fulfilled by the Basic Medical Sciences Building (1962) on the Prinshoff Campus. The complexity of these procedures involves a process of procedures that, if included, has the capacity to detract from the original design intent. This dissertation will therefore not engage with the entire process, but rather focus on the process of plastination, specialised dissection and the specialised preservation of tissue samples, as explained in *Chapter 6*.

This study will not investigate the psycho-social process implied by death or the act of dying.

2.10 Assumptions

This study will assume that it is possible to relocate the existing administrative functions of the Tshwane District Hospital from its current location to the ground floor of the adjacent hospital complex. This implies that the interior of the Administration Building at The Tshwane District Hospital will be a viable site to introduce the anatomy centre.

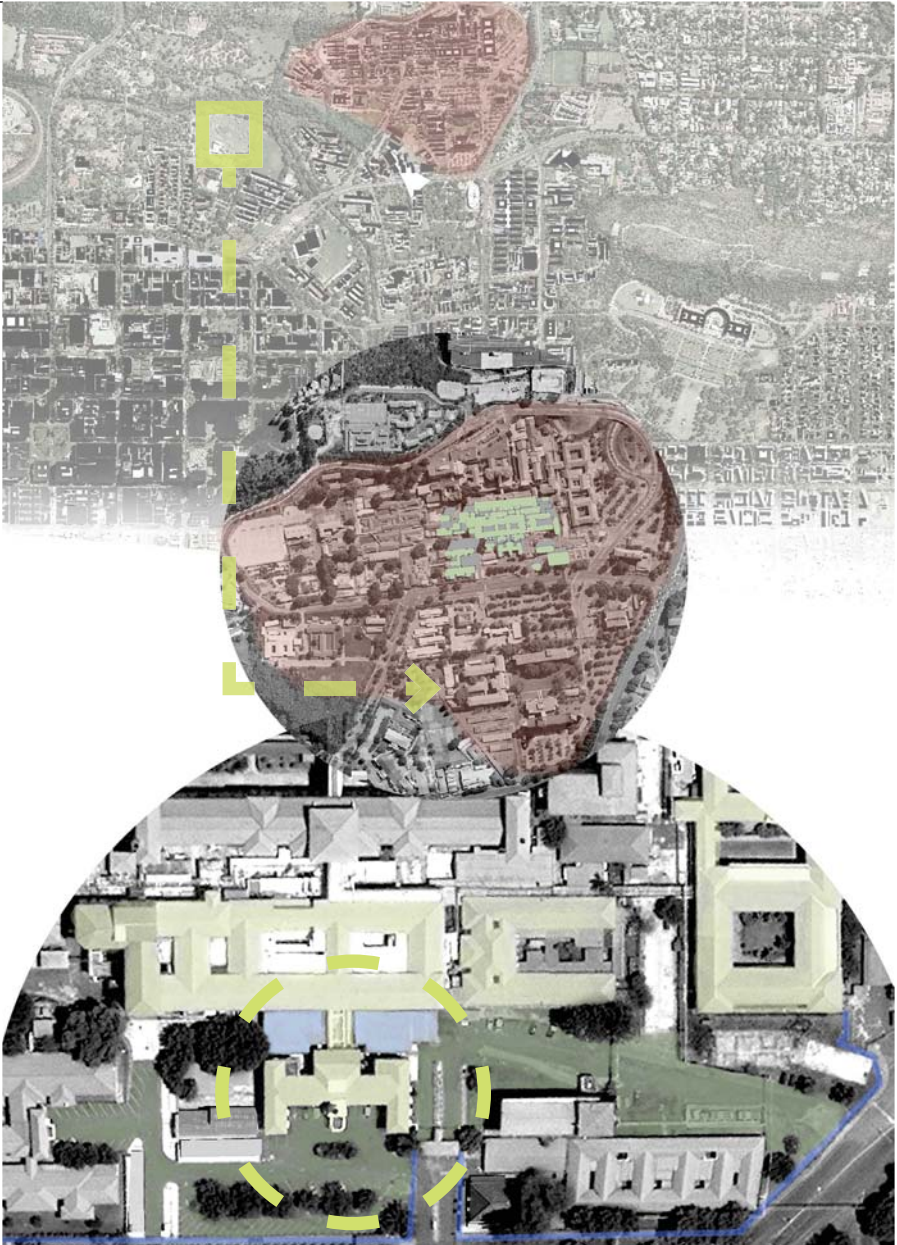


Illustration 2.2 The placement of the site within the Urban setting

2.11 Aims and Objectives

The aims of this study are to:

- provide an extended human anatomy study resource for both students and medical professionals,
- allow for the specialised dissecting facilities and the housing of the appropriate services to maintain the Anatomy Centre,
- renew public interest by altering the existing structure and introducing a new programme to the existing Administrative Building,
- provide the opportunity for the visitor to engage with the anatomic subject matter on different levels of sensitivity. This can be facilitated by interior design by manipulating the user interface,
- provide renewed interest by facilitating the continuous introduction of new material to the centre.

The reinterpretation of the existing architectural envelope has the opportunity to provide a lower environmental impact. The reduction of newly specified materials and building requirements may be reduced by manipulating the existing built fabric, rather than designing the aforementioned from scratch.

2.12 Review and Research Methodology

2.12.1 Legislation

From a legislative viewpoint the following material will be used to inform the study:

- The Australia ICOMOS charter for places of cultural significance, with associated guidelines and code on the ethics of co-existence,
- The National health Act Section 81: The Law on Human Tissue,
- The SANS 0400 and other appropriate building legislation.

2.13 Context Study

Anatomy centre within urban context

Context will be identified by a series of studies. This will include the relationship of the proposed architectural fabric of the site in relation to the gateway node it is positioned within. Furthermore, it will investigate the intended site building according to Scott's theory focusing on the stripping back of old material, the making good, and enabling works that will enable the site to accommodate new work (Scott, 2008:120).

2.14 Interviews

The complexity of the information, as well as the lack of information, justifies the use of interview as a method of qualitative research.

Prof. Meiring (recently retired Head of Department of Anatomy, UP)

Aim: To provide insight into the relationship between the UP and the Prinshoff Campus and outline the role and workings of the current W.G. Haas student resource.

Mr. Lewis (anatomist and technical assistant in the Department of Human Anatomy, UP)

Aim: To outline the requirements and typical procedures involved in the dissection and the handling of human tissue.

Dr. Soe (CEO of the Tshwane District Hospital)

Aim: Provide insights as to the current role of the Tshwane District Hospital, its relationship to the Steve Biko Academic Hospital and a basic understanding of the current functionality of the hospital.

Prof. Mieney (Department of Surgery, Tshwane District HospitalUP)

Aim: To obtain information on the development of the Prinshoff Campus to establish a timeline.



3

THEORETICAL DISCOURSE

3.1 The Notion of Change

It may be argued that when the interior designer has to respond to built fabric, change is established. This notion of change of [institutional] buildings is defined by Edward Hollis (2009:10) in the book *The Secret Lives of Buildings* as a “dirty secret”. This statement implies that change in architecture lacks acceptance from the public and professional domain. New structures are perceived by the user as a symbol of progress but, in contrast, change alludes to the perception that progress may be compromised. There is a suggestion that this notion is not only applicable to the physical structure of the building, but possibly also to the symbolic connotation it has. In the instance of The Tshwane District Hospital, it can be implied that such a connotation may be that of the authoritarian political approach of the

apartheid government.

Scott (2005:1) identifies three possible fates for buildings when he notes that buildings can be left unchanged, be demolished or altered. Architecture would not have to be changed or demolished in a perfect world, but the dynamic requirements and needs that architecture has to accommodate justifies the existence of alteration as facilitator for change (*ibid.*).

Hollis (*ibid.*), however, insists that change is a spontaneous occurrence in the built environment, and he argues that it should be. His motivation is that change enables architecture to endear the test of time, and therefore allows a building to keep on existing and fulfil a function. Such a function has the ability to extend beyond the programme and structure of architecture. Changing architecture may possibly also change the connotation it has. Hollis (*ibid.*: 14) signifies this opportunity by stating:

“Buildings are gifts, and because they are, we must pass them on.”

There is a complex process involved in changing architecture. In this study, the change of architecture implies that a designed means should be provided in order to allow the user to reinterpret both the architectural envelope and its content. But before new work can be commenced, Scott (1998:150) suggests that the existing built fabric be prepared before new work is commenced. He (*ibid.*) defines this process as ‘enabling works. It may therefore be argued that enabling works suggests the manipulation of the connection point between old and new in order to establish a link. As established in *Chapter 1*, buildings are comprised of a series of sub-systems. It is the role of the interior designer to seek a designed means of connecting the systems present in the existing envelope to the systems of the proposed new work. Groàk (1992:21) compares buildings to energy systems that are open, closed or isolated. The open system allows for the free flow of matter across its boundaries, closed systems allow for the partial flow of matter, where the isolated system does not allow for the flow of matter at all. Enabling works suggests creating an open system in the existing, allowing a connection point to the existing. In this study, the manipulation of the existing built fabric will be informed by the requirements of the proposed new work. *Chapter 4* should identify the components that are relevant to the alteration of the place. The aim is to contextualise these components, identify building systems and derive an informed approach from the above.

The process of change arguably has relevance to the field of human anatomy. In order to facilitate a typical dissection, the anatomist must accept the implied properties of the human tissue he has to dissect, and envision the possible dissected result. It can be argued that the unexposed human tissue represents the “real” - whereas the completed dissection represents “the ideal”. The success of a typical dissection therefore is influenced by an informed transgression between the real and the ideal.

In architecture, the progress from the real to the ideal is often compromised by imposing an ideal on a structure. In contrast, by only focusing on the limitations of the real, the ideal is marginalised. Cook (1992:219) argues in the same vein when he defines the ideal man in the visual media:

“By current convention, saying that a man has rippling muscles and steel blue eyes, is regarded as ‘unrealistic’; saying that he has bad breath and a fat beer belly may be regarded as ‘realistic’. Yet, both kinds of men exist in the world (if the latter kind occurs more frequently in a user’s experience, it does not make the former unreal.”

Eisenman (Jencks 1997:14) highlights the dynamic pulsating relationship between the growth and decay of the urban environment as an opportunity for linkage with new work. It is this fractal nature of urban environments that is proposed as the “point of intervention”. In order to establish a connection point between the existing architectural envelope and the proposed new work, Jencks (*ibid.*) urges the designer to get as close as possible to the grain of the urban environment. There is a suggestion that only by engaging with the intricacy of the built environment, is it possible to create a sustainable link with new work.

If a link can be established between the existing The Tshwane District Hospital and the intended new work, it will become a platform from which to effectively communicate to the visitor. Jencks (1997:35) also values this notion and suggests that the interior realm subsequently becomes the physical manifestation of who society is and where they aspire to be. He (*ibid.*) argues that the existing becomes a means of taking the temperature of culture.

3.2 Reinterpreting the Existing

The need to develop new architecture is questioned by Carroon (2010:291)

when he states that:

“We cannot build our way to climate neutrality.”

Subsequent environmental research supports his argument, seeing that there are 300 000 square feet of buildings in the United States, most of which will still be standing in 2030. As a result, existing buildings outnumber new construction 99 to 1 (*ibid.*). The replacement or complete renovation of such structures will both prove too resource-intensive. Carroon (*ibid.*) therefore proposes a strategic alteration of selected building elements, which will allow it to fulfil its function.

In this study, this strategic alteration will be referred to as the reinterpretation of the existing building fabric. All new work to the built envelope

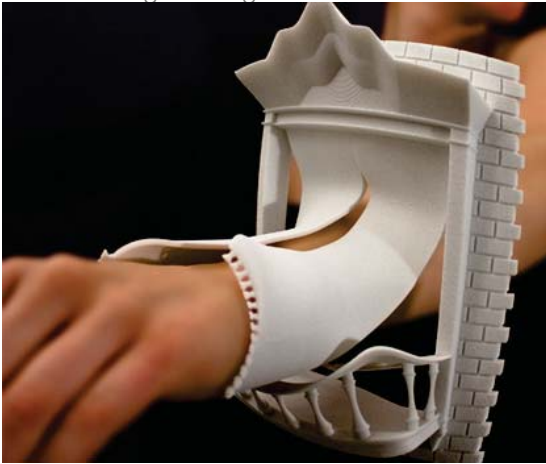


Illustration 3.1 The reinterpretation of architecture as jewellery (Ponoko, 2009)

should therefore either contribute to, or be informed by the principle of reinterpretation, as indicated in *Illustration 3.1*.

This study should indicate that the reinterpretation of the existing can be facilitated by the manipulation of *Diagram 3.1*:

1. Circulation.
2. Introducing Activity-driven space.

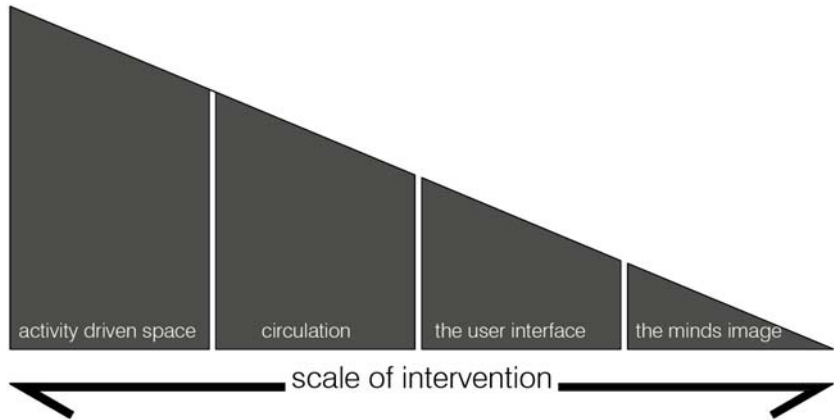


Diagram 3.1 The scale and type of proposed intervention involved in the reinterpretation of space.

3. Manipulating the user interface.
4. Controlling the “mind’s image”..

3.2.1. Circulation

Dovey (1999:51) argues that the manipulation of spatial circulation can become a means of suggesting power through built form in the book, *Framing Places*. His research indicates that the principle of authority is spatially experienced by the user. As indicated in *Diagram 3.2*, architecture can arguably become an instrument by which choice is either given or taken away from the user.

In altering the built fabric only slightly, an alternative circulation route may be provided. If conducted successfully by the interior designer, circulation may become a tool by which the user can be guided to engage with parts of a display, where in other instances, it may provide the user with the choice not to do so. In the case of sensitive subject material, for instance a Human Anatomy Centre, the choice to engage will protect the user from being

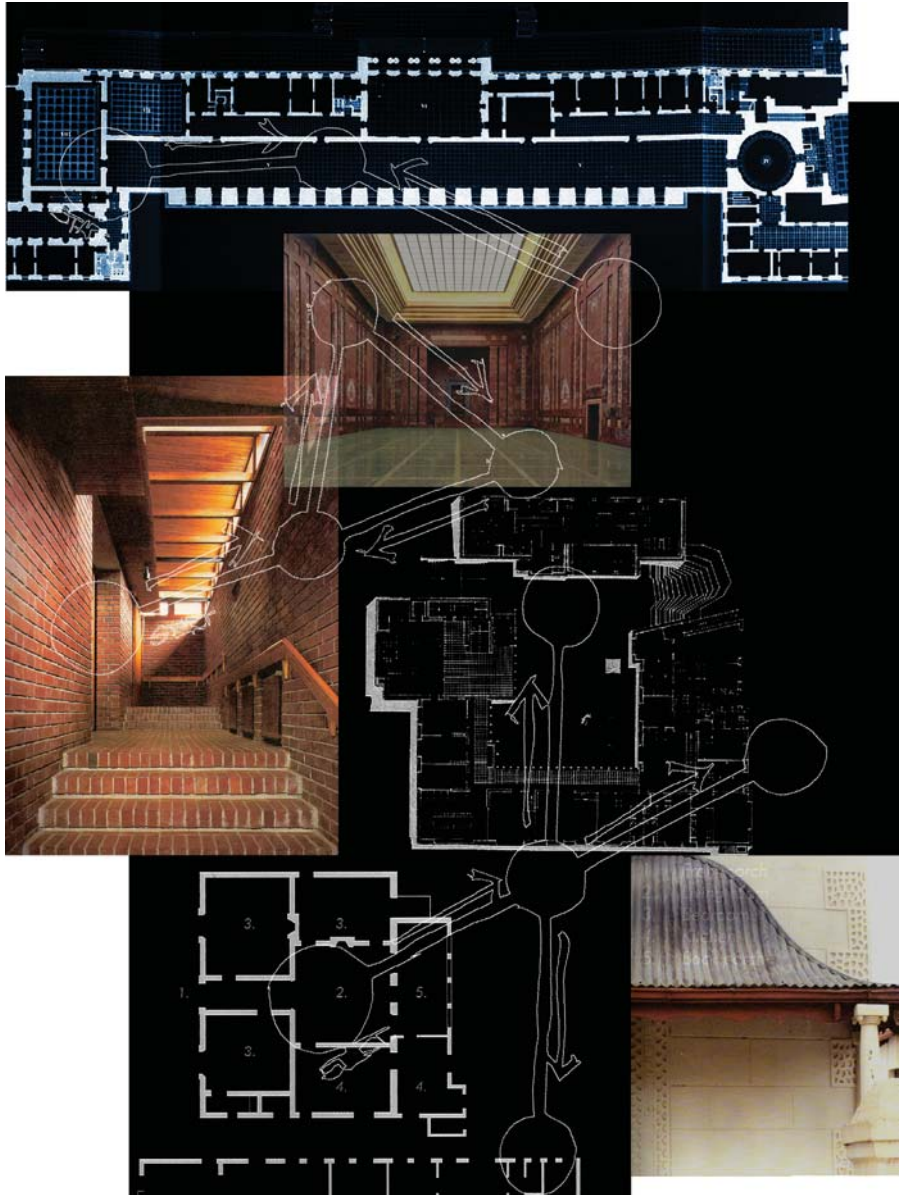


Diagram 3.2. How circulation pattern can guide the user in the interior realm.



confronted with sensitive subject material without his choosing to be. In order to provide a hierarchy of levels of engagement with the interior space to the user, this study will aim to intervene on different levels of the architectural envelope. The building shell should be approached as the monument; maintaining the symbolic role the place fulfils within the Tshwane context. The interior should be approached as the anti-monument, allowing it to be altered and added to in an attempt to reinterpret the Administration Building.

As the narrative is not only the link between objects and spaces, but also through a specific space, the form of these spaces becomes a volumetric manifestation of circulation (Ching, 1996:268). Altering an existing structure implies the possibility of volumetric constraint. An alteration strategy may therefore include altering a predominantly horizontal structure, in order to allow both visual and physical vertical circulation.

3.2.3 Activity Driven Space

Part of the architectural dilemma is that of altering the spatial perspective of the user. Whether it be the tactile or the non-tactile attributes involved in transforming space into a place, the user relies on his or her spatial ability (Da Costa, van Rensburg 2008:30). Cross-cultural psychologist, J.Berry (ibid.), aims to quantify a measure for spatial ability and concludes that field dependence and field independence can be seen as a means of measure of spatial understanding. Field dependence focuses on the boundary and planar arrangement to define a space. Space therefore becomes an entity that starts and ends at a boundary. In contrast, field independence focuses on space as “a dynamic process, rather than a static condition” (Berry 1992:124). The user therefore tends to understand spatial qualities beyond its physical boundaries. Berry remarks that field independence is a phenomenon that can be closely associated with nomadic cultures, for instance, in which case the addition of a highly structured environment will suppress spatial complexity.

From the above it can be argued that there is a need to acknowledge the unique needs of the non-urban dweller and question the outright western approach that is usually associated with western cities, that are based on a



Illustration 3.2 A spatial interpretation signifying the impact of activity driven space. <http://dream-weavers.co.za/wp-content/uploads/2007/06/pic-2.jpg> http://fc07.deviantart.net/fs70/f/2009/360/2/0/Urban_Decay_by_c450.png

Roman grid system.

Failure to do so usually results in architecture that becomes irrelevant (Da Costa, van Rensburg 2008:32). The aftermath of an architecture that has no relevance to its users or surroundings other than its form, becomes reduced to “organised walking” space (Borden 2001:184).

The Tshwane District Hospital and its setting (The Burra Charter 1999:2) has, to some extent, become “organised walking space”, not granting the opportunity for the user to take ownership of the immediate surroundings

Da Costa and van Rensburg suggest (2008:35) that in South Africa the intent of government to create unity and social coherence is often inappropriately expressed by the building of monuments. In contrast, they argue that the activation of space can be established by introducing an activity with which all



Illustration 3.3 The degeneration of the Tshwane District Hospital

users can engage.

A human anatomy gallery should be driven by the activities it houses. Room should be made for the user to interact with displays and possibly engage with other visitors in doing so.

3.2.4 The Spatial Perspective

It can be argued that the user interface is the first physical link that a user

would have with the architectural envelope, but the user interface allows for communication on both a tangible and intangible level. Buur and Hornecker (Buur&Hornecker 2006:3) emphasise two typical views in which space is perceived by the user.

These are:

- An expressive movement-centred view - this view focuses primarily on the experience of interaction between the visitor and the object. Its aim is, however, not primarily to introduce the user to the space, as the focus of this view is embedded in the richness of the sensory experience provided by the interaction (*ibid.*).
- A space-centred view - this view is spatial and not aimed at the object in the space. It aims to provide a means of introducing the user into a space by the introduction of elements like sound and light. By architects, this approach is often defined as interactive (*ibid.*).

By only addressing the space-centred view, Polish artist, Krzysztof Wodiczko, manages to reinterpret public spaces. He does so by projecting visual imagery and video onto the built structure. By manipulating the content of these images, Wodiczko often manages to provoke and question the motives of the institutions responsible for the architecture he projects against (Jekot, 2008:35). By confronting the user with these images, Jekot (*ibid.*) remarks:

*His intention is to handle cultural miscommunication
and use art for healing ideological divisions*

Hence the suggestion can be made that the user interface can play a role in the reinterpretation of architecture. In the instance of a Human Anatomy Centre, the user interface has the potential to facilitate the effective communication of sensitive subject matter. In aiding the interaction between the visitor and the architectural fabric, the user interface can arguably also serve as a device by which the possible negative perceptions to The Tshwane District Hospital (1927) can be overcome.

3.3 The Mind's Image

Swanepoel (2005:210) notes that a photograph is taken from its context



and placed within a different environment. This notion has two results: first, there is the removal of the element from its context and, second, there is the reinterpretation of this newly acquired image in a new context. For both the principles of de-contextualising and reinterpretation, there is a strong suggestion of constant tension between objectivity and subjectivity. Swanepoel (*ibid.*:209) argues that the semiology of photography must be learned, and does not come naturally. This notion is confirmed by Umberto Eco when he argues that the reading of the photographic image is no longer an analogue to reality (*ibid.*).

