PART THREE
INITIATION SCHOOL
The chapter discusses the tectonic concept as an extension of the design intentions. This is realised through the exploration of democracy and what it stands for currently and the postulated post democratic ideals.

The concept and technical resolution is embedded in place and become an important influence in the making of architecture. Material choice is informed by current site condition and reuses material to mitigate the heavy construction of the design.
Heritage stance
The general technical concept was guided by the question of how the proposed intervention and design investigation fits into the continuum of architecture. To appropriate the question more to the project at hand, how can the proposal be able to benefit the existing colonial architecture of the Union Buildings and allow it to read the same language after many years have lapsed, so as to have a meaningful contribution to its host?

Throughout the investigation, the language of the Union Building, as we know it, reads as a Greek influenced piece of architecture, with its Doric columns, the use of the plinth to instigate a temple or a place of Gods. The question then lies how one is able to create an intervention which relates and reads the same as the Union Buildings while still maintaining a sense of newness and difference?

Technical concept
The tectonic concept was the process and extension of the design argument and intentions. The concept is exemplified within the physical structural system and material choice. The passive and active ventilation systems, services and design details will be discussed.

The earth can be understood as a combination of tension and compressive forces which hold up the earth. Compressive forces are apparent while tension forces appear in strain. Architecture as an archive is conceptualised, in an attempt to expose structure, and to expose the earth that is hollowed out. The nature of the space gives opportunity for the spaces to be made light, to create a relationship between the sky and earth.

The tectonic concept can then be defined as the exploration of transparency and secrecy, which ties with the design intentions of attempting to create a liminal space below the Union Buildings that opens up the buildings for public accessibility and for the interaction of the politicians and the public. The notion of transparency and secrecy is played with, to expose ‘secretive’ spaces to make transparent.

The heritage tectonic concept is line with the tectonic concept which looks at a later future. While the current intervention can cause physical disturbance, the aim is to allow the architecture become timeless and imprint itself on the landscape. The Union Buildings has hosted different political ideologies, and
The line represents the constance in imagery of Union Buildings, unchanged over time despite changes in political ideologies and manifestos.

The architecture has become timeless and imprinted itself on the landscape.

This represents the proposal intervention, which is a corruption of the axis by generating a new axis. Within this notion, the deflection aims to rest within the continuum of architecture, introducing a new layer in to the old, and allowing the new to merge into its landscape while still maintaining a differentiation between the old and the new. The proposal is thus a process of erasing and a process of reimagining. The architecture is a hard contrast in the existing representative of a harsh past and highlighted through the use of corten steel.
one that the project proposes disrupts this by corrupting the axis and generating a new one. The deflection introduces a new layer into the old, and allowing the new to merge into its landscape. The proposal looks at two approaches; the process of etching and a process of remoulding.

Materiality
The choice of material is aimed to read as the same language as the Union Buildings. The choice of material is from reclaimed sandstone from the demolished parts of the existing Union Buildings. Corten steel is used at conjunctions of the old and new structure, to highlight the harsh change from a colonial piece to a democratic space. The deterioration of the Corten steel is symbolic of the disconnection in the change of political ideals. Use of concrete is used for the retaining wall and parts of the structure which require compressive strength to sustain the heavy structure that lies above the submerged level of the political school.

The process of etching is applicable to the top surface structure (Visitor’s centre). The design of the seats are made from reclaimed sandstone and corten steel

Site conditions
The site of the Union Buildings consists of slate. Slate is a fine grained metamorphic rocks that is created by the alteration of shale (King, 2015). It is composed mainly of clay minerals. Shales and mudstone in that basin are compressed by minor heating. The forces that occur enable the clay minerals to form shale and mudstone.
Figure 6.3 Historical images of construction process (National archives)

Figure 6.4 Central amphitheatre (National archives)
Figure 6.5: Soil Rock condition of Johannesburg (Abiye, Mengistu and Demlie, 2011)

Figure 6.6: Sectional perspective (Author, 2015)
Excavation of middle ground. Anchoring the walls and applying shotcrete to uphold the walls

Tunneling the pathway to retain the structure above.

Creating a service space between shotcrete wall and adobe blocks. Internal walls are constructed to make the architecture

Replacing the amphitheatre sandstone

Glass walkway panels placed on the existing amphitheatre to bright light into the dark spaces below

New roof structure for politicians to access the space below. The roof is designed in accordance with the concept of a linear path

Connection points between old and new are characterised by the use of Corten to symbolise the harsh transition between the old and new political ideals

Remainder of the structure is built; glass ramps and internal finishes
Construction process
The construction process becomes crucial in the design of the political school for the preservation of the existing Union Buildings structure.

Figure 6.7 Initial plan design. The circle remains balanced while creating chaos within the internal boundary of the circle (Author, 2015)
1. Attachment

The Visitor’s centre is the first act of engagement with the structure. The narrative acts builds on the relationship with the structure as though it were romance. This condition has an external structure that acts against the wall in an attempt for occupying the third space.