Illustration 3.4 Reinterpretation of the existing through projection <http://hightechfolkart.files.wordpress.com/2010/12/wodiczko-video-008.jpg2011>

The interaction between user and architecture is temporary. The aftermath of such an interactive experience often results in a formulation of a connotation to place. One might argue that a mental image of the place is created and kept to serve as record of the experience.

Groàk (1992:38) argues that all things created have two narratives. First, there is the narrative of the object in itself and, second, he highlights the external



explanation of the object, or its so-called “broader meaning”. It may therefore be argued that whilst the physical interaction with the object investigates the object in itself, its broader meaning may influence the public perception and attitudes toward it.

The interior designer, although not the curator of an anatomy museum, has the ability to manipulate built fabric on different scale levels. The design task should include the manipulation of built fabric, the considered addition of selected new elements, as well as guiding the resulting intangible factors like curatorship, future alteration and the introduction of new work. This manipulation affects the user’s experience of interacting with his environment. In this study the perception toward both the subject of human anatomy, as well as the building envelope it occupies (The Tshwane District Hospital) will be affected.

Hollis (2009:13) views the alteration of architecture as the retelling of a story. This statement implies that the reinterpretation of The Tshwane District Hospital creates the opportunity for challenging the perception of the user, not only with regards to the built envelope, but also to that of the field of human anatomy.

“The designer must make legitimacy for his or her work in the same way that the poet makes truth in poetry.” (Scott, 2005:150)

4

DESIGN APPROACH AND APPLICATION

4.1 Application

The intervention should be applied to the interior of the Human Anatomy Centre, respectfully retaining the architectural form of the existing as point of departure. The reasoning behind this notion is justified by its positive economical impact (through the reuse of existing infrastructure), its minimal additional environmental impact and the protection of the existing historical built fabric. The Code of Ethics of Co-existence in Conserving Significant Places in Article 8 of the ICOMOS Burra Charter (1999:21) states:

Adapt a co-ordinated multi-disciplinary approach to ensure an open attitude to cultural diversity and the availability of all necessary professional skills.

The intent is to transfer the notion of diversity and social awareness beyond the built process in an attempt to evolve the envisioned application and reinterpret it as a celebration of humanity within a South African context.

Any change in building programme, however, requires a change in the spatial and physical composition (Scott, 2005:171). In order to structure and facilitate the notion of change and its effect on the architectural envelope, Scott's theory of stripping back will be followed. The application of new work will pertain mostly, but not exclusively, to the interior of the building.

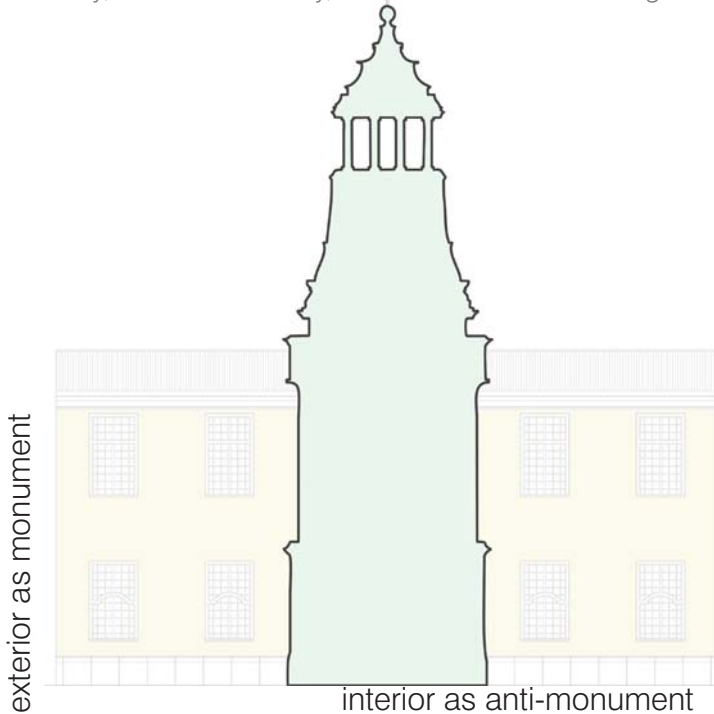


Illustration 4.1 Application of design intent

4.2 Approach

4.2.1 Alteration Strategy

Alteration suggests change to the existing built fabric in order to enable it to obtain a new function. Article 15.1 of the ICOMOS Burra Charter (1999:6) states that:

Change may be necessary to retain cultural significance, but it is undesirable where it reduces cultural significance. The amount of change to a place should be guided by the cultural significance of the place and its appropriate interpretation.

The initial response to altering the building would be to perform critical maintenance to the key elements in the building. Scott reflects on this process as 'making good' (Scott 2005:1). The Icomos Burra Charter (1999:6) requires that maintenance be performed in order to retain the cultural significance of a place. Chapter 8 will outline the technical approach to maintenance. Demolition will be implemented as a second step in the alteration of the existing structure. When executed incorrectly, the act of demolition has the ability to endanger cultural significance through unwanted removal of built fabric.

Three instances have been identified where controlled demolition will be done in this project. They are:

1. Where unwanted entropic skid has become an immediate threat to the future existence of the Administrative Building as architectural symbol in the Pretoria landscape.
2. Where demolition has the capability to tolerate rather than accommodate new work. This notion should allow new work to be clearly distinguishable as such.
3. When the scale of demolition has been considered as an extension of new work. The intention is that the scale of demolition correlates

with the scale of the envisioned intervention. This will eliminate unwanted removal or destruction of built fabric.

Scott (2005:127) accentuates that ruination (the act of demolition) requires precision while simultaneously allowing for creative expression. Such alteration highlights two important aspects; firstly, the level of alteration should be of such a nature that it allows for a well-resolved intervention (*ibid.*: 170). It may therefore be argued that a minor intervention has the ability to add to additional entropic skid and in doing so contribute to the detriment of the host building. Secondly, the alteration process, when viewed in isolation from other processes involved in the change of architecture, should provide possibilities for intervention that would otherwise not exist. Scott (2005:126) compares the alteration process to that of a shadow that is cast by new work.

4.2.3 Intervention Strategy

Intervention to the existing refers to Scott's theory of new work. Article 22.1 of the ICOMOS Burra Charter (1999:7) states that:

New work such as additions to the place may be acceptable where it does not distort or obscure the cultural significance of the place, or detract from its interpretation and appreciation.

Generating new form in reaction to the altered ruin manifests in the Human Anatomy Centre through the theoretical principle of reinterpretation (as discussed in *Section 3.2*). The intervention allows for a new spatial hierarchy and function, as was the initial intention of the architect. The intervention should, however, remain as dynamic as the subject material it houses. The intervention to Human Anatomy should be in constant flux, developing together with new discoveries about the human body. Scott (2005:171) reflects on the successful intervention at the well-known Castalveccio by Carlos Scarpa and concludes that this museum was initially complete, but that Scarpa has placed it in a state of beautiful incompleteness for future generations (2005:165).

The Human Anatomy Centre utilises 'the ruin' to generate new form (indicated in *Chapter 8.1*). Asymmetry in form may appear to be hostile to the existing structure, but this intention questions the existing grid composition and suggests a sense of incompleteness. This notion is supported by the



ICOMOS Burra Charter (1999:7) in article 22.2:

New work should readily be identifiable as such.

Illustration 4.2 The interior of the Castel Vecchio. http://3.bp.blogspot.com/_4lQQyoQe3jw/SzMeMR9Efb/AAAAAAAAAMw/YcQ2JqivgSU/s400/Castelvecchio+Museum.jpg

5

BUILDING ANALYSIS



5.1 Conservation Approach:

The identification of a place and its associations and the immediate protection of such a *place* and/or its *setting* are identified as the first step to the formulation of a *statement of cultural significance* (ICOMOS Burra Charter 1999:10). In the instance of the Administration Building, the place of intervention has been identified. In an attempt to make this site safe, however, a series of risks has been identified that may jeopardise the cultural significance of the *place* (see *Table 5.1* below). A subsequent action has been proposed in an attempt to alleviate or reduce the identified risk factors accordingly through maintenance, alteration or intervention strategies.

26 April 1880 at 16:00
A meeting is held at The New Pretoria Club in order to investigate the possibility of opening a local hospital. 15 committee members attend amongst them Bishop Chales Joviet.

September 1880
The committee meets again and proposes a 5 bed "cottage hospital".

December 1880- February 1881
First Anglo Boer War has to effect that the Republic becomes independent.

1882
In the light of the war that had just ended, a hospital is yet to be built.

1888
A house close to the Old Barracks is donated by the government with the aim to start a 15 bed hospital on the premises.

1890
The additions to the house was designed by Mr. S. Wierda, and the cornerstone of this new hospital is unveiled by President S.J.P. Kruger. (Snyman 1977: 5)

1892
The opening of Weskoppies Psychiatric Hospital commences, housing psychiatric patients who had been placed in jail with criminals before the opening of the hospital

1932
The construction on the new hospital is complete and patients are transferred to the new facility

1927
The cornerstone is laid for the Pretoriase Algemene Hospitaal

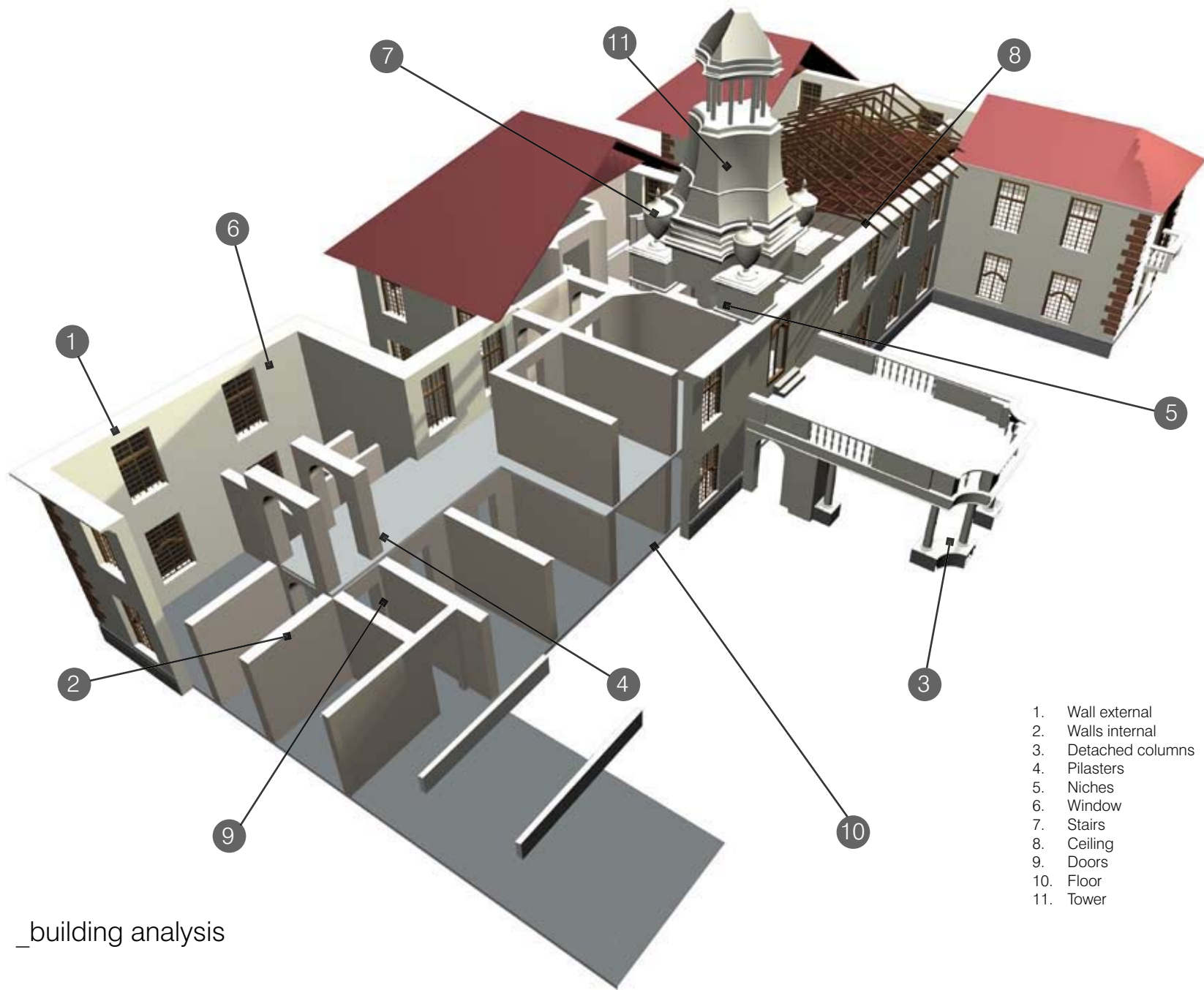
1923
Dr. Heymans (a medical doctor at The Volkshospitaal) collects 10 300 names on a petition requesting the urgent provision of additional medical facilities as the the current Volkshospitaal was not coping with the tremendous demand imposed by the Pretoria population. General J.C. Smuts made 300 000 pounds available for this project and J.S. Cleland is commissioned as architect responsible for the project (*ibid*:7).

1922
The Donkey Camp (an area to the north of Pretoria is deemed adequate for erecting a large scale medical hospital. But the government is slow to commence construction on this much needed facility

1900
British forces take over the Volkshospitaal and subsequently rename it The Pretoria Hospital. During this time The Royal Army Medical Corpse is in charge of

1896
The Volkshospitaal is upgraded to utilize electricity and the associated services

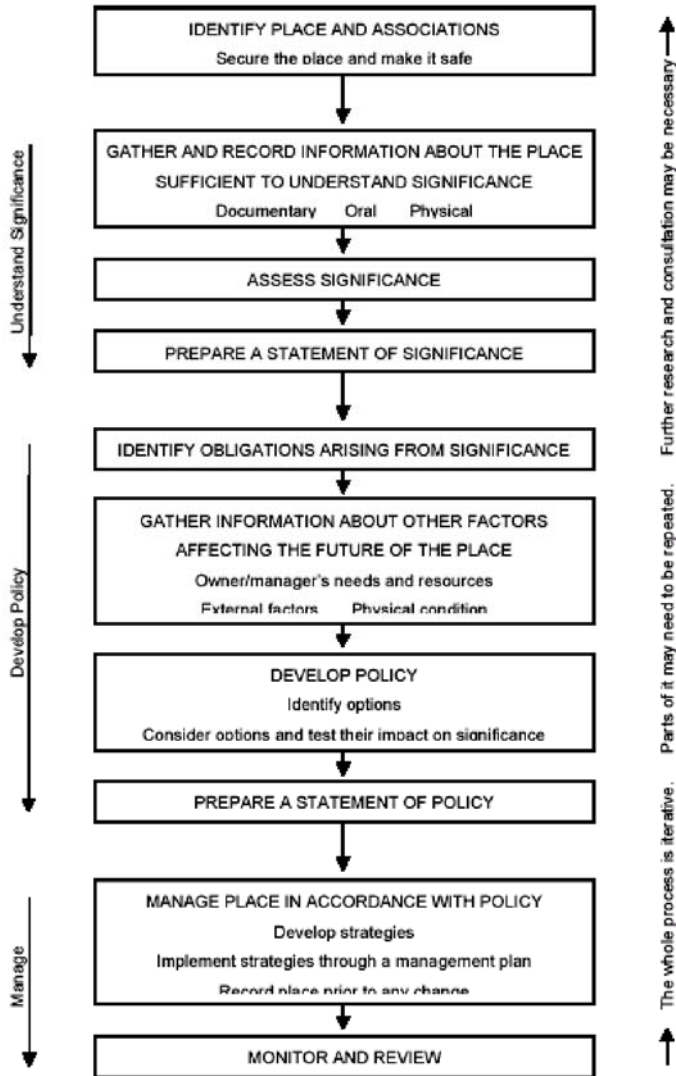
1895
6 additional beds are built increasing the hospital's cap to 320 patient



1. Wall external
2. Walls internal
3. Detached columns
4. Pilasters
5. Niches
6. Window
7. Stairs
8. Ceiling
9. Doors
10. Floor
11. Tower

_building analysis

Table 5.1 Summary of the application of the 1999 ICOMOS Burra Charter in establishing cultural significance. <http://www.heritage.nsw.gov.au/guidelines/index.htm>, 2010



5.2 Establishing Cultural Significance

5.2.1 The Site

Before the Anglo-Boer War (1899-1902), a colonial gentleman dubbed Hans “Donkey” traded with donkeys in the Pretoria area. This occurred after pests tormented the local population’s working livestock in 1896 and alternative means had to be sought by farmers of the area. So lucrative was his trading venture, that he subsequently purchased the ground where the Tshwane District Hospital is located at present from Hans “Klerk” in 1902. This land locally then became known as ‘the donkey camp’. The Pretoria Universiteitkollege (T.U.K.) was allocated this land in order to start an experimental agricultural farm in 1912, but after the ground was deemed unsatisfactory for the intended purpose, the donkey camp, as well as Prinshoff, was taken over by the government for the sum of £25,000 (Snyman 1977:2). The newly acquired land was set aside in order to house an envisioned hospital in the area. In 1932 the current Old Volkshospitaal was relocated to the north-eastern corner of the old donkey camp.

5.2.2 The Development of the Hospital

After several attempts to establish a much needed hospital facility in Pretoria, Mr. S. Wierda, government architect and engineer, was presented to President Kruger (Mieny, 1993:5). After the appropriate paperwork, the Volkshospitaal (as depicted in *Illustration 5.1*) opened its doors to the public on 10 October 1891 (Mieny 1993:6). The expansion of the medical services to the Pretoria public saw the development of the mental hospital at Weskoppies, as mental patients were imprisoned with criminals in Pretoria up to this point (*ibid.*). In 1895 the Jameson raid took place and as a result the authorities were challenged in treating the enormous influx of wounded and sick soldiers. In an attempt to accommodate the wounded, discussions resulted in the development of the ‘het Roode Kruis’ in the Z.A.R. which is known as The Red Cross today.

The Volkshospitaal received electricity and x-ray devices in 1898. But the current Volkshospitaal facilities could not accommodate the newly acquired X-ray machine and Mr and Mrs. Bourke made available their house in Cilliers

Street in Sunnyside as premises to house the facility. After the battle of Colenso, Boer and British soldiers were nursed side by side in this house. On 5 June 1910, British forces took over Pretoria under the leadership of Lord Roberts. The Volkshospitaal was renamed as the Pretoria Hospital and the satellite facility in Sunnyside was subsequently terminated. This service was then replaced by a tented hospital erected on the premises of Barton Keep. The Palace of Justice was also used as a hospital by British forces till the end of the war (*ibid.*).



Illustration 5.1 The Volkshospitaal (Snyman 1972:21)

In 1912 the provincial administration was approached for aid in the expansion of the medical provision capability of the Pretoria area. This followed the incompetence of the Volkshospitaal to deal with the influx of patients in that time. The flu epidemic of 1918 enforced this need. Out of sheer desperation, Dr. Heymans presented General Smuts with a petition of 10 300 names supporting this notion. As presented at the Public Hospital's enquiry Commission in Pretoria, Mr. Benson (Secretary of the Hospital) claimed that there was a danger of walls collapsing on the patients (Mieny 1993:7).

As a result, the government made available £300, 000 to develop a new hospital on the site previously known as 'the donkey camp'. The architect and head of the Department of Public Works, Mr. John Cleland, was commissioned to design the hospital.



Illustration 5.2 John Cleland

5.2.3 The Architect

Born in 1879 in Staffordshire, Mr John Stockwinn Cleland arrived in South Africa in 1903. He started his South African career as partner with M.M. William Black in Cape Town and later relocated to the firm of Tuly and Waters (Snyman 1977:29).

In 1920 Cleland joined the Department of Public Works for the Union of South Africa. He was appointed as the head architect for the Union from 1920 to 1932, after which he was promoted to Secretary of the Department of Public Works from 1932-1938 (*ibid.*)

His career includes several well-known South African buildings amongst others:

Joining forces with Sir Herbert Baker on the design of the Union Buildings

The design of South Africa house in London

He won an award for the design of the Pretoria Postal head office

He designed the National hospital in Bloemfontein, the Addington hospital in Durban and the Groote Schuur Hospital in Cape Town

He also was involved in the design of the Old Arts building on the campus of the University of Pretoria.

His daughter, Joan Agnew, recalled him (in 1975) as providing in the need of local artists by sourcing local art for installation in the buildings he designed. He also promoted the development and use of South African timber species

in the fabrication of furniture and marble from Marble Hall. As architectural representative in the Rotarian Club in Pretoria (circa 1922), Cleland urged the City Council to make provision for public spaces. He argued that although it may have been perceived that the pleasant South African climate eliminates the need for such spaces, it is ill conceived. He advocated that open spaces should be provided for children to play in. These spaces should be accessible without the use of a motor vehicle.

After his retirement in 1938, Cleland still served as advisor to the government. He passed away in 1950 at the age of 71.

5.2.4 The Administrative Building

The Administrative Building was originally utilised to accommodate five male doctors. These doctors lived on the first floor and a separate suite was allocated to Mrs. Deborah Joffe, the first female doctor at the hospital. The first floor further housed a kitchen, pantry and quarters for the housekeeper. The ground floor mainly housed offices with the “Raadsaal” in the west wing and a medical library in the east wing.

Later developments saw the Administrative Building strictly fulfil the role of the administration of the hospital. The east wing later became the encoding department, whereas the west wing later became used for the registration of admitted patients to the hospital.

The name of The Pretoria General Hospital was changed to H.F. Verwoerd Hospital on April 1960 (Snyman 1977:46). This notion followed the admission of President H.F Verwoerd as patient after an attempt on his life, resulting in extensive injuries.

The H.F Verwoerd Hospital (presently known as The Tshwane District Hospital) remained mostly unchanged as most of the primary services have been relocated to the Steve Biko Academic Hospital. Its current role is that of a level two medical institution that treats patients with less severe injuries. If patients are then found to have advanced medical requirements, they will be referred to the adjacent Steve Biko Hospital.

5.2.5 Connotation to the University of Pretoria

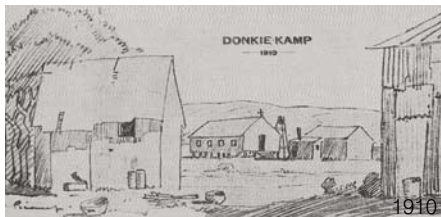


Illustration 5.3 Collage depicting building development

After the lack of funding, an unstable world economy (because of an ongoing world war) and the political pressure against the initial notion, a medical faculty was established at the University of Pretoria on 27 August 1943 with two departments; that of Anatomy and Physiology (Mieny, 1993:15). The H.F Verwoerd Hospital was used as an academic institution providing the opportunity to give students practical experience in the treatment of patients under qualified supervision. This remains the case until today.

5.3 Statement of Cultural Significance

The aforementioned documentation as compiled in *Section 5.1* and *5.2*

should be viewed as supporting material, outlining the cultural significance of the *place* as discussed. It may be deduced that the Administration Building bears significant relevance and value to its context and users. Advances in the medical field can be associated with the iconic tower of the Administration Building, which has become an architectural symbol in the urban landscape. This symbol has been a beacon for those seeking medical attention in the past century. The National Heritage and Resources Act 1999 no25(5) recognises places older than 60 years as automatically protected by law. The Act further stipulates that in principle such *places, buildings, structures and equipment of cultural significance* is part of the *national estate*, thereby placing it in the sphere of operations of resources authorities (No.25:12).

The Administration Building has served individuals of different social stature, race and income, providing patients with high quality medical care by specialised South African medical personnel. Its strive towards quality has seen the hospital involved in the training of medical personnel, thereby evolving its role to that of a highly specialised educational facility.

It is therefore evident that the Administrative Building is of cultural significance to the people of Tshwane. The proposed intervention should therefore result in the conservation of this place through the strategic implementation of specialised maintenance, alteration and intervention as proposed in *Chapter 7*.

5.4 Building Structural Analysis

1. Walls external:

Exterior wall planes isolate a portion of space to create a controlled interior environment (Ching 1996:22).

Such walls comprise of a cornice, plastered and painted vertical surface, and a formed granite plinth. The corners of the external walls are articulated in hand-formed natural sandstone blocks. Accentuating the corner articulates it as a linear condition and defines the edges of the adjoining planes in order to become a positive feature of the form (Ching 1996:81).

Apart from the plinth and the cornice, the wall is a flat surface, with the exception of window and entrance openings in the facade. Timber window frames are recessed into these openings. Later additions to the structure introduced split unit air conditioning on the south-facing walls. External walls



Illustration 5.4 Exterior wall of The Tshwane District Hospital

are 450mm wide and act as primary structural support for the roof and first floor structure.

2. Walls internal:

Internal walls are plastered and painted and appear to have been set out in a grid composition. Ching (1996:23) argues that this composition defines spatial slots with strong directional qualities joined only when the plane is interrupted by an opening.

Openings in internal walls accommodate doors. These openings are 3100mm in height and 950mm in width. Internal walls join the floor. Internal walls join the overhead plane. Internal wall thickness is 450mm.

3. Detached Columns:

Detached columns have a wall behind them which they do not touch, but into which the entablature is firmly built (Righini, 2000:85). Columns are positioned to indicate an important hierarchical function. In this specific instance it is placed to indicate entrances into the building. The connections between vertical elements (like columns) signify an invisible plane; the closer these



Illustration 5.5 Interior wall



Illustration 5.6 Detached Columns

elements are placed together, the stronger the sense of plane they convey will be (2000:14). Detached columns are round formed stone supports and taper to the top of the element. The column base is therefore wider and rests on top of a granite entablature, denoting a defined visual anchor point to the ground plane.

4. Pilasters:

These columns are placed as structural support element and act as load-bearing element for transverse arches, located along the east-west axis of the building. Pilasters are flat wall-like representations of columns (*ibid.*). Pilasters also act as a structural support mechanism for beams spanning across the east and west wings of the building individually.

5. Niches:

The foyer of the building is surrounded by four diagonal supporting walls. The diagonal walls on the southern elevation have niches. The niches are reflected in the northern side with the exception that it is articulated as a service counter in this position. These elements in their current form serve no purpose whatsoever. As a result, the structure is placed.



Illustration 5.7 Pilasters

6. Windows:

There is a significant resemblance to the Edwardian style in the execution of the timber window frames design. Righini (2000:154) remarks that Edwardian windows are based on the revival of the medieval Tudor style. The Tudor style had been known for the elaborate use of timber in doors and window frames. The Edwardian style shares this notion, and in contrast to 'hiding' timber building elements in masonry work (as a safety precaution after the London Fire in 1666) visible in the Georgian style, timber is an aesthetic feature in the Edwardian style (*ibid.*).

Some windows on the western facade have hoarding panels, but its function seems to be merely aesthetic.

Ching (1996:158) notes that the placement of openings on a vertical plane, depending on their size, number and location, begins to weaken the enclosure of space, thereby affecting spatial orientation and flow.

7. Stairs:

In contrast to the Victorian viewpoint that the staircase is an elaborate element seen as an aesthetic component free from the built form, the Edwardian style views the staircase as an integrated building component (Righini2000: 158). Vertical circulation in the building is only possible in the centrally placed staircase. Alternative vertical circulation should be considered if the building is to be used as a public space. The design of the staircase is a concrete structure with a linoleum finish and steel handrail detail.

8. Ceiling:

As in the case of the base plane, the ceiling can be manipulated to articulate zones in a room (Ching, 1996:118). The ground floor has no ceiling and the overhead concrete soffit is located at 3900mm above fixed floor level and painted white. The first floor has a 12.5mm gypsum board ceiling with a flush plaster finish and is painted white (ceiling height 3500mm).

9. Doors:

Doors are based on Edwardian principles. The generous use of timber sections, as well as the size of these openings make for an elaborate architectural component (Righini, 2000:157). All office doors have a panes fan light introducing natural light into these spaces, while also allowing ventilation.

Doors along the east-west axis are placed adjacent to the foyer and within an arched opening. The double doors leading into the passages have small glass panes and allow for the user to get a glimpse of the interior of the building. The doors, although elaborate, do not compete visually with the built structure and can even be described as light, allowing visual access even when closed.

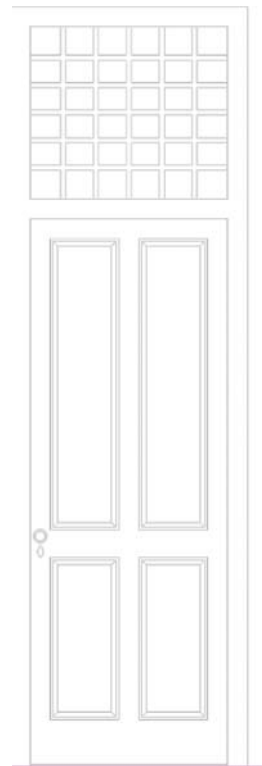


Illustration 5.8 Typical Door



Illustration 5.9 The Floor

linoleum and carpet finish in different spaces. The connecting point between the base plane and the vertical plane is accentuated with an elaborate timber floor skirting.

11. Tower:

The tower is a distinct sculptural element that has over time become a symbol synonymous with the Tshwane District Hospital. As metaphysical notion, the tower has a deeper connection to the place: the dagger with the two snakes curled around it. The dagger with wings signifies the

10. Floor:

The base plane or floor in is a planar element in the building that has no intermediate level changes. Flooring then consists of flat floor planes that are vertically spaced and accessed by a staircase. The edge definition of the floor plane is well defined, signifying a distinct field (Ching, 1996:100).

Floor material consists of a concrete floor slab (250mm deep) with different finishes; stone,



intervention of The Greek messenger to the Gods, Mercurius, in order to stop two serpents fighting. It was said that his intervention in this matter resulted in the snakes curling peacefully around his dagger and staying there for eternity. Through this symbol, the hospital accepts its responsibility to intervene and aid towards a positive outcome (Snyman, 1977:1).

5.5 Building Systems Analysis

5.5.1 Acoustics:

This building is located in a relatively quiet street. The challenge, however, is that the hospital staff and students make their way home either around the Administrative Building or through it. As a result, it may be a disturbance to the users of the building, should they be exposed to this noise pollution. The noise imposing on the building use can be divided into two categories: firstly, there is sound conveyed through the building structure and, secondly, there is sound carried through the air. Hausladen and Tichelmann (2010:39) term these principles "air borne and structure borne sound".

Air borne sound can be delivered where different users meet. These sounds may be conducted through ventilation ducting, flanking paths and cable ducting. In the case of the Administration Building, the constant flux of people through the foyer contributes greatly to air borne sound. The building is also one with a remarkably high mass and has no structural acoustic insulation at the present time. At present there is a multitude of hard surfaces in the interior spaces of the building, resulting in poor acoustic reverberation times, with the exception of the first floor offices, which are covered in an industrial carpet.

5.5.2 Climate:

This building has a high level of heat gain from the northern facade in summer. This is largely due to the fact that there are very few shading devices provided on the northern facade, resulting in an uncomfortable working environment. The solution to this challenge was to add air conditioning in order to cool the structure in summer. This building, however, has the potential to have effective cross ventilation due to the offset placement of openings, as well as the provision of openings in the internal structure to aid the flow of air. The building also has an electric boiler that heats the structure during the winter months.

The building has been fitted with a boiler radiator heating system. The boiler is currently located in the basement.

5.5.3 Light:

a. Natural Light

The Edwardian design principles evident in the architectural form of the Administration Building, dictate a constant rhythm, regarding the placing of openings. With this specific building being part of the classical revival phenomenon in the Edwardian movement, the elaborate size of window openings, as well as the frequency of its placement on the facade, becomes a distinctive trademark of the time. The result of this approach to openings allows for the interior to be washed with an abundance of warm natural light, despite the cellular interior layout. It appears that care has been taken by the architect to allow the most light into the building from the southern facade (which is also the front elevation). This notion allows a high quality of light (with effective intensity and colour rendering) to penetrate the facade without the accompanying heat gain. Openings on the western facade have been executed differently with the provision of timber louvers in front of these openings. These elements, however, were later found to be reduced to mere aesthetic elements, the addition to steel verandas on top of each window in order to reduce late afternoon glare and heat gain, made the louvers redundant.

The envisioned project should therefore engage with the existing natural lighting strategies. This poses a challenge as the control of natural illumination in the interior environment is of the utmost importance in the visual communication of elements on display. Firstly, it should be possible to control the natural lighting levels in specific spaces inside the structure; secondly, it should be possible to isolate specific lighting levels to specific spaces (in order to eliminate the 'bleeding' of unwanted light into adjacent spaces). Finally, it should be possible to provide a mechanism for the control of natural illumination without disturbing the style or the future historical value of the architecture it engages with. As mentioned previously, the fenestration of the existing Administration Building is a valuable architectural component and should arguably be retained.

b. Artificial Light

The incremental changes in the use of the building and its spaces justified

the retrofitting of artificial lighting over the years. The initial intention was to accentuate the luminaire as object with specific focus on its materiality, positioning and size. The lighting seems to have been treated as a mere result of this elaborate luminaire, and the quality of illumination provided can at best be described as low intensity ambient light. The initial positioning of task lighting was limited to one lamp per room. The quantity of lamps, combined by their placement in the ceiling or soffit above, must have allowed for a stark atmosphere with arguably uncomfortable shadow interfering with a simple task, like working at a desk at night.

As a result, fluorescent tube lighting was added to the existing offices over time. The materiality of the existing structure, combined with the warmth of the natural illumination by day, is contrasted by the introduction of cold white fluorescent lighting to be used at night. Also, the allocation of a new use for the Administration Building justifies the introduction of new specialised lighting types and luminaires, as the lighting requirements of a typical display gallery is vastly different from that of a typical office space.

5.5.4 Circulation:

The main circulatory axis passes through the foyer of the building and links with the main building of the Tshwane District Hospital. The secondary east-west axis that protrudes from the foyer introduces the user to the offices located on the southern side of the building. The current function of the building introduces storage on the ground floor of the eastern and western wings of the building. Users therefore have to move through the entire building in order to collect files. The first floor of the building houses the CEO of the hospital as well as his immediate administrative staff. Currently this staircase is the only element that allows for vertical circulation. This implies that individuals with compromised mobility will have difficulty to reach the upper floor, as no elevators have been provided in the current structure. Ching (1996) argues that access to alternative spaces in a building can be obtained not only physically, but also visually. Even though little physical access is possible to the first floor, no visual access is allowed to the first floor at present.

5.5.5 Colour

The use of colour in the Administrative Building seems not to exist. The figure below indicates a selection of the existing colour pallet. It is clear that most

of the colour perceived originates from the existing materiality of elements in the interior. There are wooden doors and window frames, the building exterior and interior are painted beige and a blue linoleum floor has subsequently been added. As already mentioned, the use of this building has ranged from residential to administrative. A human anatomy centre will require a well-considered colour expression. Ching (1996:86) states that texture and colour together affect the visual weight and scale of a plane and the degree to which it absorbs or reflect sound. Colour should allow the user to orientate himself and at the same time enable the curator to draw the visitor's attention to specific elements on display. The proposed colour strategy will be explained in point.

5.5.6 Materiality

The relationship between place and architecture has thus far been established by contextualising the Tshwane District Hospital within its setting. The relationship between architecture and place has only been explored on mostly an intangible level. Righini (2000:21) notes that architecture was, and in certain places still is, place bound. He extends his argument by investigating the writings of Geddes, famous environmentalist and regional planner, with specific reference to the valley section. In this theory it is argued that a section through any valley on earth implies crossing several different climate zones when moving from the top to the higher to lower side of this valley. Geddes (*ibid.*) argues that this climatic differentiation implies different architectural requirements for each zone. Each zone has different plant species and a varied geological composition. His findings highlight that the most typical valley section has more or less the same type of architecture in the same places along the slope of the section, and therefore concludes that the architectural setting of architecture can affect the material selection and aesthetic appearance.

The material palette of the Tshwane District Hospital is limited in its composition. It may be argued that the initial building was contracted between two wars, having a severe implication on the money available for the construction. It may also be argued that material is used in a rather conservative application. Ashby & Johnson (2006:78) indicate that what may possibly be perceived as conservative material application, may indeed be an honest approach to the application of material to architecture. This is evident when a material is applied to depict its strengths i.e. steel represents strength, polished wood represents craftsmanship and granite an idea of

performance etc. (*ibid.*:81).

Informed by the arts and crafts movement, the 'honesty' of materials in their application is evident in the Tshwane District Hospital. Expression is obtained through material form, and not always material type. Snyman (1977:28) argues that the architect allowed as far as possible to reflect the local environment in the interior of the Pretoria Algemene Hospitaal. This was evident at the time in the selection of local timber species and suppliers of building materials. Selected building elements were obtained from other countries.



6

PRECEDENT STUDIES

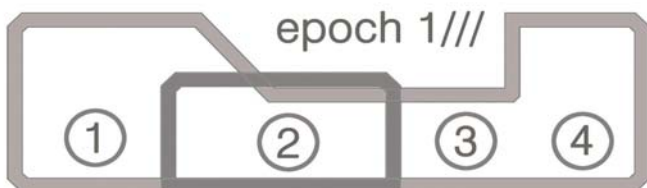


6.1 Origins Centre – University of the Witwatersrand

Architect: Mashibane Rose Architects

Date of completion: 2009

Relevance of the project to the study: The legibility of the narrative. The clarity of communication of information, as well as the subsequent linking devices, is analysed in an intuitive manner in the following section. The aim is to communicate the experience as a user, connecting the spatial experience to the architectural expression where applicable.



Entrance Space – Welcome home!

Allows user to orientate him as to the direction the display will take off into. This space also serves as a pause between the initial interaction with the ticket salesman and the exposure to initial information. It might therefore be suggested that this space is intended to allow the user to orientate himself within his immediate surroundings. In contrast to the notion of placing an item in the foyer that usually is supposed to attract the user's attention, the architects here in this instance opted to merely suggest an object in space. The interpretation of this structure is left

Initial display – Proof of the existence of our forefathers

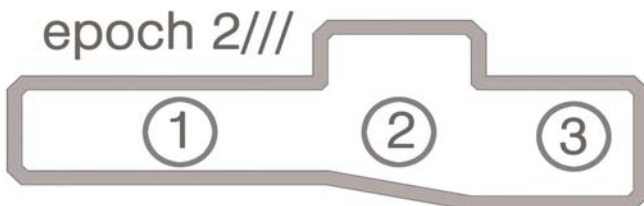
The first display confronts the user with archaeological evidence that our forefathers existed in Africa. This is reflected by a series of stone age tools mounted in a recessed glass display case. The overhead plane reduces in height in this space. There is a feeling of intimacy and this focuses the user on the subject material on display. The lighting level is reduced in this space.

How did our forefathers look and live?

The next segment of the display let the user divert back to the initial axis confronted with upon entry. It is in this space that the user questions how these forefathers looked and how they lived. Elements allowing the user to explore these elements are static displays, multimedia displays and

Clarity- A simplified attempt to answer this question is directed at the user

The user is now guided to a multimedia room. The room is completely dark and the user may feel disorientated. The visual material however aims to act as a means by which the user can get direction (in terms of the subject matter and in terms of displays to follow). Upon entering this room the user viewed a clock that indicates the time left until the next multi-media show is showed. After attending this room the user have the choice to select the next segment to the display he wants to attend. Signage indicates these options: Proceed above



The San people

This segment introduces the user to the San people, their lifestyle and the rich cultural heritage they have left mankind with. Illumination levels are increased in this section and the user is surrounded by a double seeded display. A San grave is indicated in the middle of the walkway – this exposes the user to the methods used to excavate typical displays. lower interior lighting levels.

Hunting as ritual

A series of freestanding elements in combination with recessed rear illuminated displays are utilized to portray the hunting process. The hunting display illuminates in an audio visual display of a typical San hunting expedition.

Hunting ritual as spiritual experience

The user is now taken on a journey, into the spiritual world. Firstly the emphasis is placed on the process of crossing from reality to the spiritual world, followed by the exploration of the spiritual world as source of expression and inspiration that seems to be informing reality as one should progress. The spirit world as depicted suggests a elements commonly found in rock art. The segment of the display makes use of coloured lighting and forest sounds in an attempt to seemingly place the



Fragile art

The user is now introduced to rock art. The space into which the user is guided to view this rock art, is the largest of the display halls. This particular space is a triple volume space, with high ambient lighting levels. The acoustic performance of the space is improved by the introduction of acoustic panels placed at strategic location in order to reduce reverberation time. lower interior lighting levels.

The artist

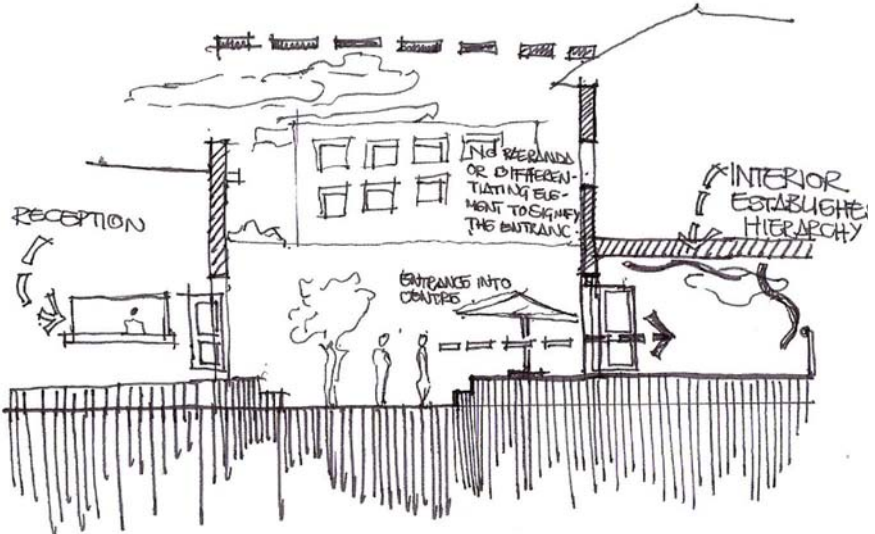
This section draws the users attention to the floor plane on which rudimentary etchings have been created in the wet concrete and left to dry. An illuminate phrase: "Who made this art" is projected on the floor. The user can now speculate who the author of each image was. The parallel to the interpretation of San rock art becomes evident to the user.

Elements depicted by art

The initiation process – the initiation process is often depicted by primitive art, as a result modern man is able to speculate as to the significance of rituals and customs involved in this process. Struggle- Several struggle events are depicted by rock art. Art therefore become a means that depicts protest.

Where to from here

The user now proceeds up the staircase into the store upon which the journey is completed. The user is flanked on both side by artwork and information questioning where society is headed. The journey progresses toward a brighter illuminated installation. The implication can be compared to climbing out if the ground and into the light.



6.2 Main Building – University of the Free State Campus

Architect: Bannie Brits Architect and Urban Designer

Date of completion: 2007

Relevance of the project to the study: Successful local historical intervention, altering build fabric and introducing new work in order to spatially manipulate the programme, circulation and function. The level of detailed intervention in this instance contributes to the cultural significance of the place.

6.2.1 Alteration to the Building Structure

The initial brief required Brits to alter the old Main Building in order to house the so called “gold collar” employees of The University of the Free State. Brits (2011) remarks that he followed the basic principle of ‘wellness’ as design generator. He therefore proceeded to investigate elements that would affect the physical, the intellectual and the spiritual needs of the user. Addressing the stigma of superiority by making the administrative building accessible to all, Brits facilitated renewed relevance between architecture and the user. Scott (2005:153) acknowledges this notion in stating:

The object of alteration is to translate a building into the present and in doing so, making it suit modern day life.

This accessibility into the building, though not always physical, is frequently present as visual accessibility. Brits’ design requires the manipulation of and often the penetration through the base plane in the walking zones along the east-west axis.

The tectonic nature of the intervention challenges the user to understand the working of the building. At first it may appear that the intervention seems to have been too elaborate in its expression; Scott (2005:127) reassures that the potency of ruination is spatial, but subsequently remarks (2005:75) that at the same time a certain ‘savagery’ is required in the alteration of existing fabric.

The resulting legibility enables the user to distinguish between new work and existing architecture. An oculus placed centrally in the dome on the ground floor foyer, allows a layered vista, showcasing the intervention to the observer. It is evident that the contrast between new and old still provides a cohesive aesthetic outcome.

Provision for natural light to penetrate the building is evident in position, size



Illustration 6.2 Intervention detail in the University of the Free State Campus Mail Building

and orientation of external window openings, most of which are fronting south. Brits (2011) admits that it was of utmost importance to allow natural light to penetrate the building in the new intervention. He (ibid.) also utilises effect lighting extensively in order to accentuate building components, such as with the up and down lighting positioned in the corridor in an attempt to showcase the structural expression of the transverse arches.

The old building had two symmetrically placed staircases on its most east and west sides. The user therefore had to move through the entire width of the building if vertical circulation was required (ibid.). This challenge was addressed by installing additional vertical circulation in the form of a quick access staircase and an elevator.

6.2.2 Exposing the Existing

Brits exposes the internal roof structure to the user. The crude nature of the building materials on display is contrasted by the finesse applied in order to expose construction materials as architectural elements.

In order to retain the user's visual interest, the architect initiated strategically placed partial demolitions in the soffit. These openings connect the first and ground floor and as a result allow the interior space to alter in volumetric composition.