2. Insertion

The insertion. The connection between the politicians and the public. It highlights a sensitive approach to the second stage of the relationship formed with the building, in which care is still given to the structure.

3. Confrontation

The confrontation. The violent eruption symbolising the change in political ideals and the process of initiation, in which an initiate is separated from society and positioned within the structure. The incision opens the building and performs an act of ruination, one to be enjoyed.
EXPERIENTIAL ROUTE
Proposal of experiential route

INCORPORATION
- Engaging with the historical narrative
- Spatial expression and highlighted levels and understanding of city
- A reflection on the past, the present to move forward
- Beginning one’s identity and a certain to move forward
- Accommodation

LIMINAL SPACE
- A connection between the political space and the old political space
- Park underground space: Maximize the space and design meeting with politics
- High volume space: Explore the zone

ARRIVAL AND ORIENTATION
- Definition of the wall and farm wall
- Water space: The view outside the park and connect city with wall

POINT OF SEPARATION
- Entrance entry into the space
- Central entrance into the underground space
- Directional movement within a dark carved-up space
- Small road answer to highlight individuality and a path followed then
- Response to existing heritage fabric
CONDITIONS

ETCHING
Overlay of new structure with existing. The prepared is a landscaped seating area, providing shade.

VOID
The excavation process which is required below structures which cannot be removed. A cut and build process is employed.

INSERTION
The placement of the new roof structure which brings light in to the underground space and acts as the link between the politicians and the public.
STEEL STRUCTURE: Structural weathering steel.

Self-preserving steel. The steel reacts with the elements in the atmosphere. The material forms a layer of rust over time which protects the steel from corrosion.

RAMMED CONCRETE WALL:
Layers of reinforced concrete are built and mixed with cement. The first sections of the walls are used and mixed with cement mixers to form the structure.

VISITOR'S CENTRE
PHASE I - THE WALL

Construction process documenting the structural challenges in constructing the political school. Phase one is addressed in this section and highlights the process that occurs along the boundary wall, the visitor’s centre and the new built entrance to the political school.
SECTIONAL PERSPECTIVE

COMPACTED FILL

REINFORCED CONCRETE FOOTING TO ENGINEER'S SPECIFICATIONS

WATERPROOFING WITH BITUMINOUS COATING
REINFORCED CONCRETE RETAINING WALL WITH WELD HOLES AT 500MM

600MM DIAMETER FOOTING DRAIN PERFORATED PIPE
DRAINAGE MAT

REINFORCED CONCRETE WALL BUILT TO ENGINEER'S SPECIFICATIONS
PHASE I-THE WALL continued

The contestation documents the entry to the wall. The change in material was crucial in highlighting the change in political thought, as well as to make a discernible structure which separates the existing (old) from the new.
PHASE II- THE VOID

Construction process documenting the structural challenges in constructing the political school. Phase two is addressed in two parts: the pathway into the building which involves construction occurring below the Union Buildings and other existing structure which is of heritage significance, which cannot be damaged.
INITIATION SCHOOL

STRUCTURAL STRATEGY

1. Micro pile slide stabilisation used to fortify and uphold the existing Union Buildings. A reinforced concrete beam is initially constructed on the ground surface through which micro piles are drilled into the surface. Micro piles are then grouted and connected to the beam.

The finished micro piles act in tension and compression to create an integral ground reinforcement system.

2. Excavation is done to create a path that leads from the outside of the Union Buildings to the People’s Tower.

3. Precast box culverts are positioned in the same manner.

4. The insertion is explored and the process of the void is covered.

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PHASE II- THE VOID continued

Construction process documenting the structural challenges in constructing the political school. Phase two is addressed in two parts: the pathway into the building which involves construction occurring below the Union Buildings and other existing structure which is of heritage significance, which cannot be damaged.
PHASE III- THE INSERTION

Construction process documenting the structural challenges in constructing the political school. Phase three addressed the making of space, more specifically on the central space. The structural elements are highlighted, through this process systems are instigated and an understanding of the roof structure that lies in the centre of the amphitheatre (existing) are analysed.
Figure 6.8: Section exploration (September 2015) (Author, 2015)

Figure 6.9: Perspective of meditation spaces (prayer spaces) which are held together by compressive and tension forces, highlighting the balance that exists between a spiritual ethereal initiation stage (Author, 2015).
Figure 6.9: Perspective of meditation spaces (prayer spaces) which are held together by compressive and tension forces, highlighting the balance that exists between a spiritual ethereal initiation stage (Author, 2015)
Figure 6.10: Further exploration of structure through section, highlighting the centre amphitheatre and the public space below it. Different structural problems are realised such as holding up the Union Buildings while excavation and tunnelling happens below it. The degree of tunnelling is also questioned, as the heights to the underside of the amphitheatre are too great (Author, 2015).
Figure 6.11 Section of the political school with connection to the underneath structure (Author, 2015) Left