6.2.3 Introduction of a New Hierarchy

In the previous layout of the building the rector's office was placed in east wing of the building. Brits challenged this placement in his new proposal by relocating the rector's office to a centrally accessible placement. This new placement happens in close proximity to the foyer and if viewed in plan, it seems as if the architect recognises the foyer as the 'heart' of the building, with secondary administrative functions extending from this central core. Ching (1996:339) notes that the placement of central core spaces in a building results from hierarchy being introduced to the building. In this instance, such hierarchy is established by the placement and the size of the foyer in relation to its surroundings (ibid.). Brits refers to this arrangement as that of a working club – a configuration where individuals are treated equally in the context they are employed.

6.2.4 Lighting

Provision for natural light to penetrate the building is evident in position, size and orientation of external window openings (most of which are fronting south). Brits (2011) admits that it was of utmost importance to allow natural light to penetrate the building in the new intervention.

The cellular nature of the old building has been re-evaluated and this informed the removal of internal walls that block off natural illumination. In order to introduce as much natural light to the building as possible, partitioning has been kept to a minimum. In instances where interior partitioning had to be introduced, light is allowed to pass through by the introduction of glass as material choice. The result is an open space along the east-west axis that is well illuminated, despite the fact that it is located deep inside the building. Given the demand on higher illumination levels, the architect introduced additional lighting above work stations. Brits (ibid.) also utilises effect lighting extensively in order to accentuate building components, such as with the up and down lighting positioned in the corridor in an attempt to showcase the structural expression of the transverse arches.

6.3 //hapo:

Architect: Mashibane Rose Architects

Date of completion: 2012

Relevance of the project to the study: This project is a contemporary South African Museum. Construction has been completed upon the visit to the site. This precedent will investigate the articulation of services and the manipulation of natural illumination.

6.3.1 The Articulation of Services

Recessed floor power sockets provide electricity to freestanding display elements. These floor plugs become a sculptural element, because of both their seemingly ad-hoc arrangement and stainless steel cover plates. An open ceiling, exposing overhead services, introduces the user to the workings of the building. The result is a sculptural manipulation of both the base and overhead plane. Hausladen & Tichelmann (2010:191) state that the

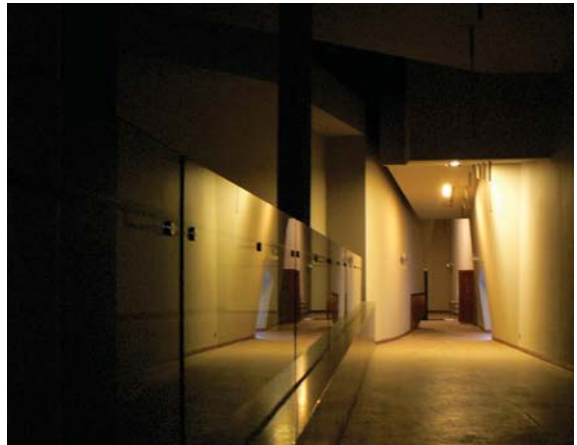


Illustration 6.3 Tectonic expression of the //hapo exhibition space

placement of electrical services in the floor screed is flexible in the installation as cabling requires no trucking, thus adding to the ease of installation. The challenge, however, is to predetermine the position of junction boxes and floor plug sockets accurately before installation, as irregularities may affect the placement of furnishings in relation to these fittings. Wall sockets are placed at an approximate height of 450mm above fixed floor level. The power supply to these sockets has been recessed into the boarded wall, covered in a floated plaster render and painted. When not exposed, overhead services are hidden behind ceiling board or partially exposed, as in the instance of the restaurant where services are exposed through perforated steel metal sheeting. The effect is enhanced by the introduction of coloured lighting strategically placed in the ceiling void.

6.3.2 The Manipulation of Natural Illumination

Form is utilised as the facilitator between natural light and artificial light. The separation of the interior and exterior structure makes it possible to create depth. It is this depth that determines the intensity of natural illumination in the interior environment. It may be argued that natural lighting is purposefully projected into the building by intentional manipulation of interior tectonics. This notion accentuates the stark forms evident in the design.

6.4 Zurich Art Gallery:

Architect: SAM Architekten

Date of completion: 2005

Relevance of the project to the study: Introduction of HVAC system into a historically sensitive building.

6.4.1 Ventilation

Cool fresh air enters through vents placed in the roof structure. The cool air is then transferred to the individual rooms and enters the interior spaces at the bottom through vents placed in the walls. Heat cumulated in the room flows upward and exits the building at the top through vents located in the roof structure. The building therefore functions like a chimney and transfers warm air out of the building (Hausladen & Tichelman 2010:214).

All vents that allow for the circulation of fresh air both in and out of the building are controlled by a building management system. This assures that the interior temperature is always optimal. The additional cooling of the structure by the HVAC system is therefore kept to a minimum. Heat gain has also been reduced by introducing horizontal shutters to south-facing windows (it should be remembered that this building is located in the northern hemisphere, heat gain is therefore experienced on the southern facade). The shutters are also controlled by the building management system. In this instance, the architects have used the existing building and by minor alteration allowed the building to function efficiently (ibid.).

6.5 Mapongubwe Museum – University of Pretoria Campus, Pretoria

Architect: Balthi du Plessis

Date of completion: 2002

Relevance of the project to the study: This project serves as an example to identify possible shortcomings of exhibition centres. The museum's link to the University of Pretoria and its placement within a historically significant building makes the Mapungubwe museum relevant to the proposed study.

The Mapungubwe Museum on the campus of the University of Pretoria forms part of its museum collection. It offers artefacts on display mostly from the Iron Age. Amongst others, the well-known Golden Rhinoceros (synonymous with Mapungubwe) is housed.

According to Sian Tiley-Nel, curator of the museum, the collection was accumulated as a result of excavations by the university at the site from 1933 until today and it is still expanding. The Mapungubwe display has to accommodate an ever increasing amount of artefacts, as the excavation continues. The University is the legal custodian of the collection and must therefore apply the expert knowledge to conserve its current content and possibly convey its intention to the user.

6.5.1 The context

Located on the top floor of the Old Arts Building, the exhibition is housed in a rectangular room with boxed out joinery carcasses cladding all the walls from floor to ceiling. The participant will be aware of 5mm grooves between joinery carcasses, clearly insinuating a modular rhythm. There are two types of visual communication to the user in accordance to this rhythm.

The first is a physical display of artefacts on clear perspex shelves. Each display niche is viewed through glass and internally illuminated from the top. The second display method is that of rear illuminated signage housed in an

aluminium 'snapper frame'. Three central pediments are placed in the space.

These are approximately 1300mm in height with a small glass display case on top. The Golden Rhinoceros is located in one of these small glass boxes. The floor finish is a tan-coloured industrial carpet, and the ceiling is an innovative system of wooden laths weaved together like a carpet and fitted into a standard 600x400mm ceiling t-grid.

6.5.2 Critique

The narrative of the exhibition proves to be illegible from the exterior of the Old Arts Building. This uncertainty continues throughout the building into the exhibition itself. Visiting an exhibition should be an event, but in contrast, this display feels isolated, as if held captive by the architecture it resides in. In one of the interviews with the curator, it was hinted that for all practical reasons it is impossible to alter the built fabric of the Old Arts Building because of its historical value. One must then ask the question: Is the Old Arts Building the appropriate structure to house a contemporary exhibition that requires dynamic expression?

The exhibition seems distant. Display niches are too deep and this dwarfs displays at times. Similarly, the display shelves, hooks and pediments, although made from clear perspex, create a visual cocktail that seems uncontrolled. The participant now has to engage with each artefact individually if he wants to understand its context.

There seems to be no hierarchy between elements on display. The famous Golden Rhinoceros and the ceramic beads next to it carry the same visual impact. Poor illumination levels, as well as a cold light temperature, render displayed artefacts as stark and dull. A mixture of low voltage halogen lamps and cold white LED replacement lamps are used for the internal illumination of the exhibition.

The central displays are externally illuminated by means of a linear track lighting system with good colour rendering, but excessively wide beam

angles. Ambient lighting levels therefore remain low.

Most of the rear illuminated information panels are badly faded, making them illegible. Communication of alternative information is communicated by small black lettering on a clear background. The opportunity is therefore lost as a result of insufficient communication, poor illumination and poor presentation of subject material.

A multimedia display on the eastern wall showcases British documentaries on Africa, which have little immediate relevance to the display, or the imposed heritage.

Interior design is the primary interface between the user and architecture. It demands control and clarity in both planning and the execution toward the end product. There is, however, no visual material or documentation available from either the University of Pretoria or the designer, apart from rudimentary and unresolved line drawings of the space. The result speaks for itself; with the intervention seemingly turning its back on the architectural envelope that houses it.

According to the curator, there are plans to expand the current exhibition into an adjacent display hall presently being repaired. One can only hope that this mythical expansion will be representative of the world heritage site it presently fails to communicate.



7

DESIGN DEVELOPMENT

7.1 User Requirements

Table 7.1 Assessment of user requirements

Space allocation	Design requirements	Technical requirements
Display galleries	Architecture should indicate the narrative of the proposed program to the user. The display galleries should allow for spaces to ponder and interpret the intervention.	Lighting, much of which is intended to be obtained by means of controlled natural illumination should be integrated into the design. Displays should be integrates in such a way that human ergonomics is used as point of reference for the execution of the design
Entrance	The entrance should be clearly articulated and the hierarchy of the existing structure must be respected in this regard.	Clear signage, access for the lesser abled, Entrance to the building should provide separate service entries, providing separate access for students and medical professionals
Storage	Storage should be kept separate from the workings of the existing display,	product storage should be provided, Cold storage, as per the requirements by law
Preparation facilities	Separate access with the opportunity to observe the anatomical dissection by students or health professionals	Facilites to be provided to produce wet samples as well as plastinated samples
Multi media space	A space with the ability to accommodate a range of visitors, from tour groups to individuals	opportunities for projection, seating, dimmable lighting, connection to the flow of the gallery

It has been established that the Human Anatomy Centre will house samples with both educational value that can be accessible to the public as informative material, but the centre will also house the functional characteristics required to fulfil a medical orientated function. The focus of the latter pertains to the academic realm and is therefore focussed toward medical professionals. The intention of distinguishing between the two is to protect the non-academic user from unwanted exposure to sensitive material, and similarly this notion would provide the academic user with realistic medical samples (i.e. not manipulated to be suitable for sensitive viewers). In order to accommodate both an academic and non-academic programmes together with varying levels of interaction, the entrances into the building has been separated in order to signify an academic and non-academic route. The academic entrance is located on the East facade of the building in close proximity to the proposed staff parking lot. This new entrance allows for rapid progress toward the anatomical facilities in the building. The non-academic user enters the building from the South via the existing main entrance. The route takes the user past the security desk onto a ticket sales point. Each user receives a bar code that will be recognised by the information station. On this barcode the visitor's age is recognised. Access is obtained by scanning the barcode when moving between different information zones. A juvenile visitor could therefore not have access to restricted areas only accessible to users over the age of sixteen. In such an instances access would be denied and the user has to progress to the next appropriate venue. It is also proposed that the adult user be able to select varying degrees of exposure to sensitive material. This selection will be accommodated when the bar code is purchased. Three routes with different levels of sensitivity will be proposed and the user has the option to select one that meets its own requirements.

Access will be granted to the academic visitor in the form of a conventional access pass. The academic user will have access to all the specimens on display. This includes the specimens on display in both the academic and non-academic areas.

The intention with the distinction between different users and their access points and routes is not intended to create an exclusive distinction between different users. The proposed outcome is to accommodate vastly different uses within one setting. Table 7.1 indicates the user requirements associated with different functional venues in the building. These findings and requirements acted as design generators for the development of a design concept.

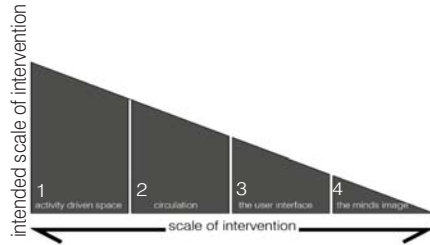
7.2 Manifestation of Theory into Design

1. Activity driven space

The aim is to rejuvenate the social image of the hospital by involving the visitor for the duration of the visit to The Human Anatomy Centre. Allowing for activity driven space will provoke interest in The Human Anatomy Centre. The measuring device that determines the vital statistics of each user and the subsequent comparison of this acquired information to samples on display, involves the user in the process and provide the opportunity to develop an awareness of the human body. The notion of activity driven space is addressed in the interior realm, but not exclusively so, as the removal of the existing palisade fencing, combined with the introduction of outside green spaces juxtaposed to the entrance of The Human Anatomy Centre signifies activity on a visual level to the passerby. This notion symbolises activity, and is intended to renew public interest to the building.

3. The user interface

The design of the immediate interface between the user and architecture is explored on two levels: First the relationship of the object or information source is seen as an entity in space with immediate static properties. The user should therefore be able to move around such displays and create distance from the display if required. Secondly the design addresses the personal experience between the user and the object. The intention is to provide the user with the opportunity to access detailed information on the displays at hand. The use of technology in this instance provides the user with a vast array of different information sources, narrated in such a way that it becomes immediately applicable to the samples at hand. The location of display information together with its legibility and the access to relevant information, served as the key generator in the design



2. Circulation

As discussed in chapter 3 the manipulation of circulation routes has the potential to allow varying degrees of choice to the user. In the instance of the Human Anatomy Centre the reinterpretation of the existing movement sequences provide the user with the opportunity to engage with sensitive materials on a level he/she is comfortable with. The alteration of the interior of the building combined with the subsequent intervention alters the building's structure and the in order to accommodate a completely new programme.

4. Mind's image

Differing levels of exposure to sensitive subject material, insinuates a gradual introduction to more sensitive material over time or different visits in this instance. The aim is therefore to leave the user with something that will allow a possible return for later investigation. The design addresses these elements by constantly altering elements in the building on a regular basis. Certain venues within the building therefore become adaptable to remain current in the displays it houses. The direct comparison between the user and the sample on display provides the user with information on the human body. The dynamic nature of this information becomes evident when elements like advances in medicine, a change in an individual's physiology or a renewed awareness of the human body may leave the user a new set of questions. It is in these instances that The Human Anatomy Centre can provide the user with valuable information by being adaptable to new display material and the subsequent information associated with it.

Diagram 7.1 Development from theory to form – the setting out of design parameters

7.3 Conceptual Development

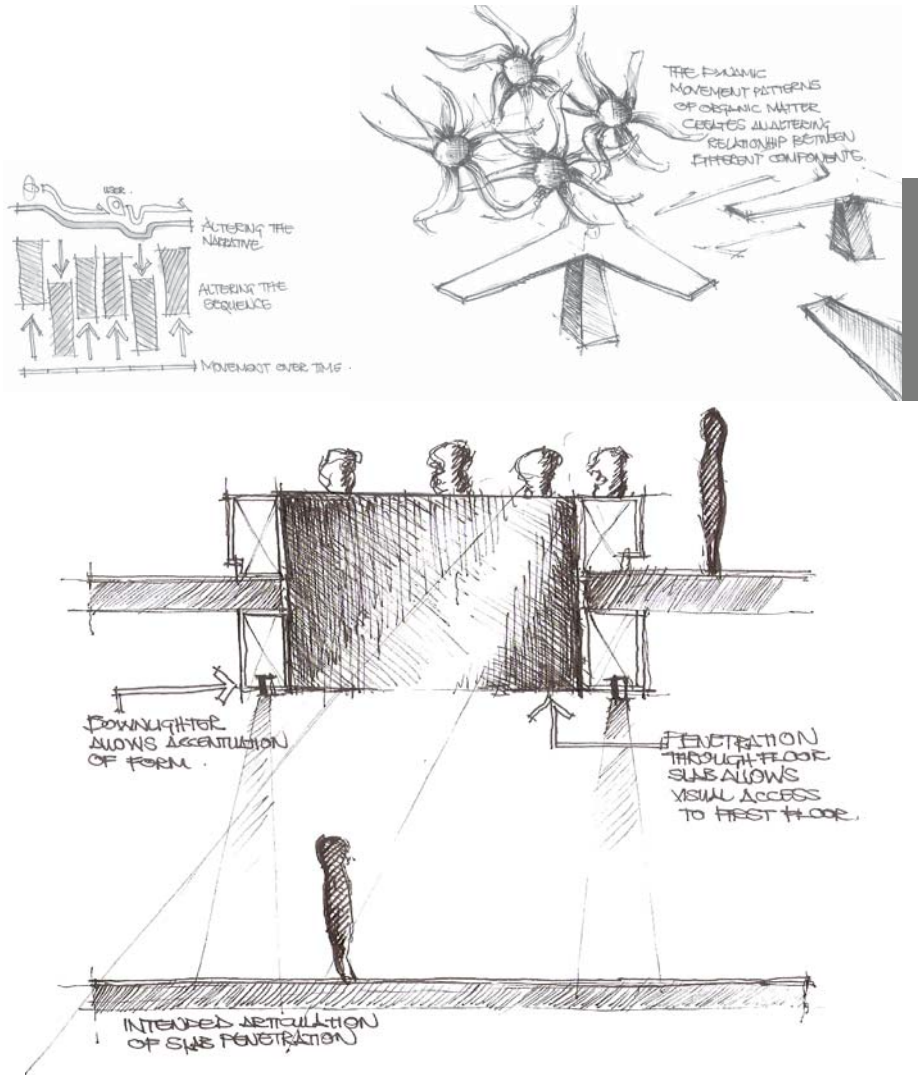


Illustration 7.1 Strategic design development engaging the user through activity driven space

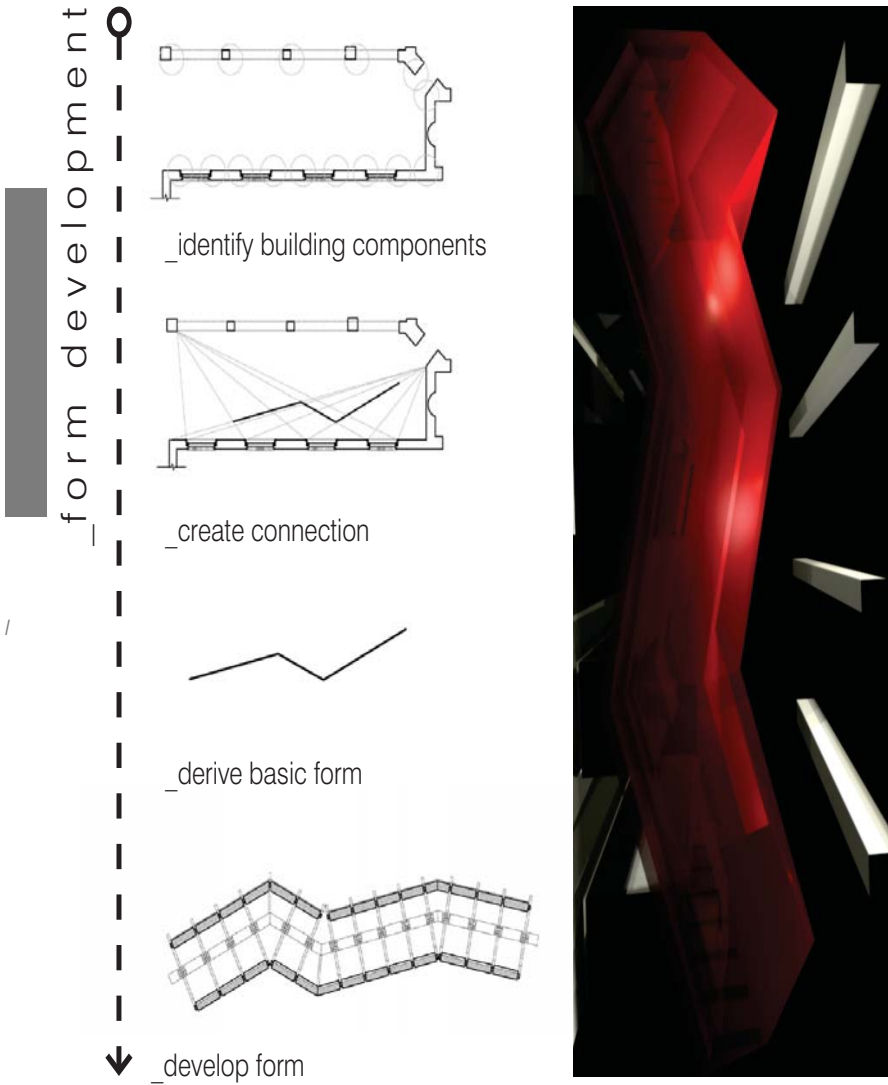


Diagram 7.2 The generation of form by establishing new relationships between building elements

7.3.1 Form

Prof. J.N.L. Durand, architect and theorist at the Ecole Polytechnique (1795-1830) alluded to the principle of decomposition of architectural form (Righini, 2000: 183). By visually placing typical classical building elements within a structural grid or along alternative axis, Durand (*ibid.*) concludes that it was possible to develop an array of varying compositions by the implementation of this approach.

Scott (2005:150) also suggests that inspiration for the envisioned intervention may be derived from the existing built fabric. His theory, however, suggests a more intuitive and creative approach than merely moving building elements along a grid. He (*ibid.*) argues that dissecting the architectural envelope to expose the value of its individual components activates the possibility to establish new relationships between individual components. The genesis of form in the design of the intervention is informed by a similar approach. This involves the reinterpretation of the existing classical grid in order to generate new form.

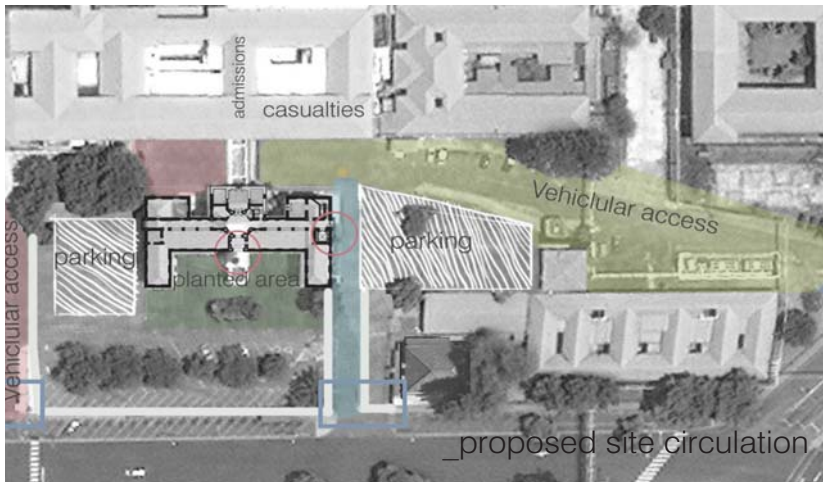
The relationship of the new form in relation to the existing has the ability to have a detrimental effect on the existing. Scott (2005:101) aims to grasp this dynamic relationship between architectural geometry and materiality to that of the ruin. His findings,aim to highlight four generic approaches.

Both materiality and form should contrast the existing architectural envelope in this study. The design is aimed toward questioning the predictability of the classical grid's relevance to the envisioned programme and intended function of the space. The aim of The Human Anatomy Centre is to provoke and discover. It seems inevitable that both form and materiality express this intention.

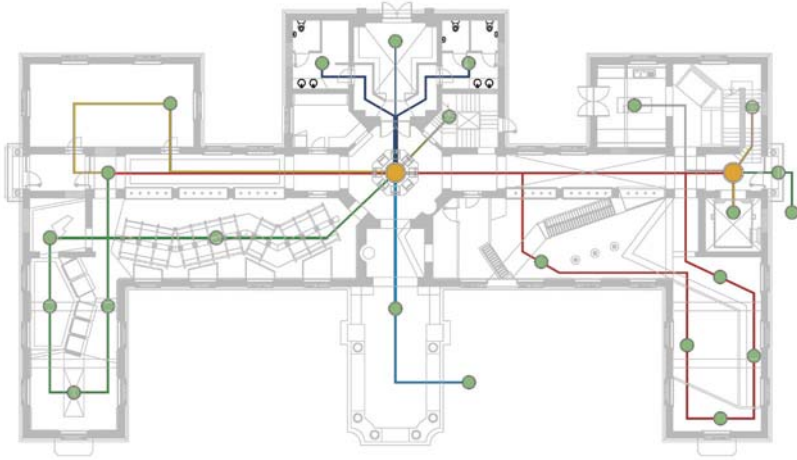
_ site development



_ current site circulation



7.3.2 Movement





<http://www.dezeen.com/2007/04/05/nelson-atkins-museum-of-art-by-steven-holl/>

sympathetic towards existing in form and material



<http://www.dezeen.com/2007/04/05/nelson-atkins-museum-of-art-by-steven-holl/>

sympathetic towards existing only in form



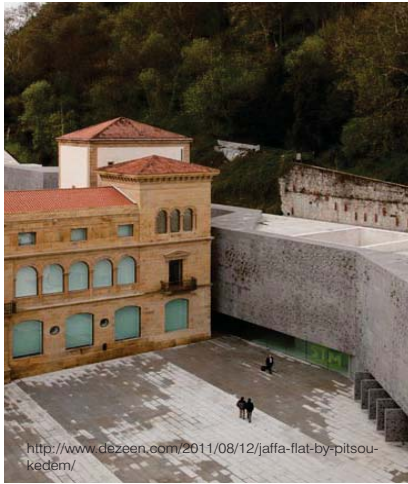
sympathetic towards existing in neither form or material



sympathetic towards existing only in material



<http://www.dezeen.com/2007/07/23/akron-art-museum-by-comp-bimmelblau/>



<http://www.dezeen.com/2011/08/12/jaffa-flat-by-pitsou-kedem/>

Illustrations 7.2 The relationship between the new and the existing architectural fabric with specific emphasis on geometric form and materiality

7.3.3 Colour

7.3.3.1 Basic colour theory

The colours perceived by our eyes are a reflection of a selected spectrum of visible light. This implies that red, for example, reflects only the red spectra in light while it absorbs all other colours. In order to develop and create new colours, there are three models used, depending on the application at hand. These models are:

RGB – Mainly used for light creation

CMYK – A model mainly used in the printing industry

Hexadecimal – For computer and web design applications

Designers should be aware of the significance and applications of each of these models. One of the reasons is that the colour perceived physically is RGB colour, but when this colour is formulated on the computer screen, it is perceived in hexadecimal colour up to the point where this work is printed, which point the colour is converted to the CMYK colour model. As a result, it can be argued that an understanding of each of these systems will allow the designer to ensure that the envisioned colour at the beginning of the printing process is the colour reflected when the design is concluded on paper.

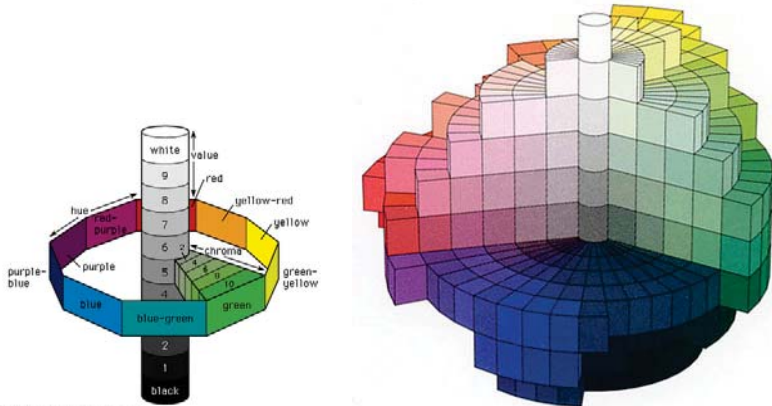
RGB

Red, green and blue makes up the components of the RGB model (Ormison & Robinson, 2007:20). If all three of the primary colours are added together, white light is formed. When red, green and blue are applied in varying quantities, colour is perceived. The principle of true colour should be explained, where values are allocated to each of the primary colours. These values range between 0 and 255. White would have a code of 255, 255, 255, whereas Cerulean Blue would have a code of 0 (Red), 123 (Green), 167 (Blue) (*ibid.*).

CMYK

Cyan, magenta, yellow and black (key) make up the primary colours in this colour model. If the above colours are added together, black is created. The colour value is communicated as a percentage of the primary colours present in the CMYK range. For instance, cyan would be 100 percent cyan whilst cinnamon would be indicated as follows - cyan: 16%; magenta: 60%; yellow: 82% and black: 51% (*ibid.*).

7.3.3.2 The colour wheel



©1994 Encyclopaedia Britannica, Inc.

Diagram 7.5 Colour wheel as presented by Munsell <http://www.uwgb.edu/heuerc/2D/MunsellSolid.jpg>. http://4.bp.blogspot.com/_vHdM2yoeMIM/SaggUQZoJ9I/AAAAAAAAAD-I/oFVLW3I5h6Q/s400/munsell-sphere.jpg.

7.3.3.3 Significance of colour in a human anatomy centre

The use of colour in human anatomy is applied mostly in order to allow the user to be able to differentiate between the systems of the human body. The route of oxygen rich blood is usually depicted as red, while the route of oxygen poor blood is depicted as blue.

7.3.3.4 Developing a colour palette

As point of departure, blue and red are seen as the primary colours in human anatomy. These colours are primary colours in the RGB colour model and can be found on different sides of the colour wheel. Blue and red, however, are not directly complementary of each other. In an attempt to reinterpret red and blue, the principles of the split complement in colour and the double split complement in colour (as indicated in *Illustration 7.6*) Through

these processes the a basic colour palette was derived. This palette only represents the hue of different complementary colours, and as a result the colour wheel is used to create a hierarchy of colour by allowing for different levels of saturation. Accent, background and intermediate colours can therefore be distinguished in order to fulfil an array of colour needs. All colours cannot be communicated at the same intensity, and an intuitive hierarchy

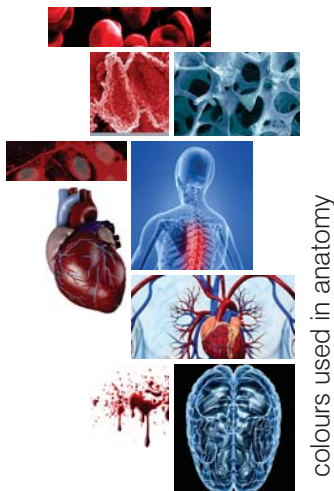


Diagram 7.6 Colour palette development

between colours in varying saturation levels addresses this challenge. The principle of utilising an accent colour to highlight specific visual information was derived from the field of human anatomy. Blue and red are therefore selected as the accent colours to fulfil this role. Background colours are chosen for their ability to reflect light and to develop an ambient mood. There should be distinguished between background colours and intermediate background colours:

Intermediate background colours are applied in this project in order to reduce the stark contrast between background and accent colours.

7.3.4 Light

7.3.4.1 Lighting and Mood

With the type of light source and the application determined, it is possible

to manipulate the mood in each space by altering the lighting direction and intensity used to illuminate each component.

7.3.5 Material

Formulating a new colour palette for the human anatomy gallery, the main consideration is to obtain materials that would not contest with the materials applied in the existing structure. The existing materials in the building will be evaluated and it will be determined which materials are more pertinent in the design than others .

The addition of new materials will be done to enhance the existing colour palette. The design approach in this instance involves expressing a specific material by accentuating the manipulation of joints, shaping and the manipulation of the material surface. Being synonymous with the Arts and Crafts movement, the Edwardian style emphasises the materiality of the interior environment. The design approach will extend this notion by respectfully reinterpreting this gesture.

The addition of any new materials to the existing materials palette will be rigorously analysed according to its technical attributes. The Human Anatomy Centre has varying material requirements, including basic fabricated joinery elements constructed from wooden board products. In contrast, the materiality requirements of the dissection theatres and display elements require a specialised material application in order to minimise damage to samples on display, but more importantly, to eliminate contamination. *Chapter 7* will therefore investigate the technical attributes of each new material selected.



Down lighting

The use of down lighting has the capacity to display stark shadows if hard light is used (Yot, 2010:23). The approach, therefore, is to always have some form of ambient diffused lighting used in collaboration with focussed down lighting in order to soften or eliminate the shadows that often occur as a result. Narrow beam angles are only used selectively in most down light applications. A wider beam angle is preferred in order to emit a softer perceived lighting quality.

Lighting from below

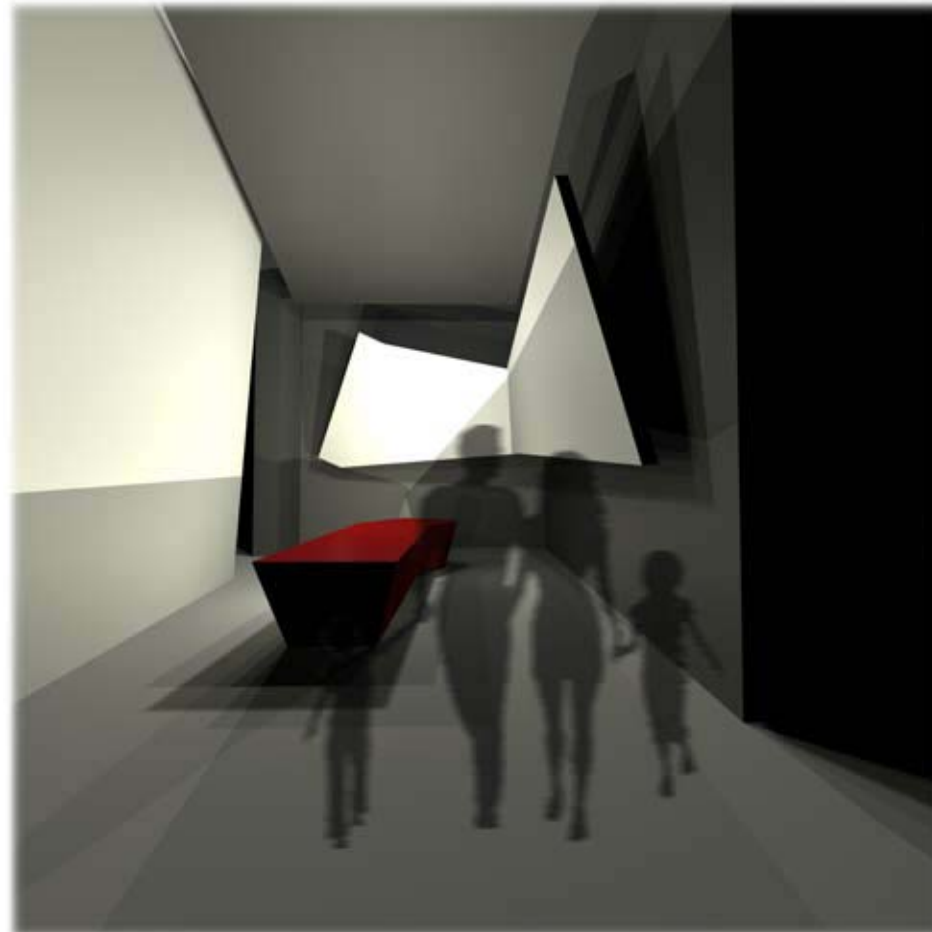
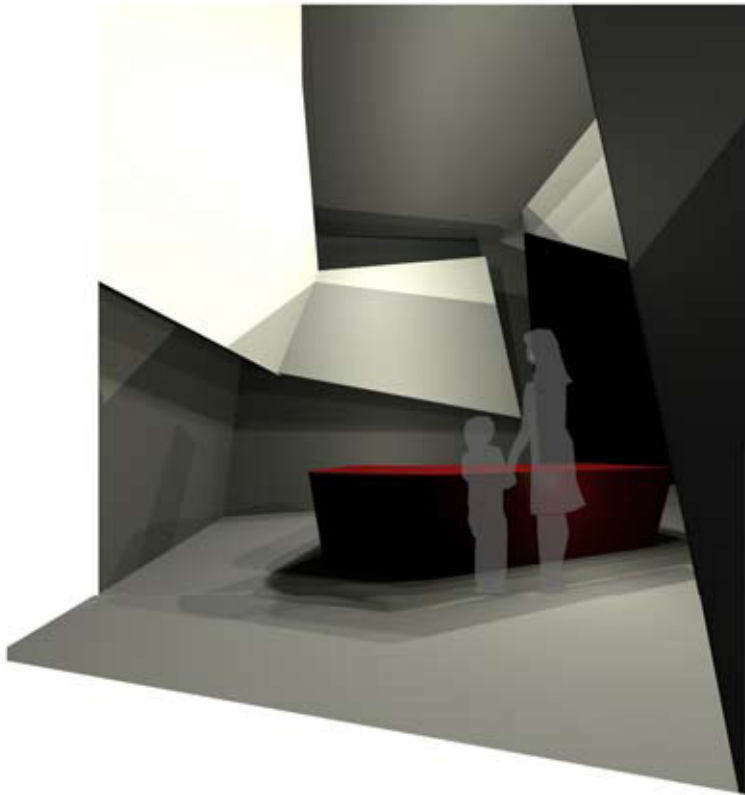
Lighting from below can be striking, so striking in the back that the application seldom truly justifies this application (Yot, 2010:24). When applied correctly, lighting from below has the ability to create a dramatic mood or atmosphere that is in contrast to the regular perception of how natural illumination would typically appear (*ibid*). It is for this reason that a series of up-lighter is specified to illuminate the arched structure of the east-west axis in the Human Anatomy Gallery building. This notion is also relevant in the light table display that allows the elements on display to seem esoteric in appearance.

Back lighting

Lighting from behind has the ability to accentuate the object displayed in front of it, as a silhouette. With specific emphasis on the texture present in the outline of a silhouette (*ibid.*), this approach is visible in the design the lighting diffuser placed within the window opening on order to accentuate to silhouette of elements displayed in front (see *Illustration 7.5*).