Figure 6.12: Sectional perspective showing amphitheatre in relation to the school (Author, 2015)
Figure 6.13: Section of political school. The lower part of the structure has strengthened glass in which people can view the earth, as a process of archiving and creating transparency. The roof structure is designed with reference to the Union Buildings with its hidden ridge (Author, 2015).
Figure 6.14: Detail exploration_01 (Author, 2015)
Figure 6.15: Detail exploration_02(-Author, 2015)
Figure 6.16: Detail exploration_03(-Author, 2015)
Figure 6.17: Extrapolated roof structure of the connection between old and new (Author, 2015)

ROOF STRUCTURE
Process of remoulding

BIPV glass roof on laminated curved Solagna beams for entrance way of politicians

Glass panels placed on steel beams to form roof structure

300 Reinforced concrete slab as new surface level with the existing Union Buildings amphitheatre

Glass floor as platform for politicians

Circular galvanised steel beams to support concrete floor above
Metal rods bolted on hinged ends to tapered beams to support lateral movement of glass ramp
Reflective surface support structure to allow light reflected into the interior spaces

Round circular beams with hinged end supports to support steel beams placed on metal plates

5000 diameter reinforced concrete column

Glass ramp supported on I-beams spanning from the platform to bottom level of political school

Level of political school
ROOF STRUCTURE
What makes the central space

500mm glass and reinforced concrete
- Frame out of galvanised steel

600x600x600mm DEEP LAMINATED CLEAR GLASS
SPACED AT 1500mm CC

LAMINATED GLASS SHEETING FIXED AND SECURED TO STEEL CLAD SHEETED TO ROUND 8

TENSIONING STEEL COLUMNS ROUTED TO ROUND STEEL BEAM

TENSIONING STEEL COLUMNS ROUTED TO ROUND STEEL BEAM

Roof structure on the level of the mezzanine

Structural steel members supporting and stabilising various columns are linked with angular headed or round flush bolts

Floor level of structural members

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Figure 6.17.1 and Figure 6.17.2: Roof structure and structural components (Author, 2015)
2. Axonometric view

250mm x 1000mm adobe blocks with 50mm reinforced concrete bed between blocks to increase strength and longevity of blocks

Mentis grating fixed to concrete pipe

450mm concrete pipe for geothermal ventilation system with 500 litre tanks and joints taped with bitumen impregnated tape

Drainage mat

Waterproofing with bituminous coating

Compacted fill

100mm diameter footing drain perforated pipe
10mm elastic joint on 40 x 40 x 6 galvanised steel angle on 30mm safety glass

Reinforced concrete retaining wall with weep holes at 3/6m.

Rock fill with shale rocks, used to form bottom surface

300 diameter reinforced concrete columns on reinforced concrete footing to engineer's specifications

Figure 6.18: Detail: Wall meets ground (Author, 2015)
Figure 6.19: Perspective of wall incision, detail of walkway into the incision (Author, 2015)
Environmental systems

The exploration of the building systems expands on the tectonic concept of architecture becoming an archived space. The systems incorporated mitigates the high cost excavation process and give users the experience of being in an underground space. The location of the political school makes an ideal situation for such a programme and lessens heating energy requirements thus allowing the building to self sustain itself over a long period. Heating and cooling methods have been explored using passive and active systems so as to create a hybrid system that proves beneficial to the longevity of the structure.

The design of the political school will be explored in terms of its heating and cooling techniques, ventilation strategies, lighting strategies and water strategies, which become an integral part of the design.

Heating and cooling

The nature of subterranean spaces and its connection to the amphitheatre brings about many possibilities for heating and cooling strategies. According to literature, buildings placed 3 metres below ground level have stable temperatures which do not have high fluctuation rates like the ground level. The ground level is exposed to diurnal temperatures which fluctuate with the temperatures on the outside. As much as the spaces below would not require excessive heating or cooling, the occupancy rate of people would greatly increase the temperature of the political school. The glass roof structure at the amphitheatre level makes for an ideal situation for a chimney effect to occur, or stack effect. The sun that shines on the glass roof structure allows for high heat from the northern sun to create heat build up. The cool surfaces at the bottom ground drive the cool air from its surface and creates bouyancy. The difference in temperatures in temperatures drives the heat build up from occupancy and direct it through the glass roof.
Figure 6.20: Chimney effect. Temperature differentiation causes buoyancy that drives the hot air out (Author, 2015)

Figure 6.21: Hot air from roof, cool air from the bottom (Author, 2015)
Figure 6.22: Perspective of confrontation spaces in interior space (Author, 2015)
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Figure 6.23: Perspective of impromptu theatre stage (Author, 2015)
Figure 6.24: Perspective of roof on the existing amphitheatre. Politicians access way (Author, 2015)