Illustration 7.3 Creating mood through light

7.4 Final Intervention Proposal

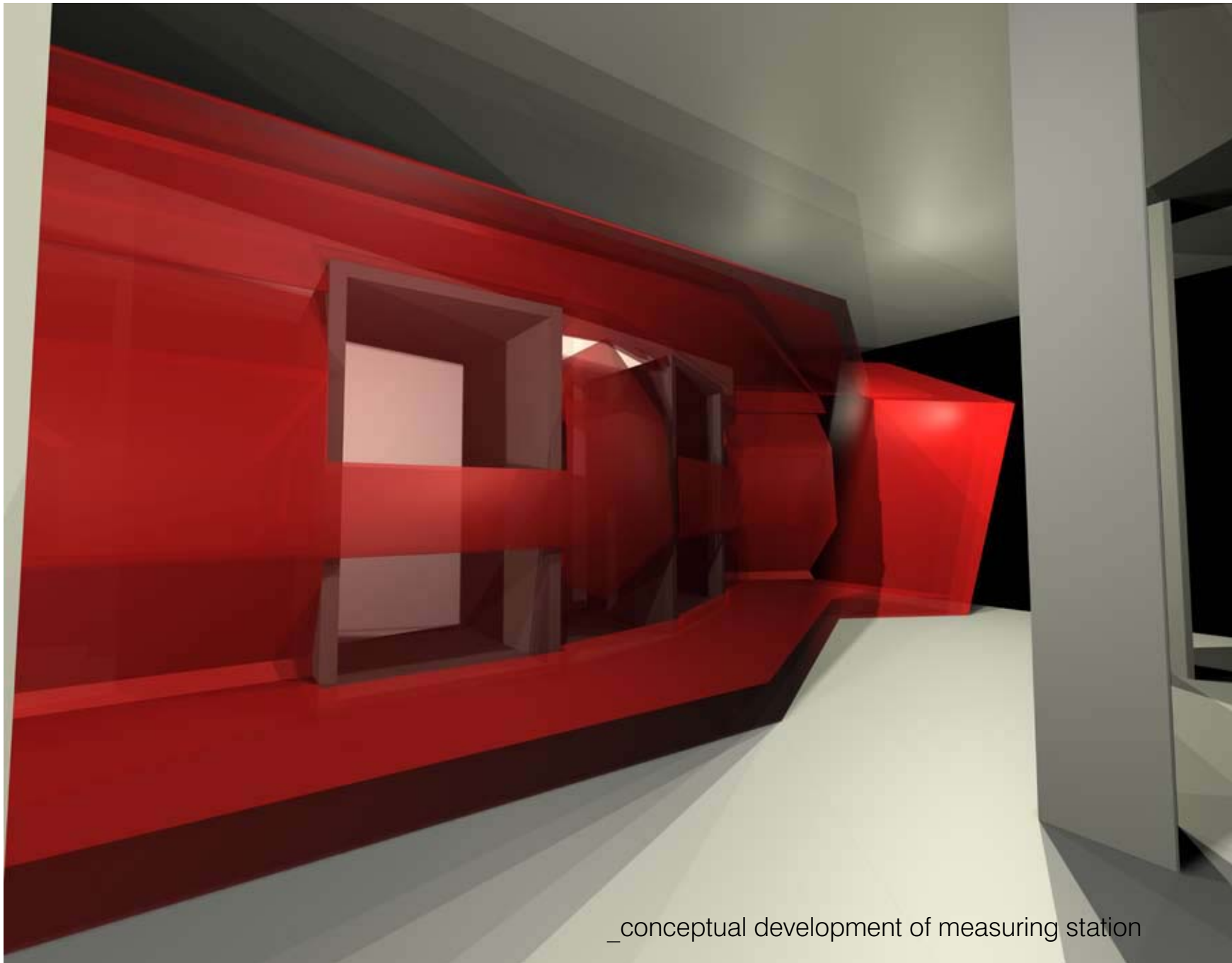


_typical multi media room

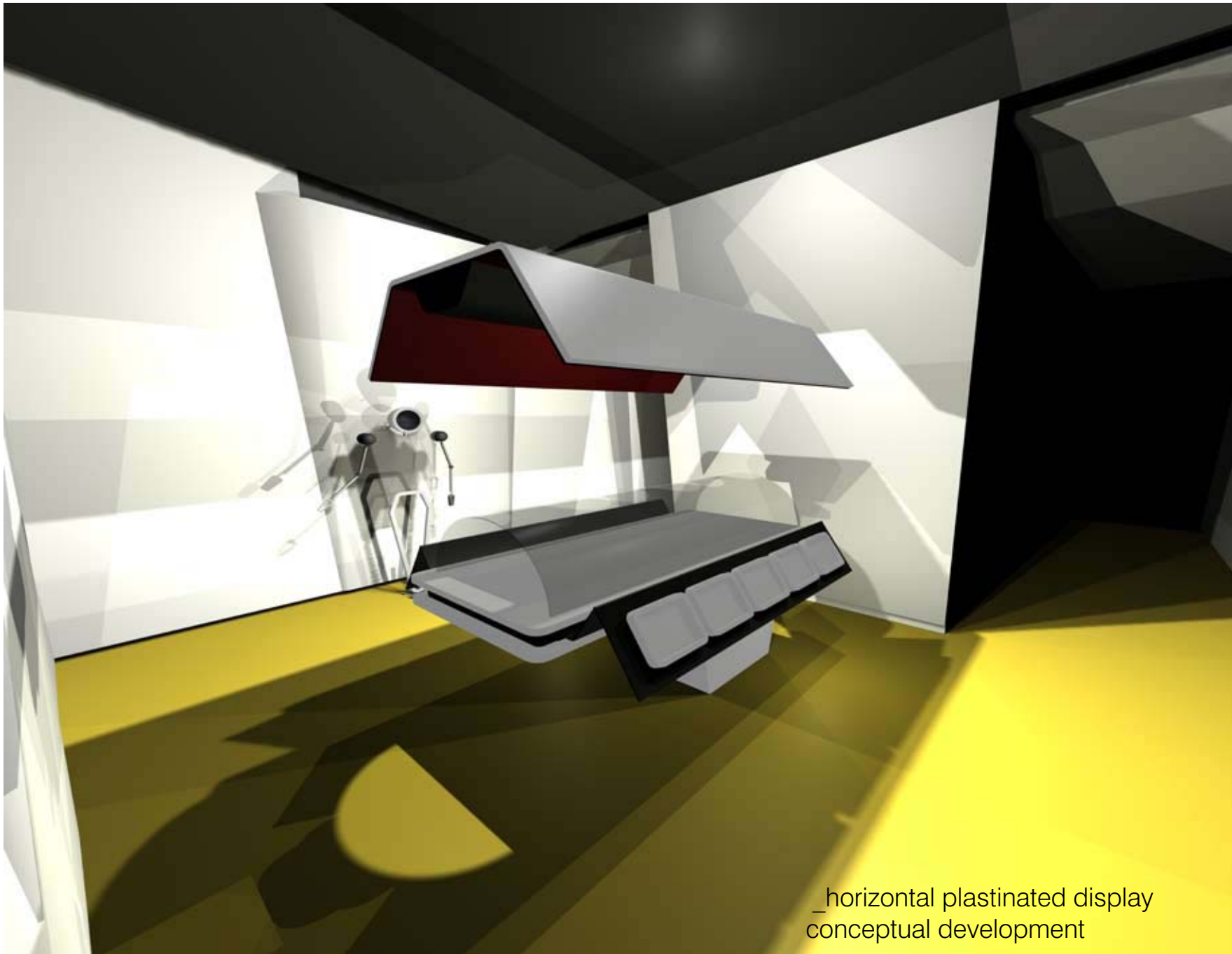


interactive information station

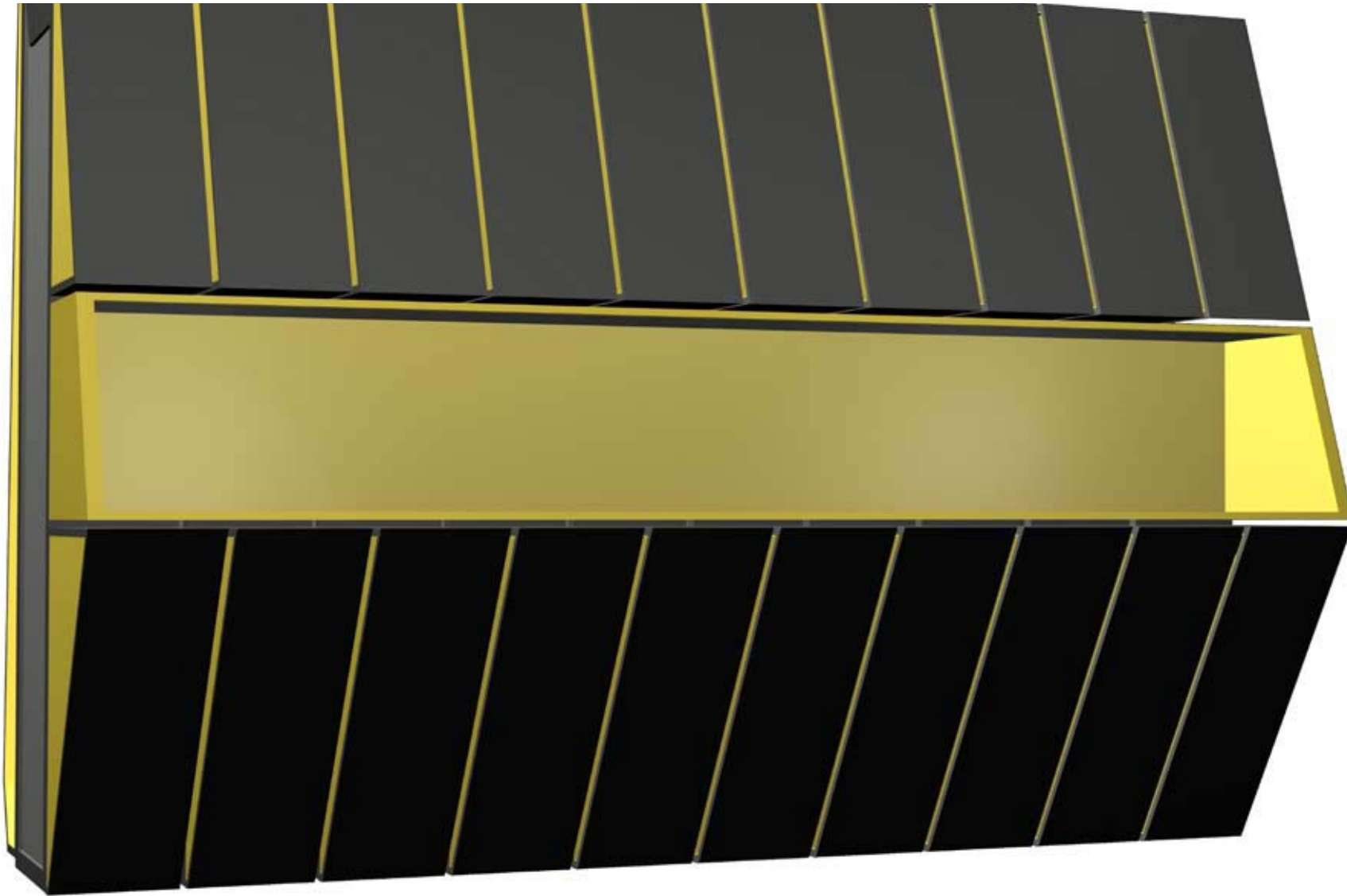




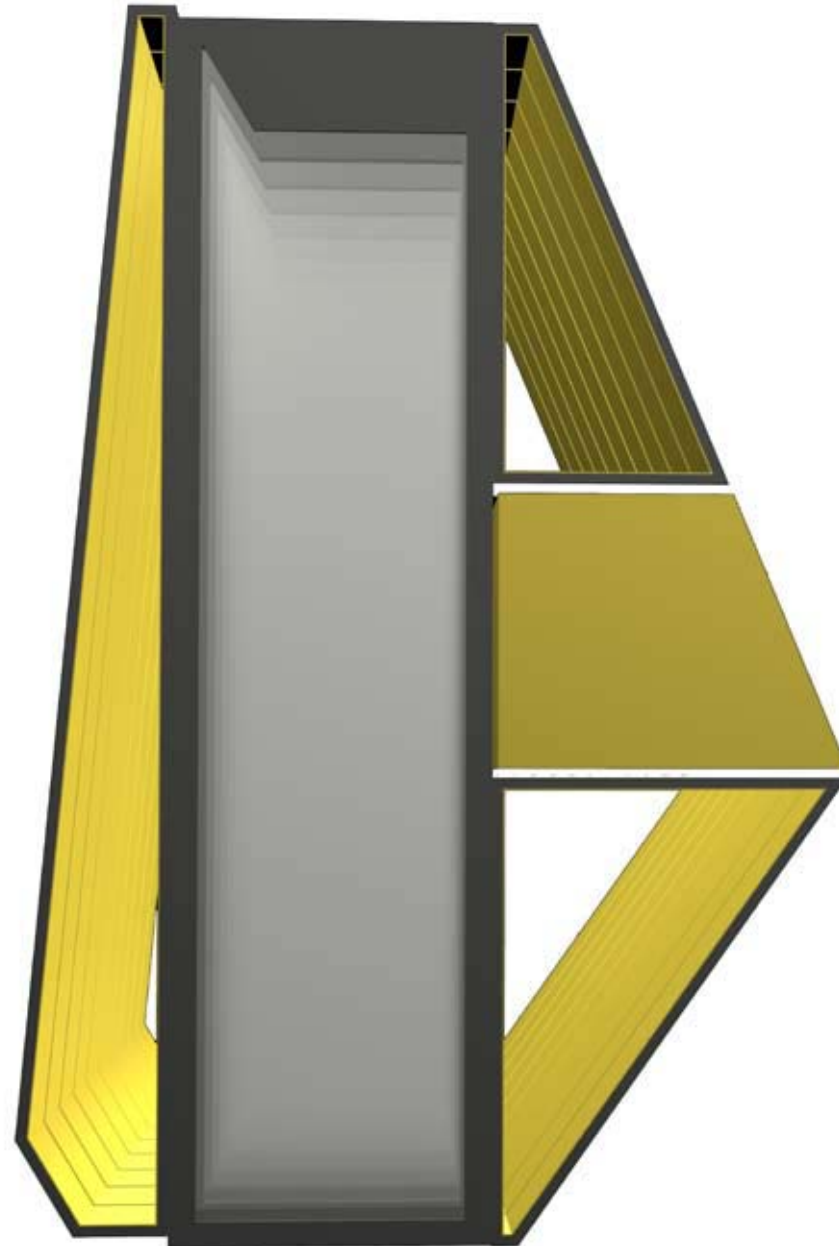
_conceptual development of measuring station



_horizontal plastinated display
conceptual development



_vertical body display drawer



_vertical body display drawer



_light table display



_holographic table display

8

TECHNICAL RESOLUTION

The dynamic nature of architecture implies constant change. This study has thus far investigated the notion of change affecting a building or *place* prior to its alteration. It is this change that signifies the need for altering architecture. Of equal importance is the change that is required during the process of alteration and intervention, and the resulting change the future user might experience as a result. In order to facilitate change, a technical intervention is required in this study. The execution of this intervention, however, should serve as a reinterpreted gesture and should add to the overall improvement of the programme it facilitates. David Chipperfield (Ryan 2001:30) acknowledges a technically sound intervention by defining his approach to altering the Neues Museum:

The intervention should accentuate a symbolic structure whilst at the same time allow the user to orientate himself and house temporary exhibitions.

The technical reinterpretation of the Administration Building will in this chapter be approached as a linear process.

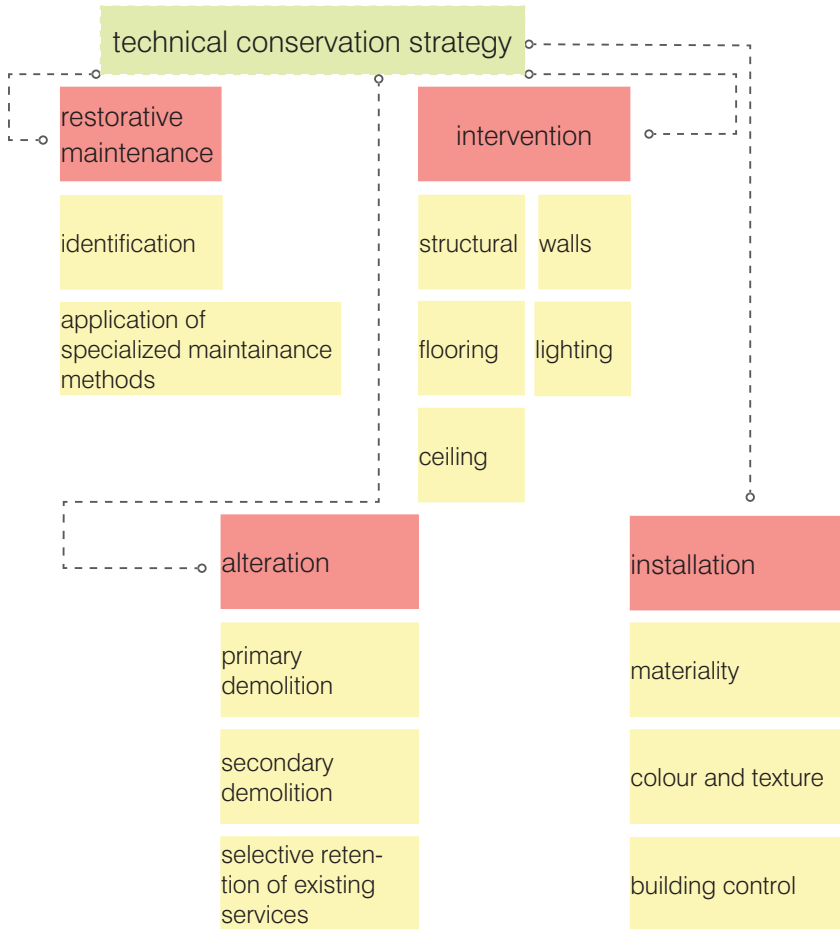


Diagram 8.1 The technical strategy to the reinterpretation of the Administration Building highlights key factors that will be addressed according to Scott's theory of stripping back. The chapter will discuss the approach to each of these elements from an interior perspective.

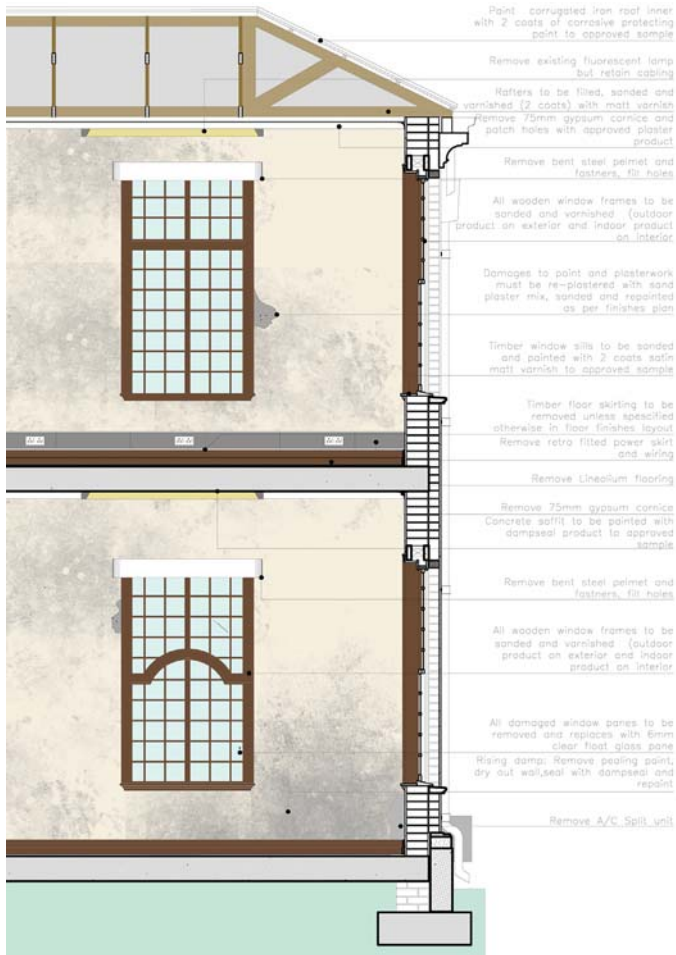


Diagram 8.2 Typical restorative maintenance section.

8.1 Restorative Maintenance

8.1.1 Addressing the Problem

Insufficient maintenance may endanger the cultural significance of a place. As noted in *Section 5.3*, the ICOMOS Burra Charter (1999:6) requires routine maintenance in order to prevent the above. In the instance of the

Administration Building, maintenance has been focussed mainly on the exterior of the building, thereby neglecting the interior. Through the application of specialised maintenance to key areas of the built fabric (indicated in *Table 8.1*), Carroon (2010:9) argues that repair ability contributes to the historically green nature of a building. His argument implies that focussed maintenance could reduce the need for the replacement of building components. It can further be argued that the intervention of to the Administration Building should continue its *passive survivability (ibid.)*. Seeing that the Administration Building was built before the demand on energy, it was designed to function without the introduction of technological building control devices. The building has the ability, therefore, to last without these elements.

8.2 Alteration

8.2.1 Demolition

The grid-bound spatial layout of the Administration Building has to effect that its adaptability to public functions is limited. Opening the interior environment up should allow for the introduction of the Human Anatomy Centre in this project, but should also allow for the introduction of alternative exhibition programmes in future. A distinction should be made between two scales of demolition. Primary demolition includes all building components pertaining to the structure of the building, while secondary demolition includes the removal of building components not part of the building structure.

8.2.3 Retention of Building Components

The north-facing walls of the Administration Building contain most of the wet services. The introduction of a newly built programme is placed in relationship with the existing service walls, eliminating the need for the additional disruption of historical fabric in order to house new services. Most wooden framed windows are retained to ensure that the style of the building remains legible. In the hall the existing staircase is modified to remain mostly intact, but to fulfil a new route.

Table 8.1 Secondary demolition elements

building component	task	aim
Floor finishes	Remove existing floor finishes without historic value	To make it possible to install new specialized flooring materials
Floor skirting	Partial demolition of existing floor skirtings	New floor finishes will require a different junction to the wall plane
Doors	Remove specified doors	To open up the interior spaces it is required to remove some doors
Ceiling	Demolish first floor ceiling	By exposing the rafters an enlarged interior volume is possible on the first floor
Bathrooms	Demolish existing bathrooms	The envisioned programme requires a new placement of bathrooms

8.3 The Intervention

8.3.1 Structural Intervention

The structural working of the Administration Building could not be altered in

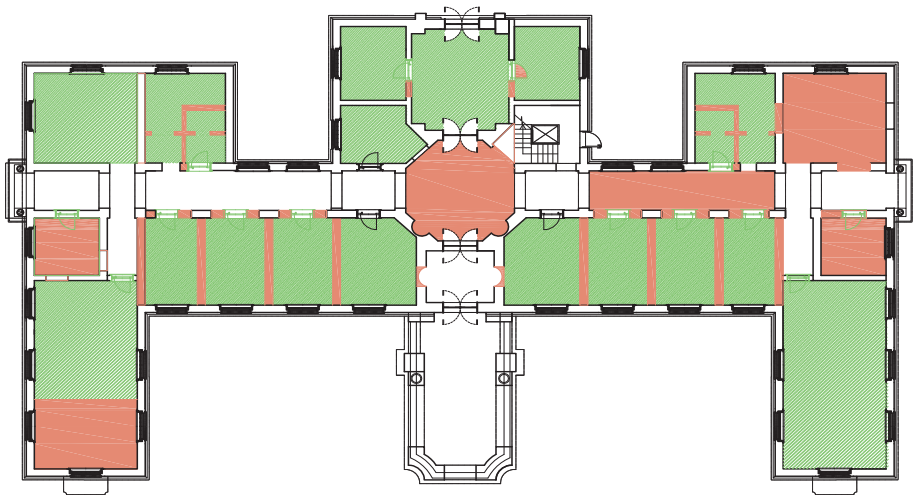


Diagram 8.3 First floor demolition plan: Orange indicates primary demolition elements while green indicates secondary demolition elements

order to accommodate partial penetrations through the first floor slab. As a result, double volumes are created by the entire demolition of selected areas, followed by the replacement thereof with new building material that has the ability to facilitate an opening signifying a double volume.

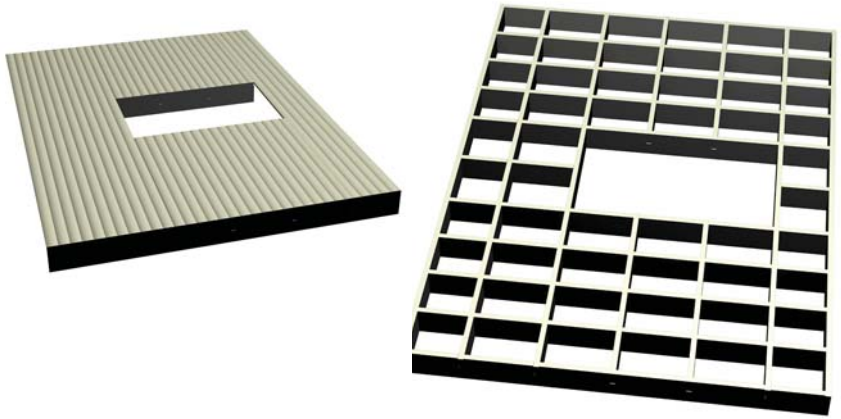


Illustration 8.1 Structural intervention after new wall penetration.

The partial demolition of selected wall areas calls for the installation of additional structural support. *Illustration 8.1* indicates such structural installation.

8.3.2 Flooring

8.3.2.1 Surface treatment

Existing floor finishes are kept in the foyer and entrance hall. These floor finishes add a significant addition to the character of the interior environment. A linoleum finish was later added to the rest of the ground floor. This linoleum finish will be removed. Replacing this finish is a stretched vinyl finish. The versatility and durability of this floor surface type, together with the intended homogenous application, should prove to be beneficial in a display space. The starched vinyl floor will be applied on a dry sub floor that will be discussed later in the chapter. The third floor type is a Flowcrete anti-bacterial and chemically inert floor finish that will be applied in rooms where medical professionals interact with open human tissue. For hygienic purposes these floors should be sloped towards a specialized “blood” type floor drain that feeds into a medical waste container that will be emptied periodically by a medical waste contractor.

8.3.2.2 Dry Sub-Floor

Dry sub floors provide a self-levelling function to the floor it is applied to. The

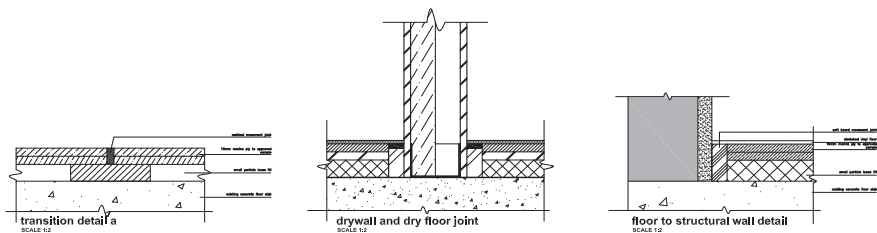


Diagram 8.3 Articulation of dry sub floor joints

under floor structure reduces the transfer of structure borne noise up to 28dB when installed over a concrete floor (Hausladen & Tichelman 2010:158).

The constant movement of this floor implies that large tiles are prone to crack (*ibid.*). The specification of a stretched vinyl floor in the instance of the Human Anatomy Centre should allow for this movement. The fire rating of a dry sub-floor is dependent on the placement of the board product specified over the loose fill. If the latter is a timber board product, the interior of the fire rating is generally accepted as 30 minutes. For gypsum board products the rating is 60 minutes.

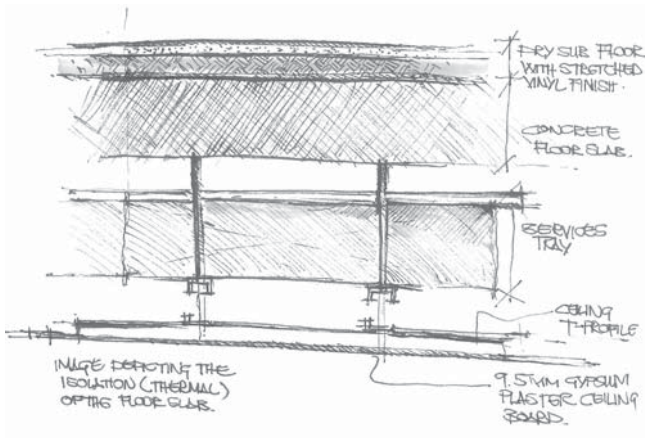


Illustration 8.2 Exposing overhead service tray through removal of first floor ceiling

Services may be placed under the dry sub-floor. In such instances, however, care should be taken to fix the services to the structural floor in order to secure it in place before the loose fill is added around the elements and the board product is placed over it (*ibid.*:158).

The articulation of floor joints should allow for the movement of board products, allowing the floor finish to move with the expansion and contraction of the host building. *Diagram 8* indicates the execution of these typical floor joints.

8.3.3 Ceiling and Roof Structure

8.3.3.1 Ground Floor Ceiling

The introduction of a ceiling to the first floor soffit acts as an insulative acoustic barrier eliminating structure borne sound resulting from the use on the first floor. The introduction of acoustic absorbent material ensures a reduced reverberation time on the lower floor. The provision of a marginal ceiling void should serve as an overhead plane to allow for the placement of lighting, mechanical ventilation ducting and the services associated with the above.

The ceiling of the first floor will be removed in an attempt to expose the roof trusses visible on the first floor. The need therefore arises for the introduction of newly placed thermal insulation. Overhead services on the first floor are to be exposed, and the articulation of the aforementioned is envisioned to be integrated as an aesthetic component.

8.3.4 Walls

8.3.4.1 Treatment of Existing Walls

The introduction of interior insulation over massive walls, like in the Human Anatomy Centre, has the potential to be detrimental to the structure. Carroon (2010:185) warns that interior moisture entrapment may result. Moisture entrapment occurs when moisture particles move through the porous brick structure from the exterior to the interior and the path of this airborne moisture becomes blocked by the placement of an insulative membrane.

The result of moisture entrapment is water damage and the growth of mildew that deteriorates historic built fabric, and may in some instances even lead to structural failure (*ibid.*). Carroon (2010:186) also remarks that recent in-situ testing has found that traditionally built brick have better U-values than initially

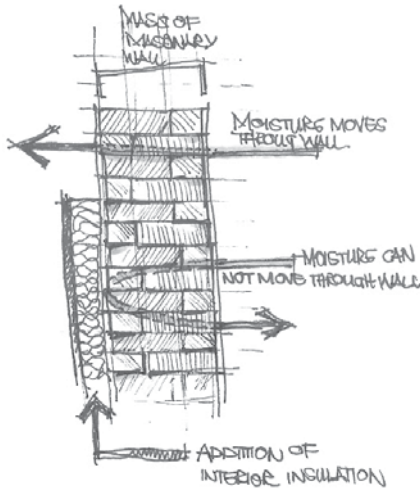


Illustration 8.3 Typical application of interior surface insulation and the resulting moisture entrapment

assumed. The approach in the instance of the Human Anatomy Centre is to allow the building to “breathe”. This notion should allow marginally less insulation than that of insulated walls, but will drastically reduce the danger of the deterioration of historic built material.

8.3.2.2 Addition of New Walls

Similar to the approach of the dry sub-floor, the addition of drywalling as new wall system is meant to enable disassembly, should it be required for the building to accommodate a new programme. This term is coined as “the long life/loose fit approach” (Carroon 2010:11). In the instance of the Human Anatomy Centre a single-stud wall with one layer of gypsum fibre board,

internally filled with 30mm acoustic insulation will be applied. Due to the height of the walls in some instances, plasterboard panels will be staggered; skim plastered and painted a colour to approved sample.

8.3.5 Lighting and Electrical Installation

8.3.5.1 Control of Natural Light

The designed control of natural light can ensure the use of high quality illumination onto subject matter whilst reducing the immediate demand for artificial illumination (Hausladen & Tichelman 2010:48).

Three lighting control mechanisms are proposed to allow different intensity, and quality of natural light is manipulated to create a display space.

Light Box

A light box is added that allows for elements to be illuminated from the side. This eliminates direct glare typically experienced by the user when gazing from an environment with low illumination levels into a brightly illuminated light source. The side illumination panels will be equipped with retractable blinds that would allow lighting to pass through.

Shading Panel

The shading panel allows the occupant of the space to adjust the levels of illumination by moving the lighting panel either in or out of the existing window opening.

Lighting Diffuser

The incorporation of lighting into the existing opening allows for natural illumination to be used in as rear lighting. It is in this application that natural lighting be used as effect lighting, more on this later.

8.3.5.2 Artificial Light

The luminance of specific interior spaces is listed as a requirement in lux in the table below:

Table 8.2 Luminance requirements of interior spaces

Activity	Illumination (lux, lumen/m ²)
Warehouses, Homes, Theaters, Archives	150
Easy Office Work, Classes	250
Normal Office Work, PC Work, Study Library, Groceries, Show Rooms, Laboratories	500
Supermarkets, Mechanical Workshops, Office Landscapes	750
Normal Drawing Work, Detailed Mechanical Workshops, Operation Theatres	1,000
Detailed Drawing Work, Very Detailed Mechanical Works	1,500 - 2,000

http://www.engineeringtoolbox.com/light-level-rooms-d_708.html

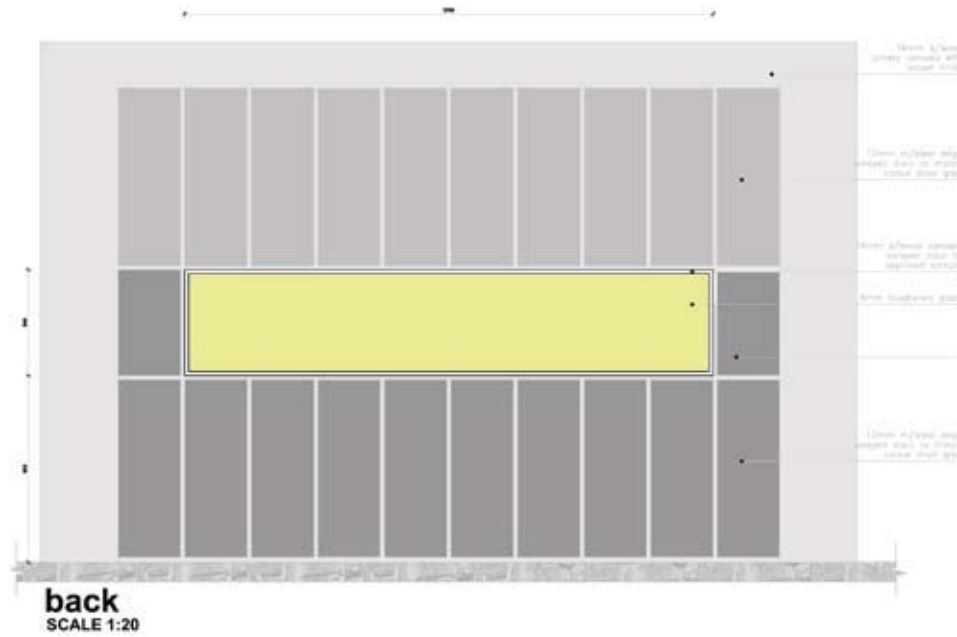
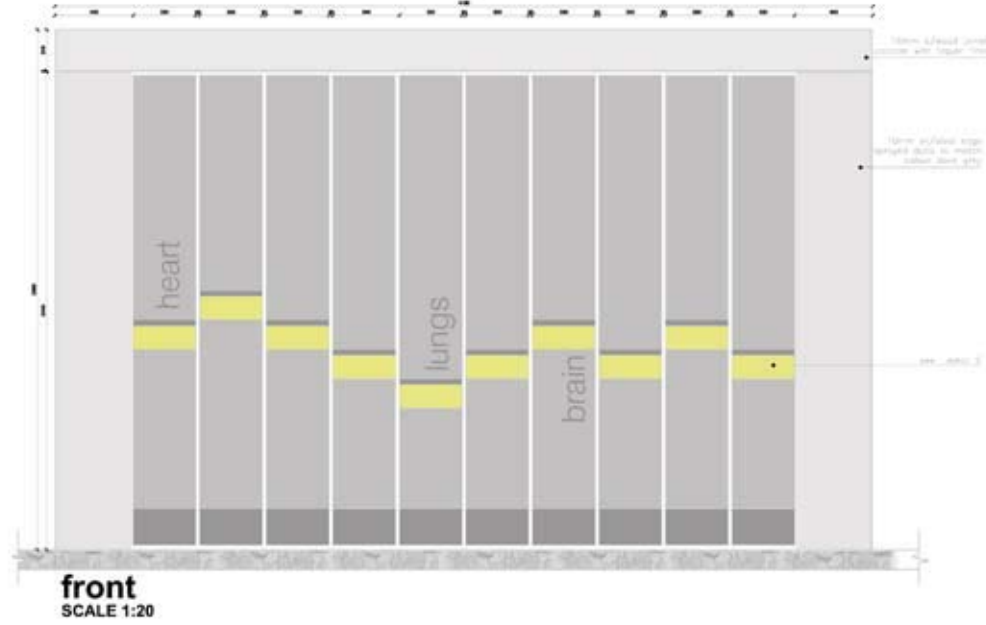
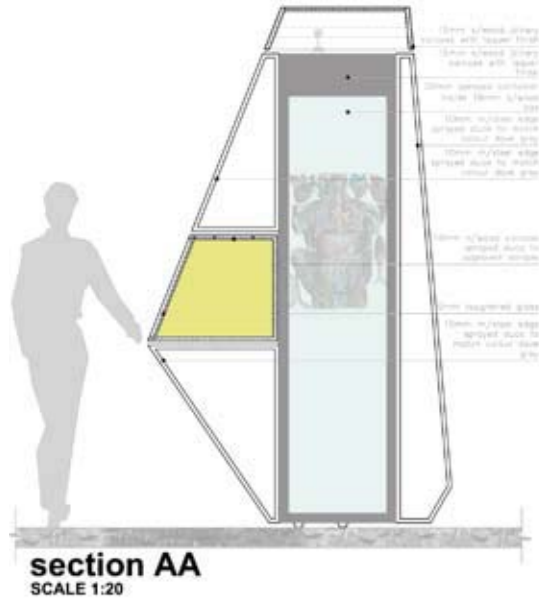
Table 8.3 Lamp type attributes

Lamp type	Colour rendering (CRI)	UV sensitivity	Wattage (Watt)	Luminous Efficacy (lm/watt)	Lifespan (hours)
LED	70-90+	High	6 W	54 lm/watt	30 000
HID	96	Low (filter required)	150 W	50-90 lm/watt	50000
Tungsten Halogen	100	Low (filter required)	50 W	15-20 lm/watt	3000
Fluorescent	51	moderate (filter required)	24 W	35-65 lm/watt	5000-20000

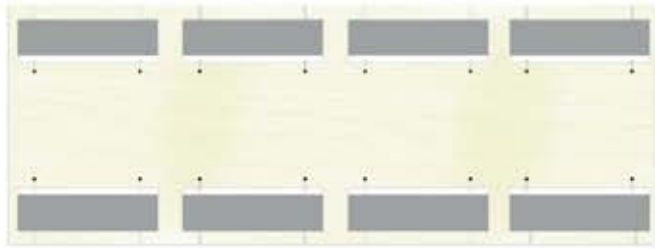
Three different strategies are applied to the lighting in the Human Anatomy Gallery. These are:

- ambient lighting
- focussed lighting
- specialised lighting.

8.4 Technical Investigation



_sliding body storage unit



plan
 SCALE 1:10



side



front

_horizontal plasitination display



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_horizontal plastinated display

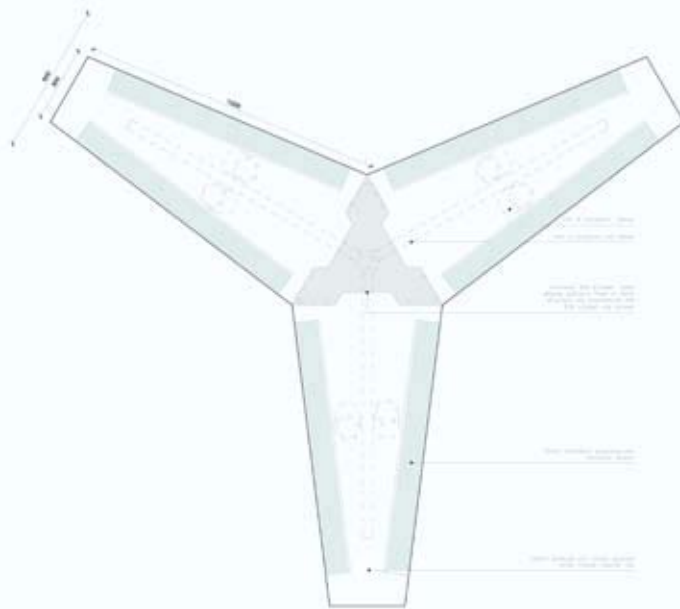
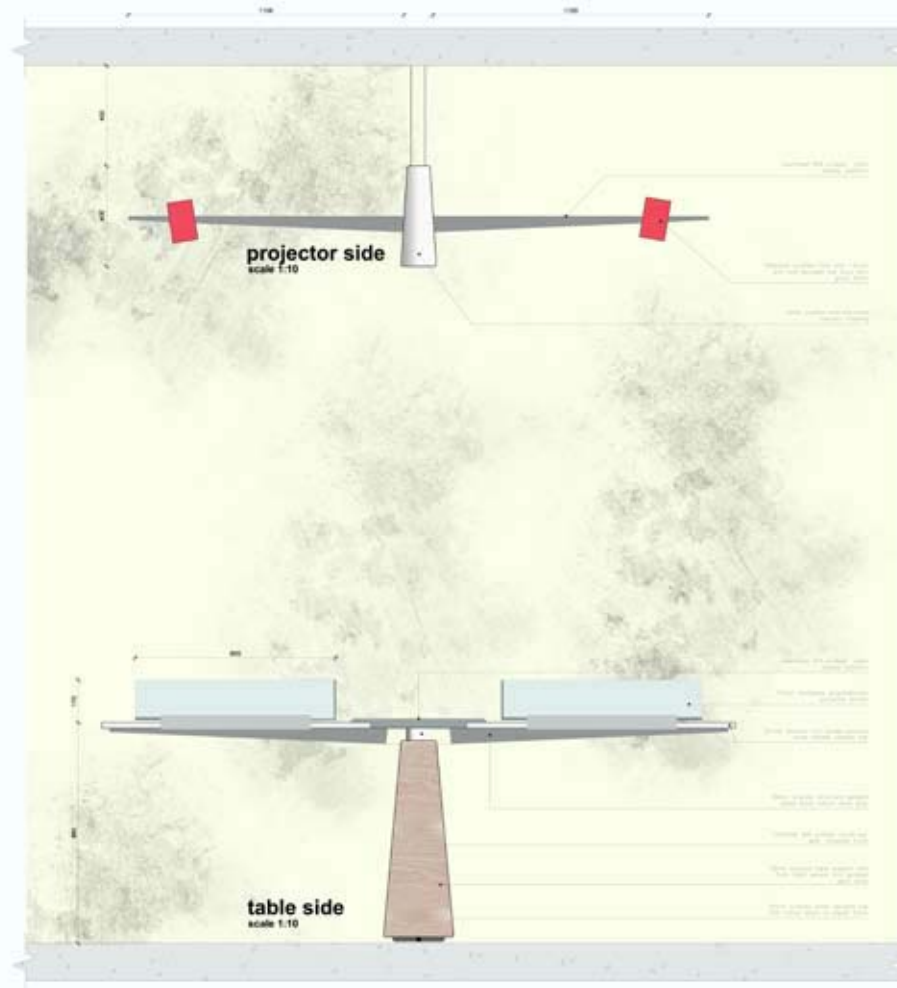


table plan
scale 1:10

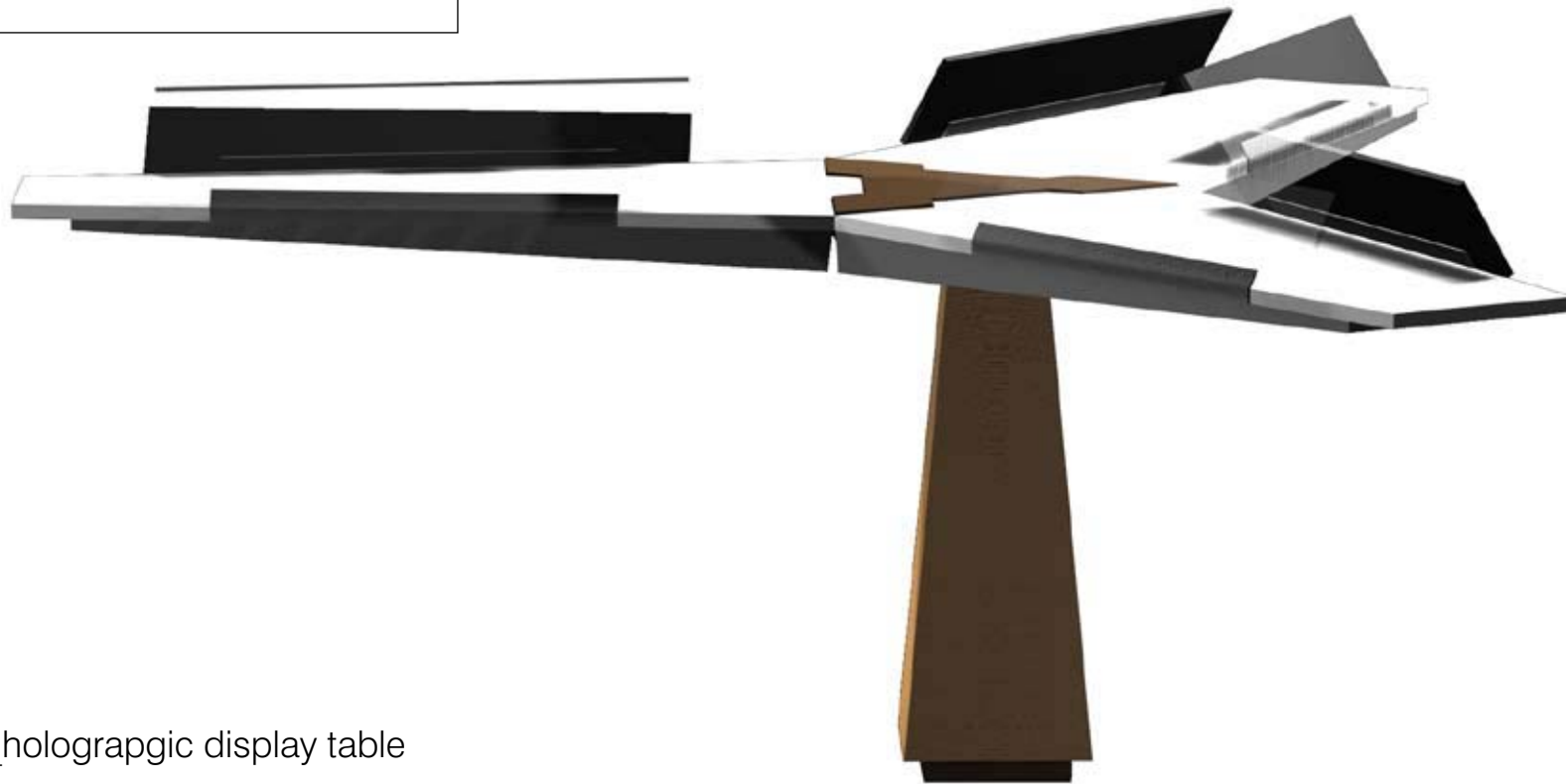
Unit: IT_01



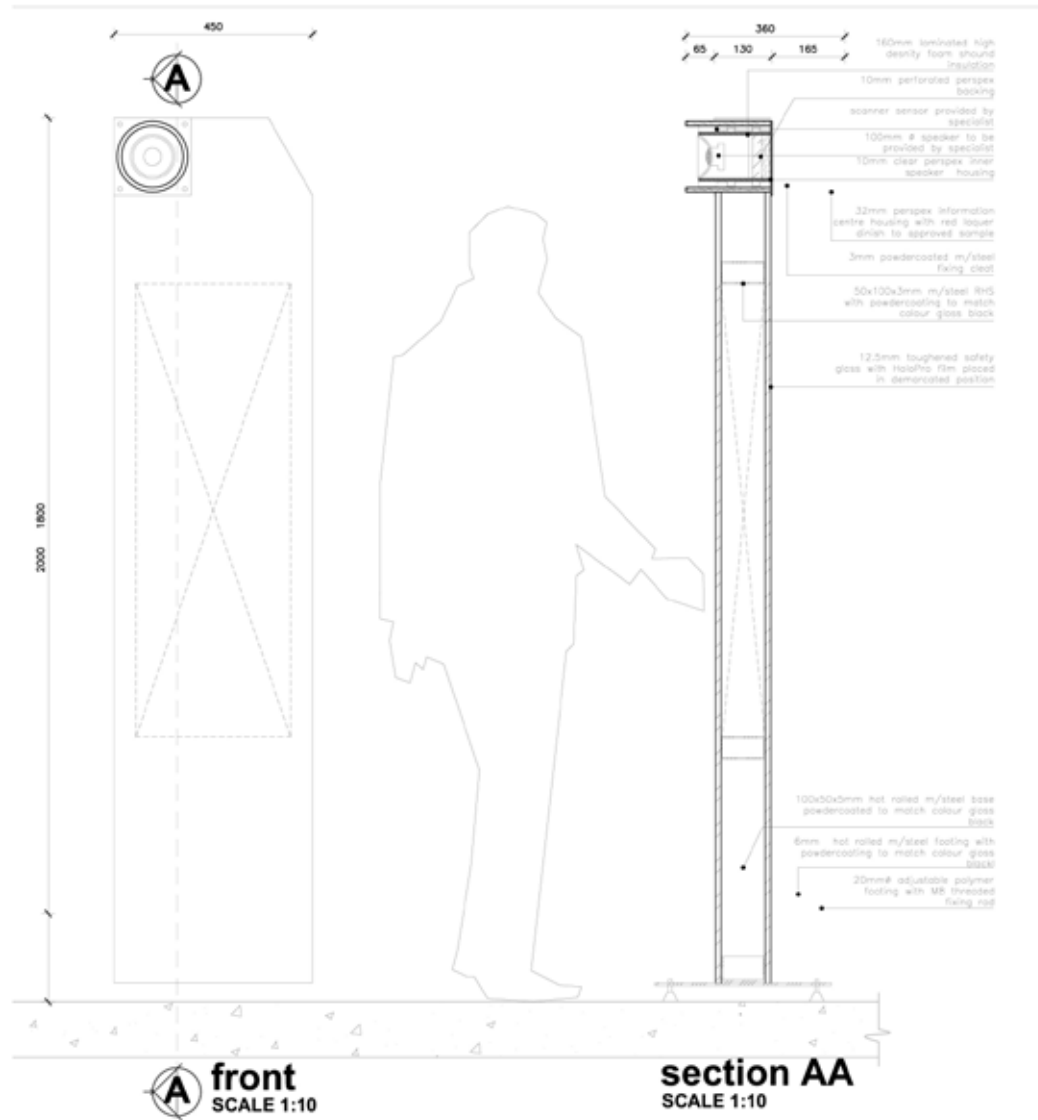
projector side
scale 1:10

table side
scale 1:10

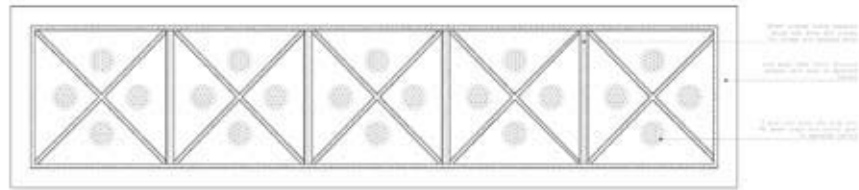
_interactive information station



_holographic display table



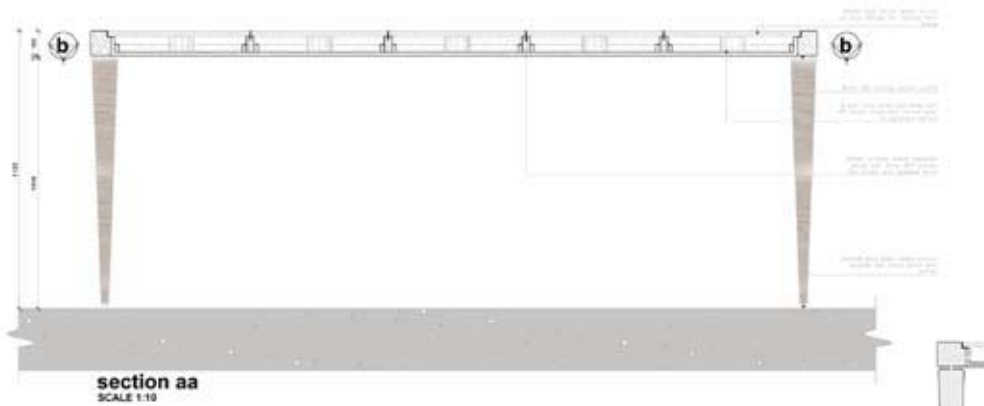
_horisontal plasitination display



structural sectional plan bb
SCALE 1:10



plan
SCALE 1:10



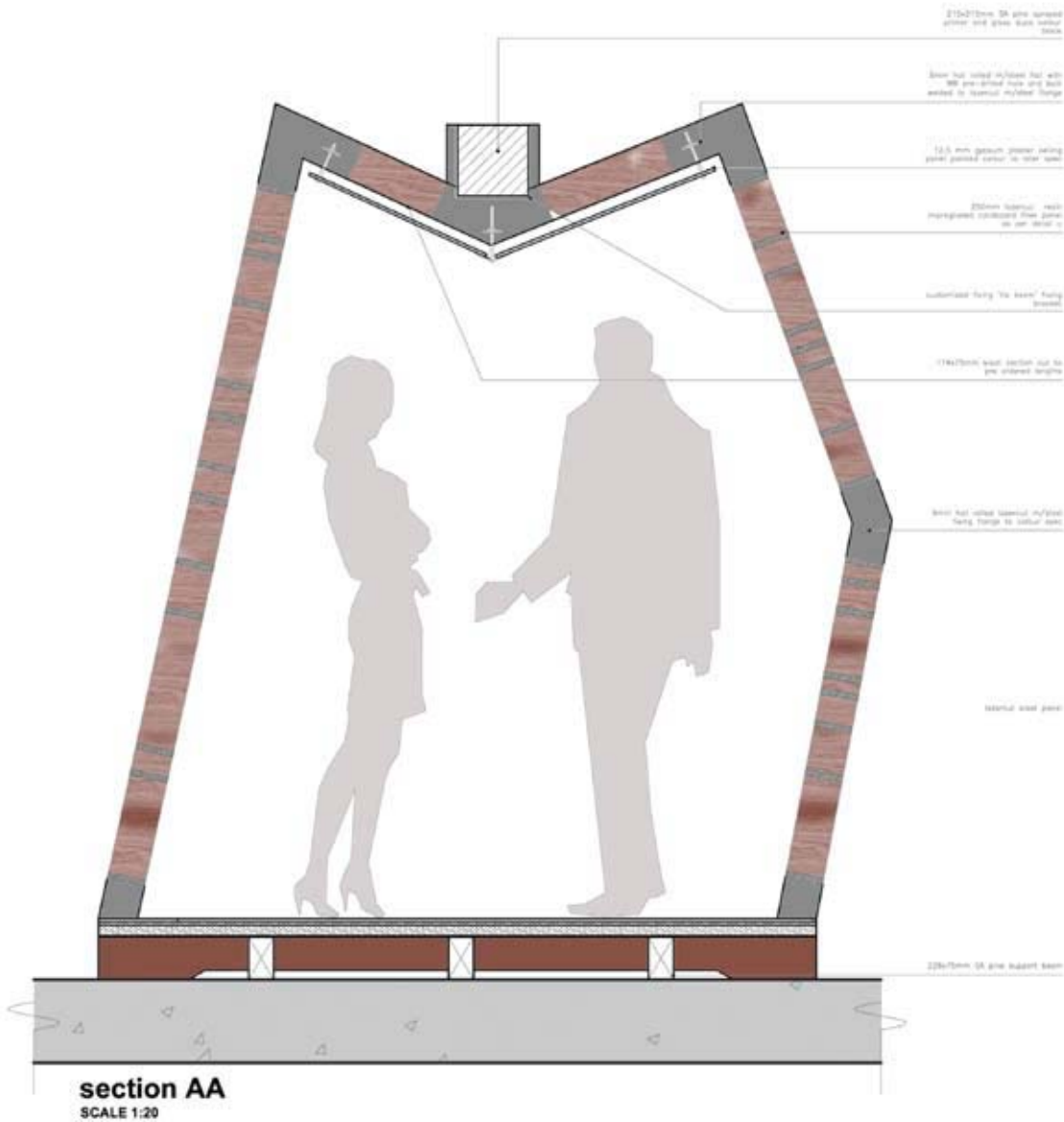
section aa
SCALE 1:10

Unit: LT 01

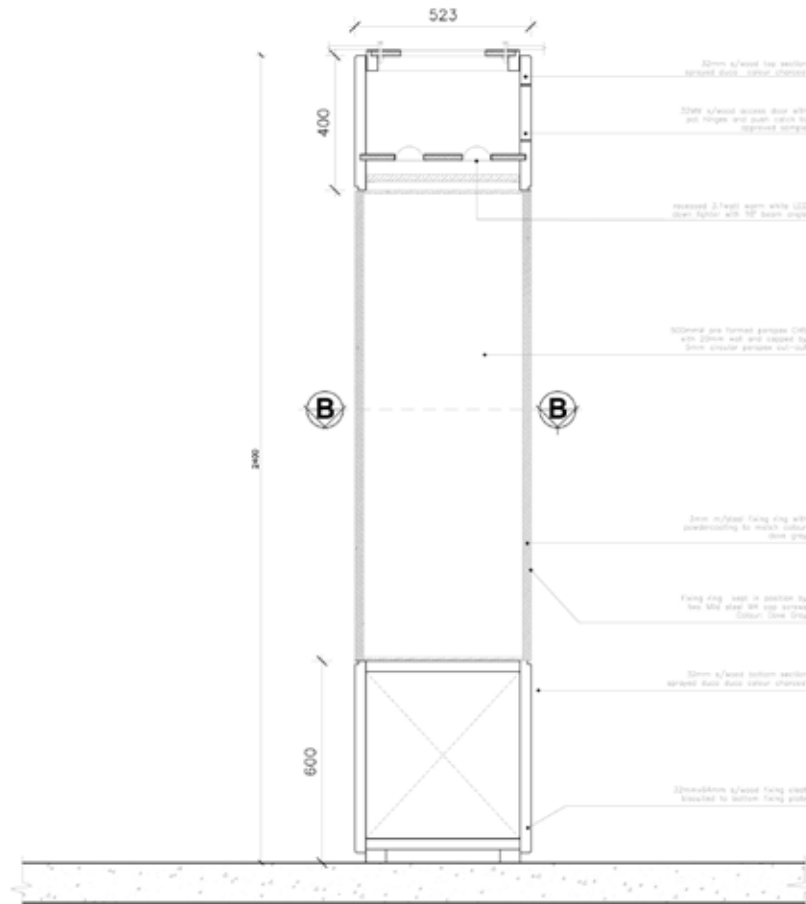
_light table



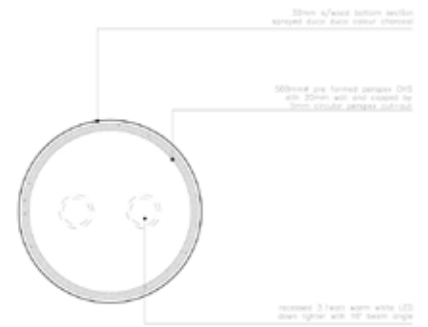
_kight table



_measuring station

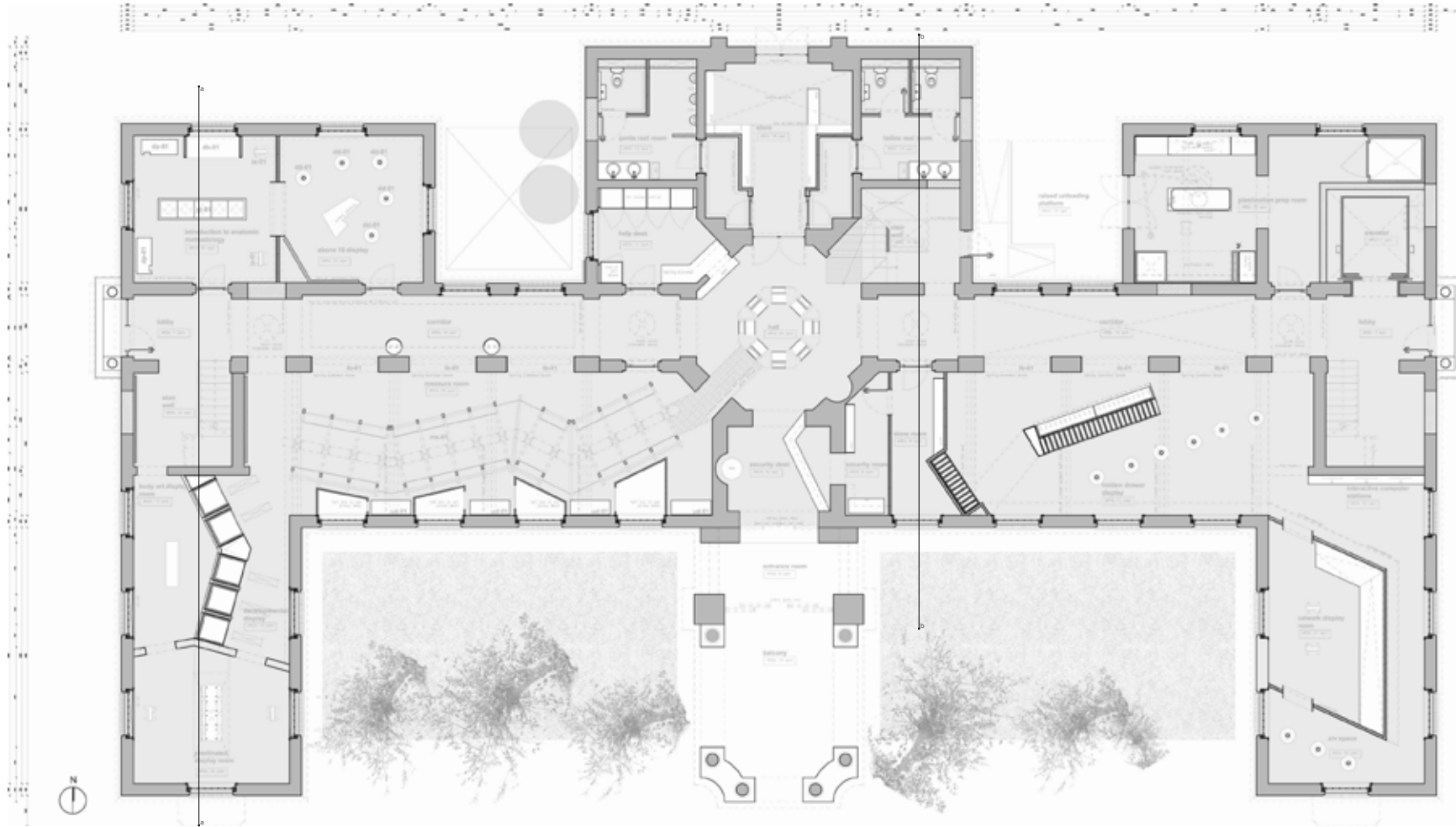


section AA
SCALE 1:20

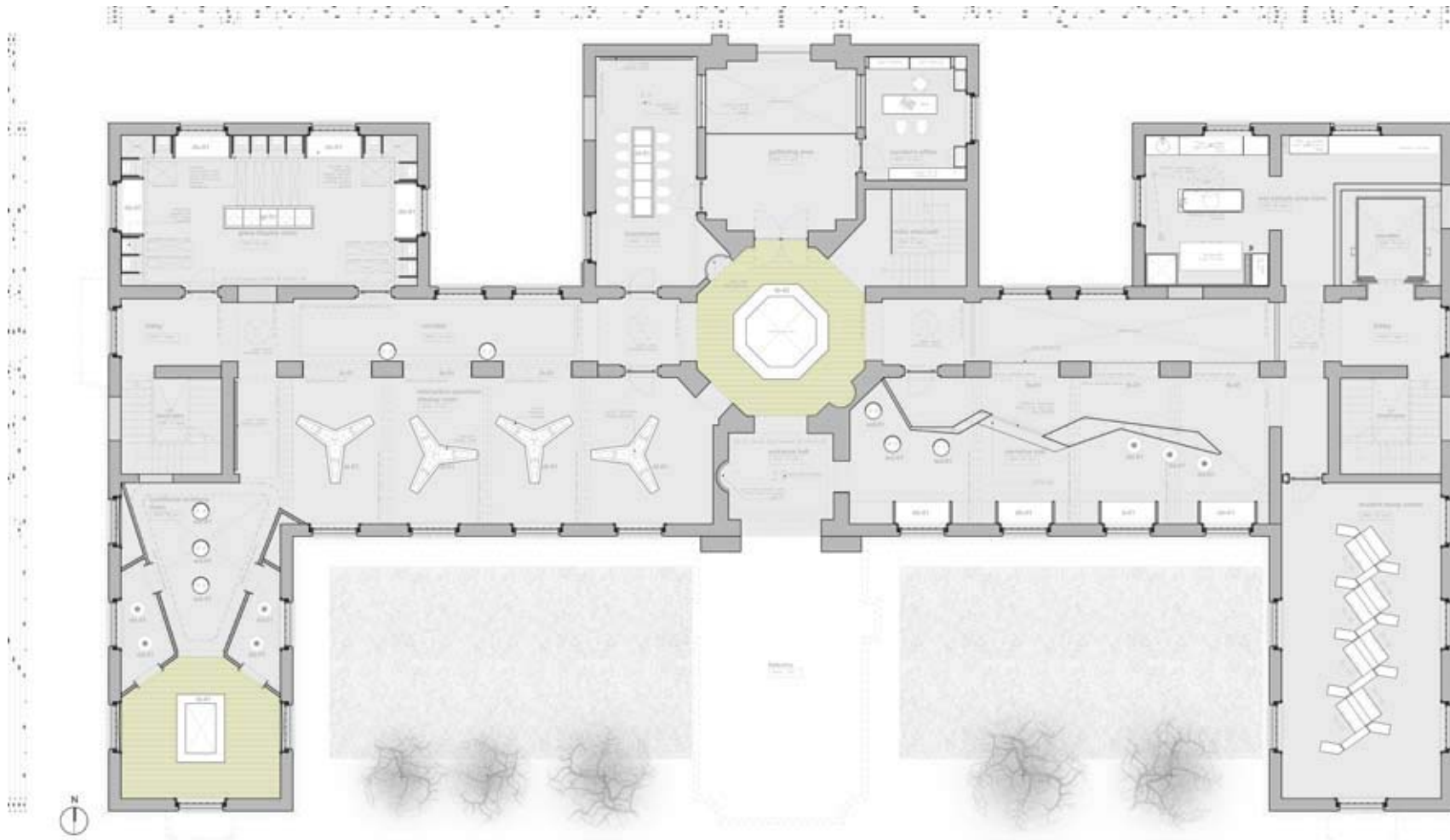


horizontal section BB
SCALE 1:20

_wet sample display carcass



GROUND FLOOR PLAN 1:50

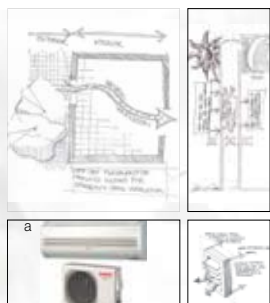


_ground floor plan

BUILDINGSYSTEMS ANALYSIS

ventilation cooling

This building has a high level of heat gain from the northern facade in summer. This is largely due to the fact that there are very few shading devices provided on the northern facade, resulting in an uncomfortable working environment. The solution to this challenge was to alter the building's orientation to reduce the solar radiation. The building, however, has the potential to have effective cross-ventilation due to the offset placement of openings, as well as the provision of openings in the internal structure to aid the flow of air.

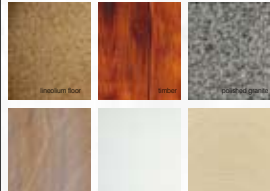


materiality

The relationship between place and architecture has thus far been established by contextualising the Tloane District Hospital within its setting. The relationship between architecture and place has only been explored on a relatively basic level. Right (2002:1) notes that architecture was, and in certain places still is, place bound. He extends his argument by investigating the writings of Giedion, Tomlinson, environmentalists and regional planners with specific reference to 'the valley section'. In this theory it is argued that a section through any valley on earth implies crossing several different when moving from the top to the higher to lower side of the valley (Giedion 1961) argues that the most dramatic differentiation implies different architectural requirements for each zone. Each zone has different spatial qualities and a varied programmatic composition. He further highlights that the most typical valley section has more or less the same type of architecture in the same places along the slope of the section and therefore concludes that the architectural setting of architecture can affect the material selection and aesthetic appearance.

The material palette of the Tloane District Hospital is limited in its composition. It may be argued that the initial building was constructed from local materials, having a specific implication on the money available for the construction. It may also be argued that material is used in a rather conservative application. Bailey & Johnson (2006:76) indicate that what may possibly be perceived as conservative material application, may instead be an honest approach to the application of material to architecture. This is evident when material is applied to objects in strength, as steel represents strength, painted wood represents craftsmanship and granite an idea of performance etc. (ibid: 81)

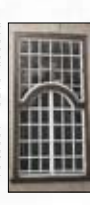
Informed by the arts and crafts movement, the 'honesty' of materials in their application is evident in the Tloane District Hospital. Expression is obtained through material form, and not away from material type. Spence (1977:28) argues that the architect should, as far as possible, reflect the local environment in the interior of the Pretoria Algemeen Hospital.



lighting

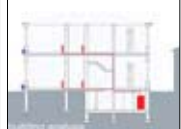
a Natural light
The Edwardian design principles evident in the architectural form of the Administration Building, dictate a constant rhythm, regarding the placing of openings. With this specific building being part of the classical revival phenomenon in the Edwardian movement, the elaborate size of window openings, as well as the frequency of its placement on the facade, becomes a distinctive trademark of the type. The result of this approach to openings allows for the interior to be washed with an abundance of warm natural light, despite the cellular interior layout. It appears that care has been taken by the architect to allow the most light into the building from the southern facade (which is also the front elevation). This notion allows a high quality of light (with effective intensity and colour rendering) to penetrate the facade without the accompanying heat gain. Openings on the western facade have been excluded differently with the provision of timber louvers in front of these openings. This element, however, was later found to be redundant to most aesthetic elements. The addition of steel louvers on top of each window in order to reduce late afternoon glare and heat gain, made the louvers redundant.

The design of the envisioned project should therefore engage with the existing natural lighting strategies. This poses a challenge as the control of natural illumination in the interior environment is of the utmost importance in the visual communication of elements on display. Firstly, it should be possible to control the natural lighting levels in specific spaces inside the structure, secondly, it should be possible to locate specific lighting levels to specific spaces in order to enhance the 'visibility' of unwanted light into adjacent spaces. Finally, it should be possible to provide a mechanism for the control of natural illumination without disturbing the style or the future historical value of the architecture to engage with. As mentioned previously, the location of the existing Administration Building is a valuable architectural component and should, separately, be retained.




ventilation heating

The building also has an electric boiler that heats the structure during the winter months. The building has been fitted with a boiler radiator heating system. The boiler is currently located in the basement.




acoustics

This building is located in a relatively quiet street. The challenge, however, is that the hospital staff and patients make their way home without the Administration Building through it. As a result, it may be less desirable to the users of the building, should they be exposed to this noise pollution. The noise imposed on the building can be divided into two categories. Firstly, there is sound conveyed through the building structure and (2), secondly, there is sound carried through the air. Houtwater and Tschann (2010:39) term these principles 'air borne and structure borne sound'. Air borne sound can be delivered where different users meet. These sounds may be conducted through ventilation ducting, turning paths and cable trays. In the case of the Administration Building, the constant flow of people through the foyer contributes greatly to air borne sound. The building is also one with a relatively high mass and has no structural acoustic insulation at the present time. At present there is a multitude of hard surfaces in the interior space of the building, resulting in poor acoustic absorption times, with the exception of the first floor offices, which are covered in an industrial carpet.



colour and texture

The use of colour in the Administration Building seems not to exist. The figure indicates a selection of the existing colour palette. It is clear that most of the colour palette originates from the existing materials of elements in the interior. There are wooden doors and window frames, the building exterior and interior are painted white and a blue kitchen floor has subsequently been added. As already mentioned, the use of the building has scaled from residential to administrative. A further architectural element will be quite a well-conserved colour expression. Ching (1996:88) states that texture and colour together affect the visual weight and scale of a plane and the degree to which it absorbs or reflects sound. Colour should allow the user to orientate himself and at the same time enable the curator to draw the visitor's attention to specific elements on display.



lighting

Artificial light
The operational changes in the use of the building and its spaces justified the retrofitting of artificial lighting over the years. The initial intention was to accentuate the furniture as objects with specific focus on its materiality, positioning and size. The lighting system to have been installed as a mere result of the electronic lenses, and the quality of illumination provided can at best be described as low intensity ambient light. The ideal positioning of task lighting was limited to one lamp per room. The quality of lamps, controlled by their placement in the ceiling or soft above, had been allowed for a stark atmosphere with arguably accentuated shadow play with a simple task, be working at a desk at night. As a result, fluorescent tube lighting was added to the existing office space. The materiality of the existing structure, combined with the warmth of the natural illumination by day, is contrasted by the introduction of cold white fluorescent lighting to be used at night. Also, the allocation of a new use for the Administration Building justified the introduction of more specialised lighting types and luminaires, as the lighting requirements of a typical library gallery is vastly different from that of a typical office space.





9

CONCLUSION



The often negative symbolic connotation of existing institutional architecture in the South African context has similarities to the misunderstood perceptions associated with the display of human anatomy. The reinterpretation of the human body through anatomic dissection and investigation exposes the workings of the human body, thereby providing substantiated information to the anatomist making it possible to develop an educated opinion. This study has suggested that interior design could be applied to reinterpret the existing architectural envelope. The intention is to provide the user with a space that could be activated to fulfil a new purpose. In this study the introduction of activity driven space, an a means to provoke public interest and awareness in the new program of the administrative building in conjunction with the introduction of a new program to a building with heritage value, suggested that it is possible to alter the architectural envelope without compromising its value for future generations. The study has also



expanded on the aforementioned notion by providing the user with a user interface that effectively conveys sensitive information without offending the observer. The extent of user interaction extends beyond the physical hospital enclosure in that The Human Anatomy Centre by provides a constantly updated flow of new in information to the user. The political connotation that is sometimes associated with public buildings often overshadows the social dependence that the user has toward institutional architecture. The result is not an architecture that is an effective political platform nor is it a place the user can truly engage with. In the instance of The Human Anatomy Centre, the reinterpretation of ideals founded in the past, is given new life, and as a result an opportunity arises for the Administration Building to educate future users

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